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The Problematic of Arabic Emphatic & Guttural Segmental Sounds among Malay Students

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Abstract
The Arabic language is made up of a set of emphatic and guttural consonants that exert a phonological influence on adjacent segment sounds by moving the tongue's root back towards the pharynx. This paper discusses the pronunciation difficulties among Malaysian students who learn Arabic words. There are three approaches to account for the production and perception of Arabic segmental difficulties namely speech perception, phonology and phonetic. Data for this research were obtained from two sources: Shehata's study (2018) and observations of Malaysian mispronunciation which were recorded. Data analysis also displays five phonological aspects of mispronunciation involving: substitution, addition, interference, omission and vowel changes. A number of opaque and difficult phonemes of Arabic including : / t ت/, / θ ث / , / ħ ح/ , / ð ذ/ , / sˤ ص/, dˤ ض/, / ðˤ ظ / , /ʕ ع/ , / ɣ ~ ʁ غ/ , /q ق /, / k ك /,that can be unfamiliar for Malay students. The paper concludes with findings that indicated Malay Arabic is mostly phonetic rather than phonological. Arabic emphasis spread among Malay students can be a syllabic words or an entire phonologicalword. Arabic pronunciation difficulties has its implications to other researchers in phonetics and future phonological theory. Malay phonological Arabic system needs more intensive highlights studies for further researchers.
Keywords: Arabic, Emphatic and Guttural Consonants, Pharyngealization, Optimality Theory.

Introduction

The Arabic language is one of the most important languages in the world. It is the fourth most spoken language worldwide with more than 315 million people from 58 different countries speaking it as their mother tongue. The Arabic language is the official language of more than 25 countries including Saudi Arabia, Jordan, Yemen, Egypt, Syria, Iraq, and others. The national communities in these countries use Arabic as the predominant means of communication in their daily life. The language has two different classes — Classical Arabic and Modern Standard Arabic (henceforth, MSA) (Comrie 2009; Alotaibi & Muhammad, 2010)

This paper examines the pronunciation difficulties of Arabic language among non-native speakers (Malay perspective)in KSA. The process of mispronunciation from one language to another is a common process as every language in the world has a unique phonological process from other languages, although the degree of difficulties might be different from one to another. The same applies to Arabic whereby this language has been influenced by other languages.

The present paper will discuss the pronunciation difficulties of the Arabic language among non-native speakers . Correct pronunciation of the Arabic Language is meant to achieve certain functions like phonological accuracy, pedagogical pronunciation, lexical morphemes, phonological awareness and phonological features. Thus, pronunciation difficulties show the interferences between a certain language and the worldwide languages.

To sum up , the problem refers to difficulties in pronunciation, which ultimately affect not only the newcomers (beginners) to the target language but also the advanced learners.

Related Literature

The phenomenon of mispronunciation of Arabic segmental has attracted the attention of linguists who have researched it resulting in a wave of studies. In what follows, a review of the available relevant studies is looked upon.

According to (Al-Solami, 2013) Arabic has a set of complex coronals, /s/, /d/, /ð/, and /t/. These Arabic sounds are problematic, whether phonetically or phonologically. In the phonetic case, the emphatic sound in the second articulation is disputed. In contrast, many studies grouped the phonological of Arabic sounds like a guttural class, whereas others were excluded. These emphatics were found to affect neighboring sounds. This effect varied from one Arabic dialect to another. The effect can be phonetic or phonological. Watson (1999) stated that many Arabic dialects have pharyngealized emphasis, as in the case of Yemeni Arabic (Watson, 1999). He stated that Arabic emphatic sounds are articulated, whether labialization or pharyngealization, in the directionality by Yemeni Arabic dialect speakers.

