

The Manner of Articulation of the emphatic /d^ʕ/in both Saudi and Palestinian dialects

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Abstract: This study aims at investigating the manner of articulation of the emphatic /d^ʕ/ sound in both the Saudi and Palestinian dialects. The subjects' sound recordings have been digitized on a PC and analyzed via Praat. The results reveal that the Saudis produce /d^ʕ/ as an emphatic fricative, whereas the Palestinians as an emphatic plosive. The implications of this study suggest that /ð^ʕ/ (the fricative emphatic sound) and /d^ʕ/ (the plosive emphatic sound) merge into /ð^ʕ/ in Saudi Arabic, whereas they are distinct from one another in Palestinian Arabic. This is similar to Alani's (1970: 46) finding that the /d^ʕ/ sound is pronounced as /ð^ʕ/ (emphatic fricative), but not as /d^ʕ/ (pharyngealized plosive) in Iraqi dialects except in the dialects of Iraqi Christians despite its orthographical representation as /d^ʕ/ in the writing system.

Keywords: Emphatic, Fricative, Plosive

1. Introduction

The diglossic nature of Arabic has been brought to the center of attention by many scholars (see Ferguson, 1959; Fishman, 1967; Zughoul, 1980; among others). Arabic has more than three registers: classical, Modern Standard, and colloquial Arabic. Colloquial Arabic includes many dialects geographically spread over the Arab world. Classical Arabic and dialectal Arabic have emphatic consonants such as /s^ʕ/ (s^ʕa:d), /d^ʕ/ (d^ʕa:d), /t^ʕ/ (t^ʕa:'), and ð^ʕ (ð^ʕa:d) as opposed to their plain (non-emphatic) counterparts, /s/ (si:n), /d/ (da:l), /t/ (ta:'), and /ð/ (ða:l), respectively. Emphatic consonants are lexically contrastive in any register of Arabic.

The pronunciation of Arabic emphatic consonants varies from one area to another in the degree of retraction of the dorsum or root of the tongue, i.e. the effort put to produce such sounds. Given that, this study aims to make explicit the differences, if any, with respect to the quality of the emphatic /d^ʕ/ in two Arabic dialects: the Saudi (Peninsular) versus Palestinian (Levantine) Arabic. My selection of these two dialects is based on my familiarity with them and the availability of informants. More importantly, I think that /d^ʕ/ varies in both dialects with respect to the manner of articulation. The chief question I attempt to answer in this study is:

1. What is the manner of articulation of the emphatic /d^ʕ/ in

both dialects?

2. Method

2.1. Lexical Tokens

There are three words with the emphatic /d^ʕ/ which is followed by the vowel /a/ word-initially, medially and finally. It is better to compare the emphatic quality in different locations in the same environments for the sake of accuracy. The three utterances on which this study is based are shown in Table 1 below:

Table 1. Tokens.

Words with [d ^ʕ]
d ^ʕ ami:r (conscience)
ha:d ^ʕ ar (he lectured)
ʕad ^ʕ a (he bit)

2.2. Elicitation Technique

The subjects of the study have been asked to produce the words in the table above. In order to capture each speaker's production of each word more accurately, they have been

asked to articulate each word in the list in isolation three times. This strategy prevents other prosodic factors (e.g. intonation and stress) from affecting the actual pronunciation of those sounds and enables us to better focus on how the production of this emphatic sound varies in both Arabic dialects.

2.3. Recordings

The data have been recorded via Praat in a very quiet and comfortable environment. The recordings have been saved into the personal computer of the researcher. The recordings have been acoustically analyzed via Praat as well.

2.4. Subjects

As the study focuses on two Arabic dialects, the subjects are four male speakers: two Saudi and two Palestinian native speakers of Arabic.

3. Related Literature

The phenomenon of Arabic emphatic sounds has been of interest to many scholars such as Al-Ani (1970), Zawaydeh and de Jong (2011), Jongman et al. (2011), McCarthy (1994), Davis (1995), among others. Most of these studies have also examined various Arabic dialects with respect to the spread of emphasis and postulated numerous articulatory correlates of emphasis such as pharyngealization, uvularization, and dorsalization.