Shehata (2018), examined the production and perception of the Arabic sound system. She indicated that non-native speakers could produce Arabic sounds accurately. She revealed that "novel Arabic contrastive consonant sounds are difficult for native English speakers to discriminate" The most difficult Arabic sounds that English adults face difficulty in pronouncing involve the segments /t-ṭ/, /h-ħ/, and /s-ṣ/, whereas the easiest position in pronunciation is the phonemes /ħ-ʕ/.

Nevertheless, Shehadeh (2013), conducted a contrastive study between Arabic and Malay languages in the verbal system. The study covers different subjects involving active voice, derivation, structures, conditional, and forms of perfects. The findings of this study indicate differences in both languages in terms of the present tense, future, verb agreement, passive, and active voice. For example, verbal forms in Arabic are derived from the root word, while the verbal system of Malay is categorized by prefixes or suffixes in most cases.

Faryadi (2007), focused on teaching foreign languages in Malaysian settings, and Arabic is one of the foreign languages. He investigated the role of Malaysian students in multimedia interaction. The study represented the importance of teaching Arabic in Malaysia. The study also indicated the plan of the Malaysian government to introduce the major educational reforms to develop Malaysia's regional educational hub. He concluded that Malaysian students could acquire Arabic as a foreign language in classroom activities.

Methodology
The following methods are employed by the researcher to fulfill the ultimate goal of the current research which is an analysis of the pronunciation functions in Arabic. There are five methods are used in this study involving: interview, reading passages, conversation and observation , reciting some verses of the Holy Quran and pronouncing 50 contexts, 150 words and 50 short sentences.

Conversation analysis was one of the methods of data collection. Other methods include focus groups and in-depth interviews with the respondents.

Interview
The data collection included both open-ended, unstructured, and semi-structured methods. The researcher conducted interviews with respondents using one-to-one interviews or group interviews. The researcher recorded their pronunciation for analysis. The interview analysis focused on examining the pronunciation of contexts, phrases and short statements, which will provide insights on the group interviews.

Reading Passage
The researcher prepared short Arabic passages (Ktab La Tahzen) with different Arabic segments including emphatic, guttural, and mixed sounds. The researcher met a group of university students and asked them to pronounce specific phonemes individually in different contexts (reading texts) by utilizing a special microphone to record their pronunciation errors, which were then analyzed at a later stage. The researcher asked the respondents to read and pronounce the passage twice individually. Subsequently, they were asked to read a whole passage loudly. Then, the researcher asked all of them to read the whole passage individually in the same group. Finally, the researcher recorded all the pronunciations, whether individually or by group.

Conversation and Observation
The researcher conducted short conversation with respondents using one-to-one conversation or group. The researcher arranged to meet and sit with respondents in groups and gave them some Arabic emphatics and guttural passages. The conversation included short & long conversations, 15 long contexts, and 80 words. Then, The researcher asked the respondents to practice conversation with each others . During that time, the researcher observed and recorded their pronunciation for analysis. During the sessions, the researcher also observed their accuracy in pronouncing specific phonemes.

Reciting the Holy Quran
The researcher prepared short Arabic passages (Quranic verses) with different Arabic segments including emphatic, guttural, and mixed sounds. The researcher met a group of university students and asked them to pronounce specific phonemes individually in different contexts (reciting verses) by utilizing a special microphone to record their pronunciation errors, which were then analyzed at a later stage. The researcher asked the respondents to recite and pronounce the passage twice individually. Finally, the researcher recorded all the pronunciations, whether individually or by group.

Pronunciation of Specific Words

The researcher conducted pronunciation of specific words with a few participants by asking them to pronounce 50 contexts, 150 words, and 50 short sentences and record their pronunciation. Subsequently, the researcher observed the accuracy on how they pronounced specific phonemes. An analysis was designed which focused on pronouncing contexts, phrases, and short statements. The analysis of this data provided insights to the group pronunciations.