Alani (1970: 44) proposes that there are in fact more than four emphatic sounds in Arabic dialects and most dialects embody a larger number of emphatic sounds. He refers to emphatics as pharyngealized rather than velarized because it appears that the pharyngeal area is involved in the production of these sounds.

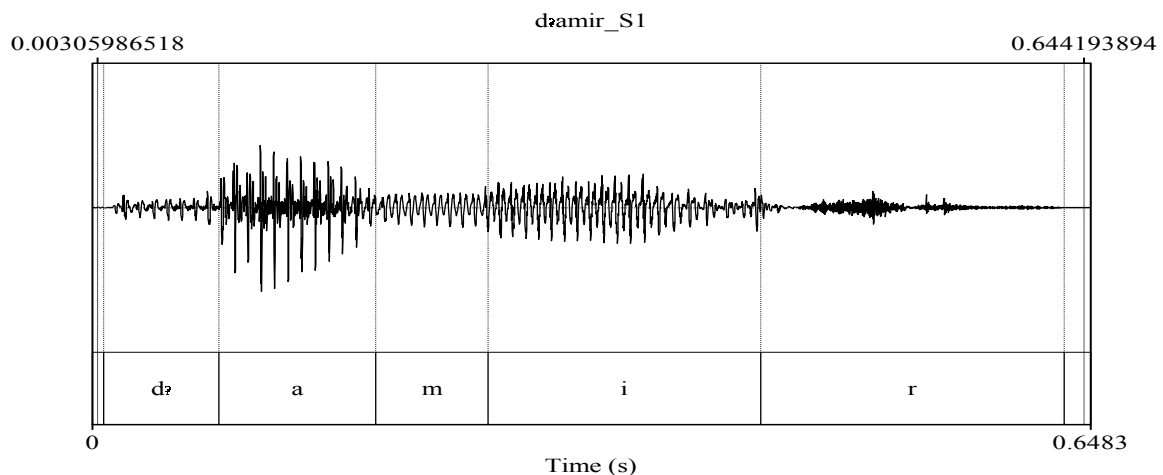
Jongman et al. (2011) conducted a study on the acoustics and perceptual effects of emphasis in Urban Jordanian Arabic. In order to investigate the extent of co-articulatory effects of emphasis, they recorded twelve speakers of Jordanian Arabic pronouncing both consonants and vowels of monosyllabic minimal pairs including plain and emphatic consonants in

both initial and final positions. The results of the study revealed that raised F1, lowered F2 and raised F3 are characteristic of vowels adjacent to emphatic consonants, consistent with a narrowing near the uvula. These effects are similar with respect to magnitude for vowels preceding and following emphatic consonants. Furthermore, the spectral mean of plain consonants was higher than that of emphatic stops. The results also showed that the rest of the word contributes more to the perception of emphasis than to the target consonant itself in a significant way. Overall, the acoustic data and perceptual results have addressed the correlates and spread of emphasis as well as the asymmetry between stops and fricatives.

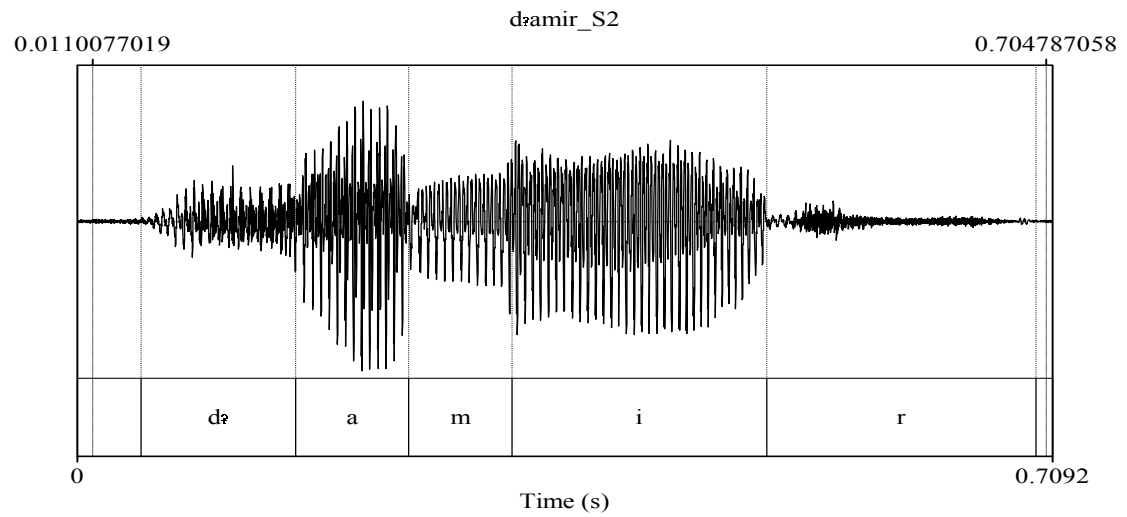
Zawaydeh and de Jong (2011: 257) examined the phonetics of Localizing Uvularization in vowels in Ammani-Jordanian Arabic. They gathered three corpora in order to examine the strength of uvularization in vowels in various parts of the word, and they found out that there is a correlation between the emphatic consonants accompanied by a uvularized quality and the decrease in F2 in vowels located in the environment of those emphatics. Their study also revealed that another weaker variety of uvularization is also triggered by the productions of uvular stops.

4. Analysis and Discussion

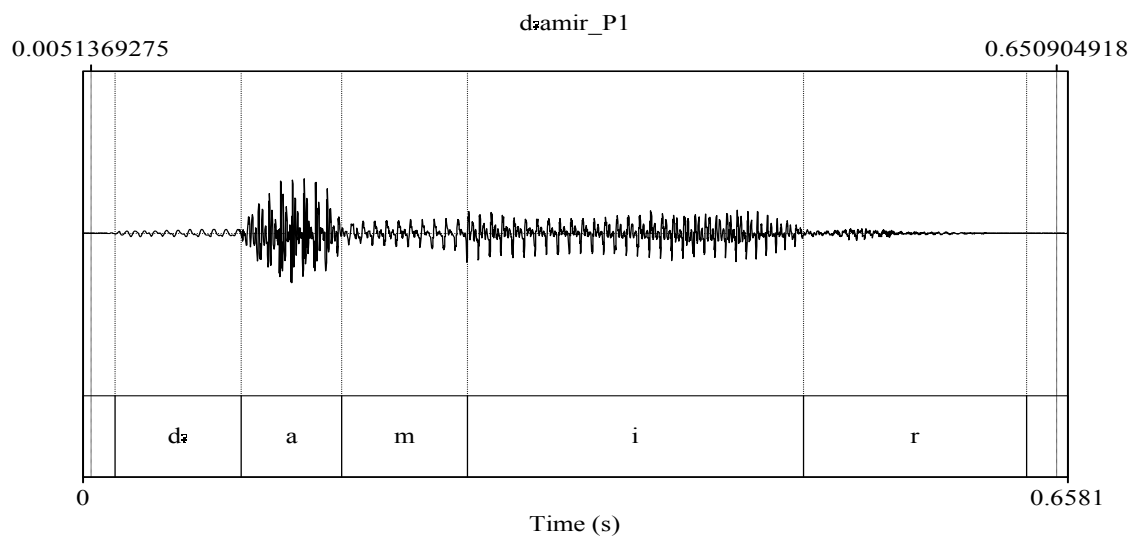
This study as mentioned previously is an attempt to make explicit, the differences, if any, between the Saudi dialect and its Palestinian counterpart with respect to the manner of articulation of the emphatic /dʕ/ sound. The variants of the consonant under discussion are shown word-initially, medially and finally in both dialects. Each word below is displayed on a waveform taken from Praat. The waveforms below (Figures 1, 2 and 3) show the words *dʕami:r* (conscience), *ħa:dʕar* (he lectured), and *ʕadʕa* (he caused/performed) as pronounced by the four speakers. The TextGrids are also shown to mark each sound of the word separately. S1 and S2 stand for the first and second Saudi informants, and P1 and P2 for the first and second Palestinian informants, respectively.