Acoustic Measurements

Data analysis was conducted using the Praat acoustic analysis software (Boersma and Weenink 2015) by observing the acoustic correlations of stop and fricative voicing (VOT, stop closure duration and vowel duration) pronounced by non-native speakers of Arabic. The software shows the correlation of pronunciation in different phonemes including the pharyngeal feature of emphatic and non-emphatic consonants that affected neighboring segments. The vowels of boundaries were marked visually using spectrograms of the waveforms and wide-band. The onset of vowels was defined as “the first waveform's minimum that accompanied the clear emergence of vowel formants on the wideband spectrogram” while the vowel offset was defined as “the final waveform minimum that accompanied the disappearance or weakening of F2” (see Wright and Nicholas, 2014 p. 45). It is difficult to distinguish the boundaries that were verified visually from the vowel of the waveform and the spectrogram. The sound of the boundaries of the vowels were saved as a TextGrid file. The duration and the vowel formants were automatically measured. Three points of scripts were carried out for the onset (point 25%), midpoint (point 50%), and offset (point 75%) of the duration of the vowel. These measurements were circulated and calculated by utilizing a 25 ms window and 5000 Hz as the maximum formant. The findings of these measurements were then saved as a text file which was analyzed using the R statistical analysis software.

Discussion & Results

To use language effectively and to avoid pronunciation difficulties , Arabic speakers use or resort to colloquial among other classical language . They make use of Arabic dialects to make language convey a lot of information to listeners but assumed by speakers. The following discussion sheds light upon mispronunciation in Arabic among non-native speakers (Malaysian perspective).

The Arabic language is one of the semitic languages characterized by a special distinctive feature known as ‘emphasis’ (Lehn,1963). Dental and alveolar cavities are primarily articulated while emphatic segments are retracted to the back of vocal tract known as secondary articulation. The point of view is supported by several scholars such as (Lehn, 1963; Al-Ani, 1970; Ghazeli, 1977; Card, 1983; Watson, 2002; Bin Muqbil, 2006). The Arabic language has two classes including Classical Arabic (CA) or Quranic (QA) and Modern Standard Arabic (MSA). MSA consists of 34 segmental sounds as follows:

a. 28 represent consonants;
b. Six sounds indicate vowels;
c. Three sounds represent long vowels /i:/, /a:/, /u:/;
d. Three sounds comprising of short phonemes / i /, /a, /u; and
e. Two sounds refer to semivowels (the phonemes /j/and /w/).

Table 4.8
Common Arabic Vowels

	Short		Long	
Vowel	Arabic Transcription	Definition	Arabic Transcription	Definition
I	عد / ʕid /	Promise	عيد/ʕi:d/	Feast
U	عد/ ʕudd/	Count	عود/ʕu:d/	Lute
A	عد/ ʕadd/	Counted	عاد /ʕa:d/	Came back
Aj			عين/ʕajn/	Eye
Aw			عود/ʕawd/	Return

However, other sounds concern consonants with different articulations. According to (Ghazali, 1977) CA and MSA have four emphatic segmental sounds involving tˤ ط, dˤ ض, sˤ ص and ðˤ ظ. There are also counterparts of these sounds comprising t ت , d د, s س and ð ذ. He also mentioned that the nature of emphatic sound /d / depended on Sibawayh's description and has less consensus. (Davis,1995) considered that the effectiveness of emphatic and non-emphatic phonemes on the adjacent segments in the guttural environment is regressive or progressive.

Against this background, (Al-Ani,1970) argued that the production of the emphatic stop is considered as the retraction of the tongue towards the upper oropharynx. Therefore, articulation of secondary segments in Arabic is utilized as pharyngealization rather than a velarization process. The configuration in the vocal tract during the production of the emphatic / tˤ ط / and the plain / t ت / is presented in Figure 4.1.