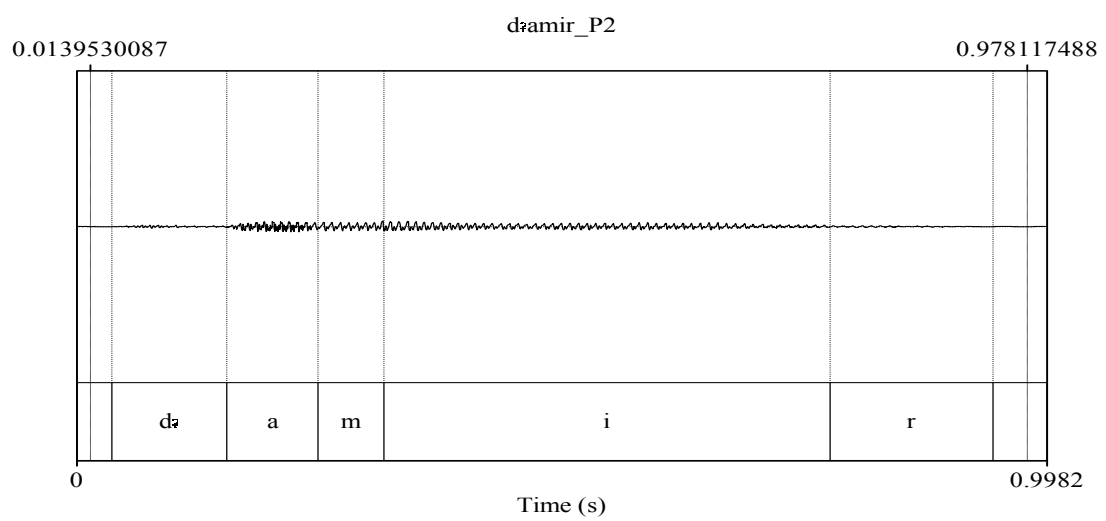
(a)



(b)



(c)

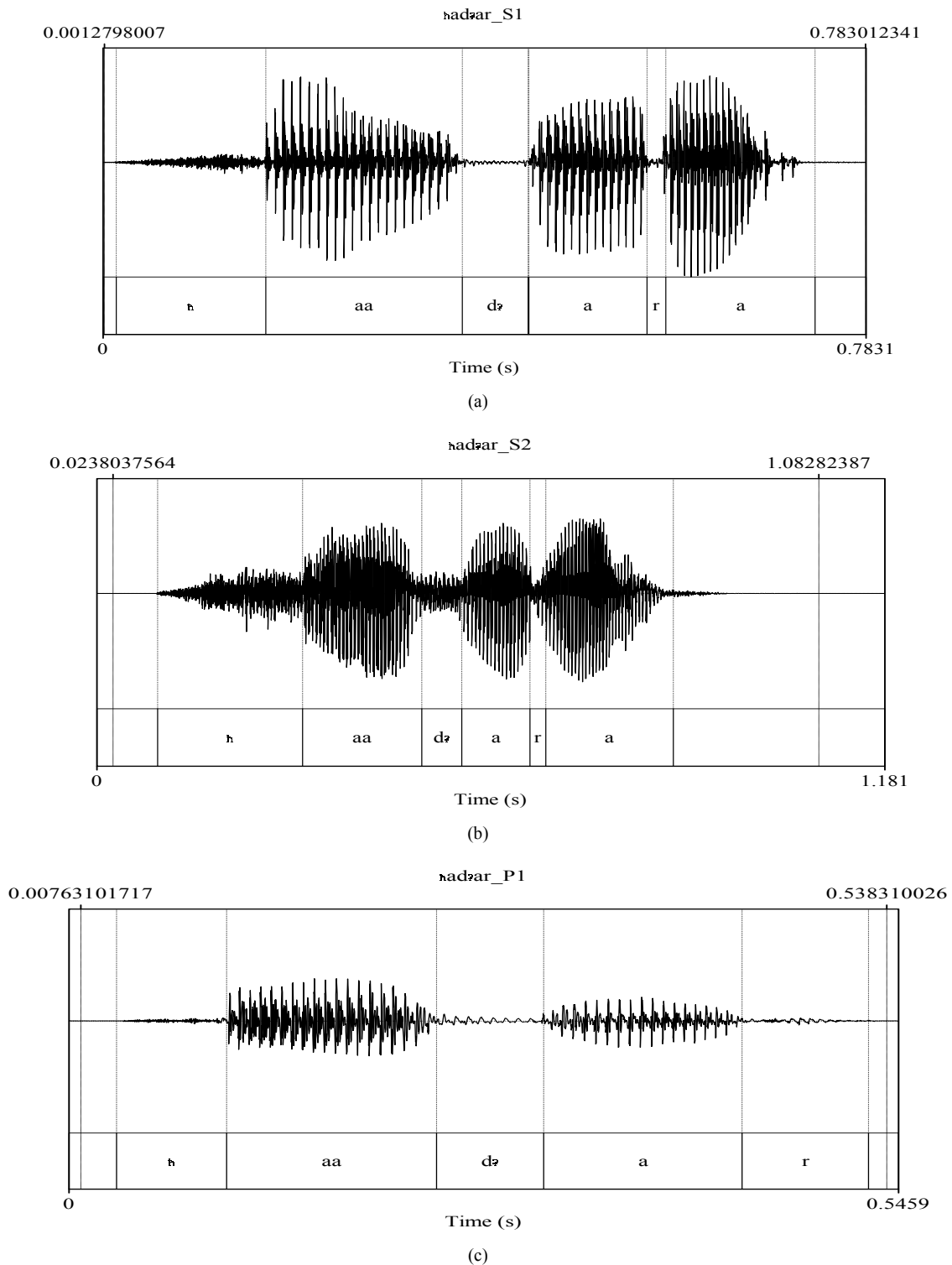


(d)

Figure 1 (a, b, c, and d). Waveforms of the word 'dʒami:r'.

The above four waveforms represent the word *dʕami:r*. The first two belong to the Saudi speakers as indicated by S1 and S2, whereas the last two to the Palestinian speakers as indicated by P1 and P2. As shown above the word *dʕami:r* starts with the emphatic consonant /dʕ/ which seems to differ in the two dialects. According to Alani (1970: 46), the most common allophone of the /dʕ/ sound is a voiced pharyngealized post-dental stop. The waveforms show that the /dʕ/ sound produced by the two Saudi speakers tends to be

a fricative which is similar to the fricative emphatic /ðʕ/ sound (this is more noticeable in the waveform b in Figure 1), whereas it is a stop sound (as classified by the standard pronunciation) as produced by the two Palestinian speakers. In order to ascertain the correctness of this assumption, we should also look at how the four speakers produce the /dʕ/ in medial and final positions. Let us now consider the medial position. Figure 2 below has illustrative waveforms of the word *ħa:dʕar*:



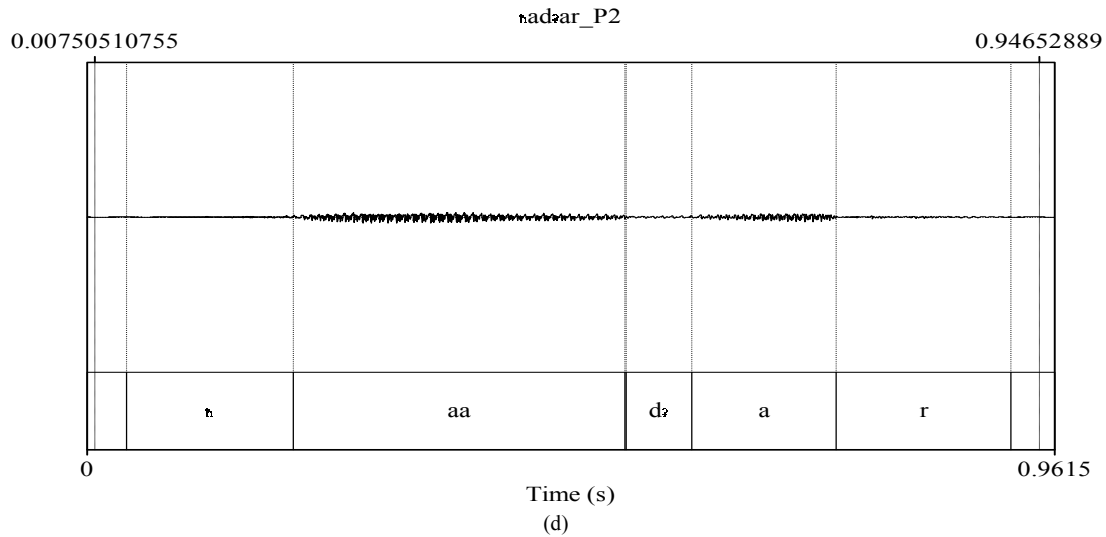
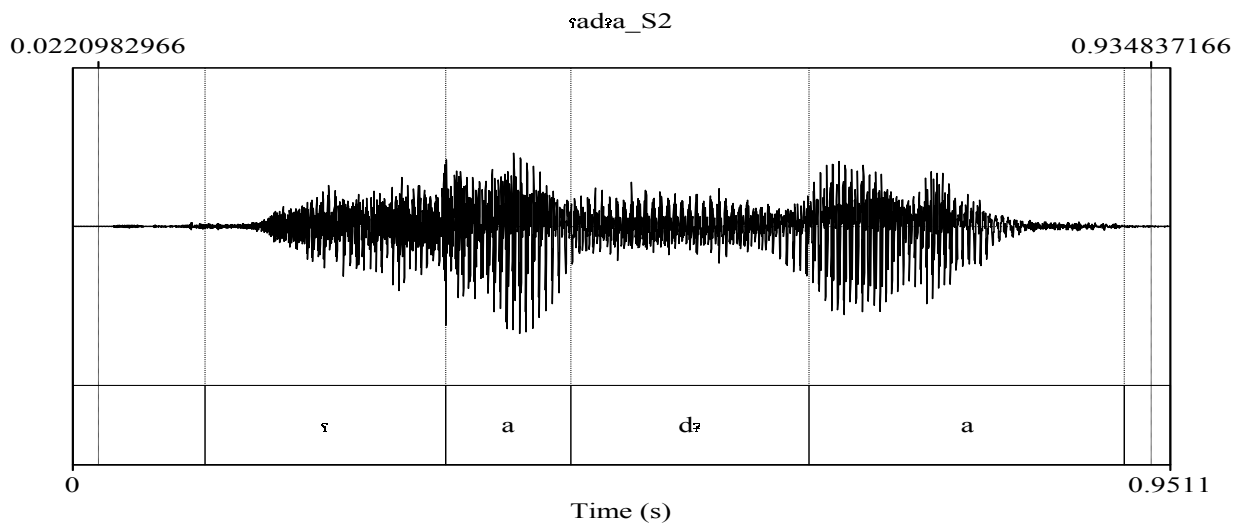
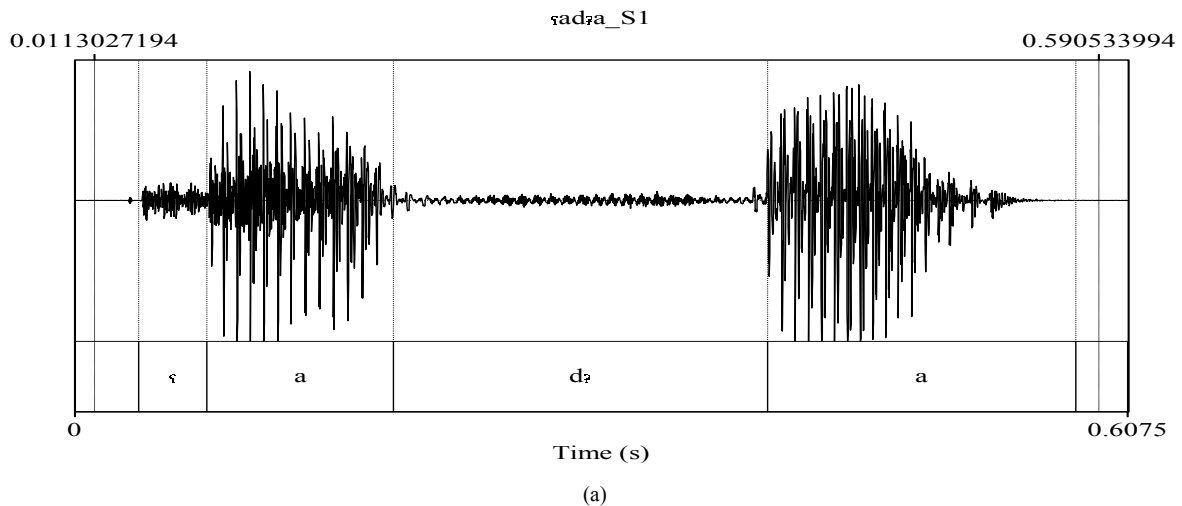