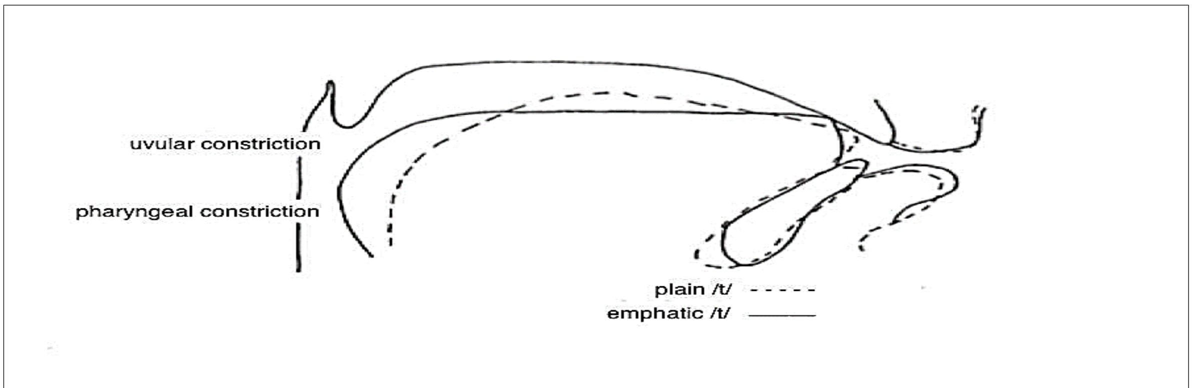


Figure 4.1 X-ray tracing of the plain and emphatic /t/
(Source: Al-Ani 1970)

Another extreme situation suggests that the co-production or secondary articulation is a process of uvularization (McCarthy, 1994; Shahin, 1997; Zawaydeh, 1999; Al-Khairy, 2005). These scholars proposed that secondary articulation occurs in the uppermost part of the oropharynx. Oropharynx is close to the uvula where the uvular sounds are produced. These sounds are so-called uvularized (Watson, 2002).

To investigate the position of emphatic affection on affix vowels, a set of words could be used. Prefixes and suffixes of the emphatic consonants could be used whether in stem-initially or stem-finally affixes. Many scholars opine that affix vowel always become /a/ because it is affected by emphatics (Al Ani, 1970; Ghazeli, 1977; Card, 1983). Thus, formants of affix vowels are measured by whether they are adjacent emphatic, non-emphatic consonants or no morpheme boundaries as presented in Table 4.9 Plain and Emphatic Consonants.

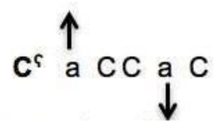
No	Plain	Glossary	Emphatic	Glossary
A	a-sidlih	I block for him	a-sʕidlih	I look away for him
B	asi: lih	A prooper name	asʕi: lih	Genuine, fem

Source: Alammar (2017)

Results of F2

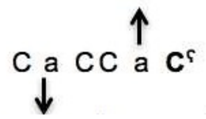
All words in this section were investigated bi-syllabically. These words are emphatics consonants that occur either word-initially or word-finally. To support this point, an example of an emphatic word is /tˤabbad/, in which the vowel is close to the emphatic consonant in the first syllable (which is referred to as 'target or adjacent vowel') while the vowel in the second syllable is referred to as 'non-target or non-adjacent vowel'. On the other hand, in the emphatic word /dabbatˤ/, the vowel is near from the last emphatic consonants which is termed 'target or adjacent vowel, which occurs in the final positions as illustrated below :

Target/adjacent vowel



Non-target /non adjacent vowel

Target/adjacent vowel



Non-target/non adjacent vowel

Each vowel was investigated by three points as follows

i. Point 25 (p25) which means the vowel onsets
ii. Point 50 (p50) which means the midpoint of the vowel
iii. Point 75 (p75) which means the offset of the vowel.

The acoustic effects of emphatics on neighboring vowels is indicated in both syllabic and bi-syllabic words when emphatic sounds occur initially. Thus, the F2 in emphatic words, whether target or non-target vowels, was consistently lowered and affected. In terms of the second formant, Figure 4.2 below illustrates the power of emphatic affection on target and non-target vowels in different positions. Overall, the presence of the emphatic consonant in the initial position was lowered in the F2 of the adjacent vowel by an average difference of 300 Hz (1550 Hz vs. 1250 Hz). Additionally, the non-target and non-adjacent syllable was also depressed in F1 by an average of 35 Hz (1600 Hz vs. 1565 Hz).

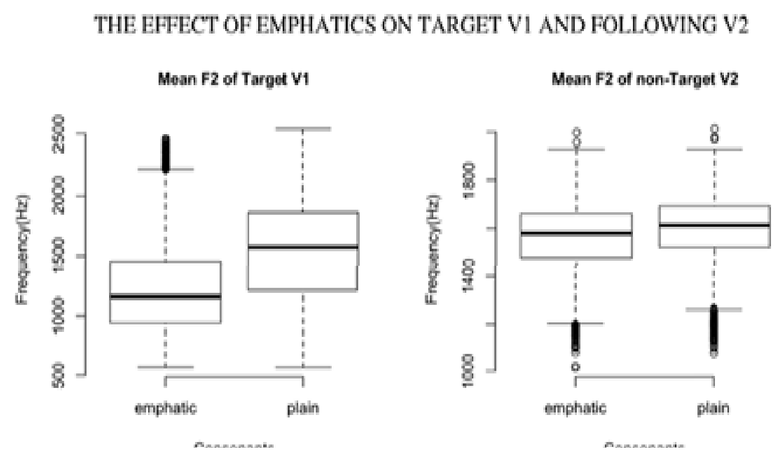


Figure 4.2 Box plots illustrating the effects of emphatics on the target vowel (V1) and the non-target one (V2) in terms of F2.

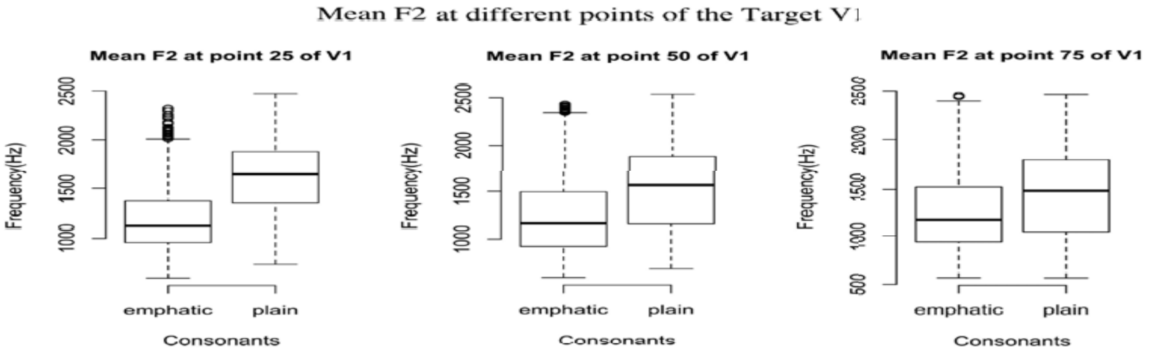


Figure 4.3 Box plots of mean F2 at different points of the target vowel (V1) when adjacent to word-initial emphatics.

Figure 4.3 above shows the affection of emphatic consonants on the target vowel is decreased by distance. F2 was lowered by 410 Hz (1630 Hz vs. 1220 Hz) and decreased gradually in the midpoint with differences of 280 Hz (1550 Hz vs. 1270Hz) and down to 200 Hz (1470 Hz vs. 1270 Hz) at the farthest point of measurements. The decrease in F2 values was affected by non-target vowels in the non-adjacent syllable with an average of 35 Hz as described in Figure 4.2. When diminished with distance, F2 of the lower vowel was lowered by 45 Hz (510 Hz vs. 1465 Hz) as seen in Figure 4.4. The effect gradually lowered with differences of 35 Hz (1605 Hz vs. 1570 Hz) at the midpoint and down to 30 Hz (1685 Hz vs. 1655 Hz) at the farthest measurement.