Figure 2 (a, b, c, and d). Waveforms of the word 'ħa:dʕar'.

As shown by the above waveforms in Figure 2, we notice that the /dʕ/ sound is produced as a fricative by both Saudis although there is much more concentration of spread energy while producing this sound in waveform (b) than that in waveform (a). With respect to the Palestinian speakers, it is

more likely that they both pronounce it as a stop sound. Finally, we need to check the quality of this sound in final positions, as indicated by the waveforms of the word *ħadʕain* Figure 3 below:



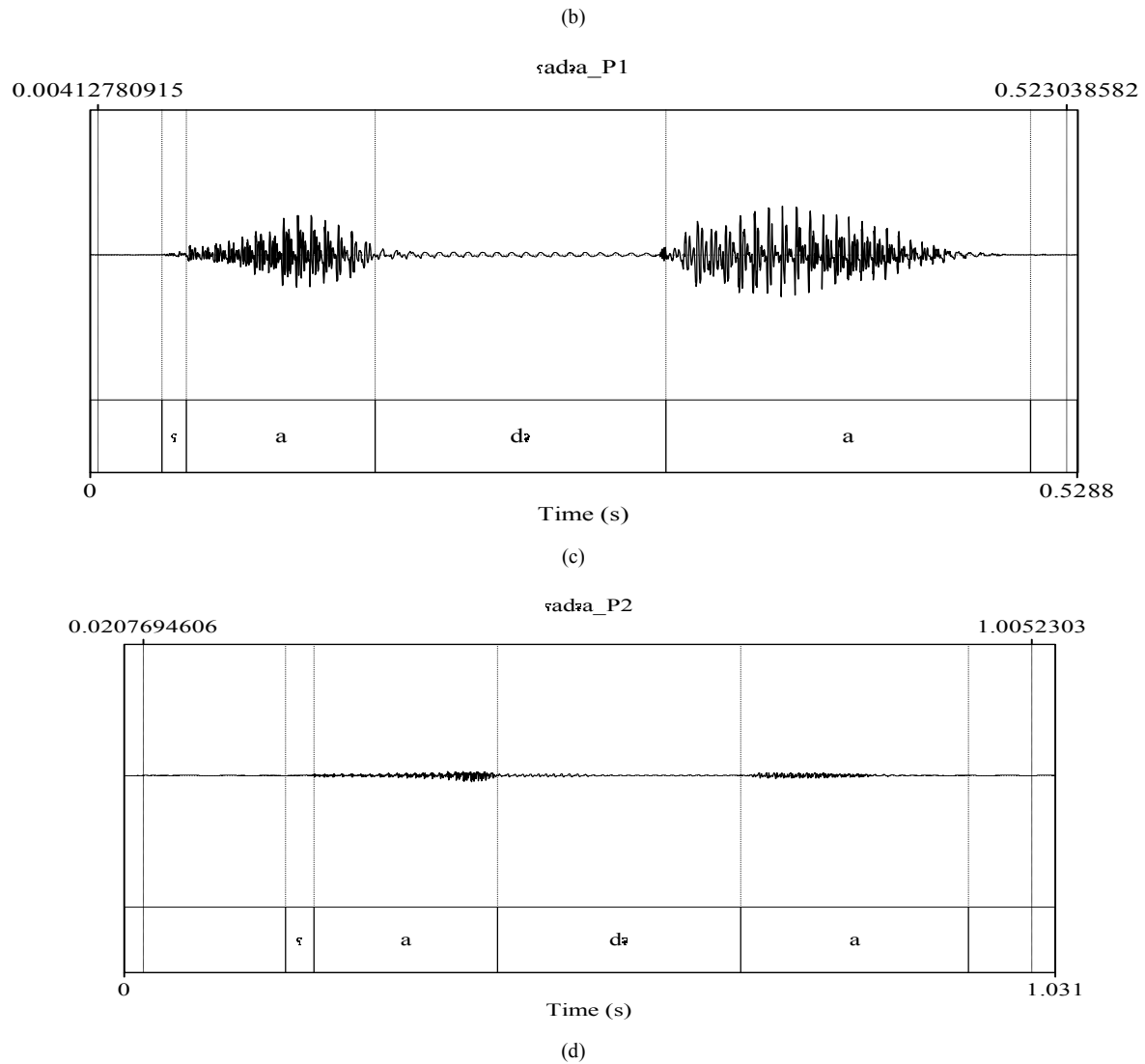


Figure 3 (a, b, c, and d). Waveforms of the word 'ʕadʕa'.

The first two waveforms in Figure 3 also indicate that the /d^ʕ/ sound in *ʕadʕa* is a fricative although there is variation in the flow of energy between the two Saudi speakers as previously mentioned. The third and fourth waveforms appear to represent a stop sound. When we look very closely at all the above waveforms, we can clearly see that there is much more concentration of energy (noise) spread over the /d^ʕ/ sound in the Saudi dialect than that in the Palestinian dialect.

Reetz and Jongman (2009: 191-192) state that fricatives vary with respect to the intensity of the turbulence and they are within the range of high to low frequency turbulence. They add that "fricatives have a relatively long noise portion with reasonably stable acoustic characteristics" (p. 192). This can be ascribed to the fact that the production of fricatives involves a narrow constriction in the oral cavity and consequently the flow of energy continues and never stops. Reetz and Jongman (p. 193) also point out that the gap in the spectrogram corresponding to the closure portion of the consonant contains only low-frequency energy in the case of fully voiced stop sounds and no energy in the case of

voiceless stops. These characteristics of plosives and fricatives, as outlined by Reetz and Jongman, describe what the above waveforms display. The emphatic /d^ʕ/ sound is produced as a fricative by the Saudi speakers although one of the two sound variants has more outgoing energy than the other, whereas the same sound is pronounced as a plosive by the two Palestinian speakers. This explains why there is more concentration of energy and turbulence in the waveforms produced by the Saudi speakers.

In his book *Arabic Phonology* Alani (1970: 46) points out that the /d^ʕ/ sound is not used in Iraq on both the literary and colloquial level, except in the dialects of Iraqi Christians. He adds that this sound is pronounced as /ð^ʕ/ (emphatic fricative) and not as /d^ʕ/ (pharyngealized plosive) although it is orthographically represented in the writing system as /d^ʕ/. Minimal pairs of these two sounds, which are distinctive in some parts of the Arab world like Egypt, are homophones in the speech of all of Alani's informants.

To recapitulate, the above waveforms of the three words show that the sound /d^ʕ/ as produced by the first Saudi informant does not seem to involve a complete closure and

consequently it could be considered a fricative with a low-frequency turbulence, that the second Saudi informant produced the sound as a fricative with a high-frequency turbulence, and that the two Palestinian informants produced the same sound as a plosive with a complete closure.

5. Summary

The results of this study reveal that the emphatic /d^ʕ/ sound is a fricative as produced by the Saudi informants and plosive by their Palestinian counterparts. The /ð^ʕ/ and /d^ʕ/ seem to merge into /ð^ʕ/ in many large areas of Saudi Arabia. On the contrary, these two sounds are distinct from one another in most of Palestine. This difference in the manner of articulation in the production of this sound might also affect the quality of adjacent sounds. This is beyond the scope of this study, but it is worth investigating in future research.

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