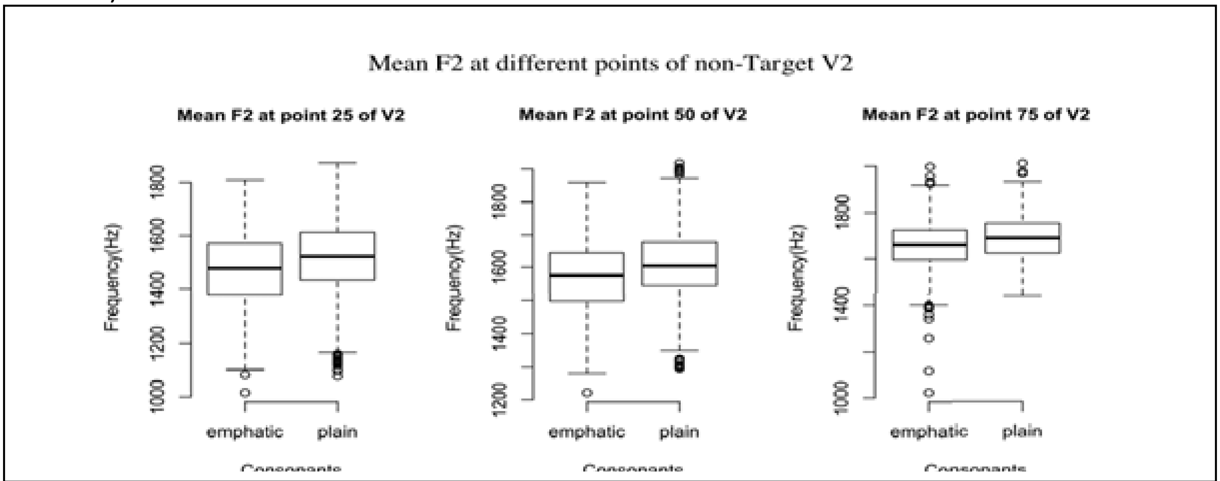


Figure 4.4 Box plots of mean F2 at different points of the non-target vowel (V2)

The above measurements were taking into consideration all groups of vowels together, i.e., short and long. In the following sections, long and short vowels were investigated separately to see whether emphatics were lowered differently in F2 based on the length of the vowels. Vowels were examined separately to see how different emphatics affected non-target vowels and whether the emphatic affect in the adjacent vowel is a gradient due to the shortness of vowel. Long vowels, in this case, could be utilized as an indicator of extended emphatic phonetic or phonological duration.

Table 4.10
Different vowels and their averaged F2 values across all three points, p25, p50, and p75, in plain and emphatic environments when emphatics are initial

Vowel type	Type of consonant		Difference in Hz
	Plain	Emphatic	
a	1590	1120	470
i	1870	1440	430
a:	1560	1190	370
u	1180	920	260
i:	2180	1990	190
u:	950	840	110

It can be seen in Figure 4.11 that the lowering effect of emphatic consonants originated in a word initial position, which became stronger on the adjacent short low vowel with a difference of 470 Hz (1590 Hz vs. 1120 Hz), followed by a difference of vowel of 430 Hz (1870 Hz vs. 1440 Hz). The last extreme indicated the long vowel with a difference of 370 Hz (1560 Hz vs. 1190 Hz). This lowering effect was followed by a short vowel with a difference of 260 Hz (1180 Hz vs. 920 Hz) and a long vowel with a difference of 190 Hz (2180 Hz vs. 1990 Hz) and 110 Hz (950 Hz vs. 840 Hz). It can thus be considered that the emphatic lowering effect was stronger on short vowels such as / a/ and /i/ while weaker on long vowels as in / i : / and / u : /. It can be seen that low vowels were the most affected vowels compared to the long ones.

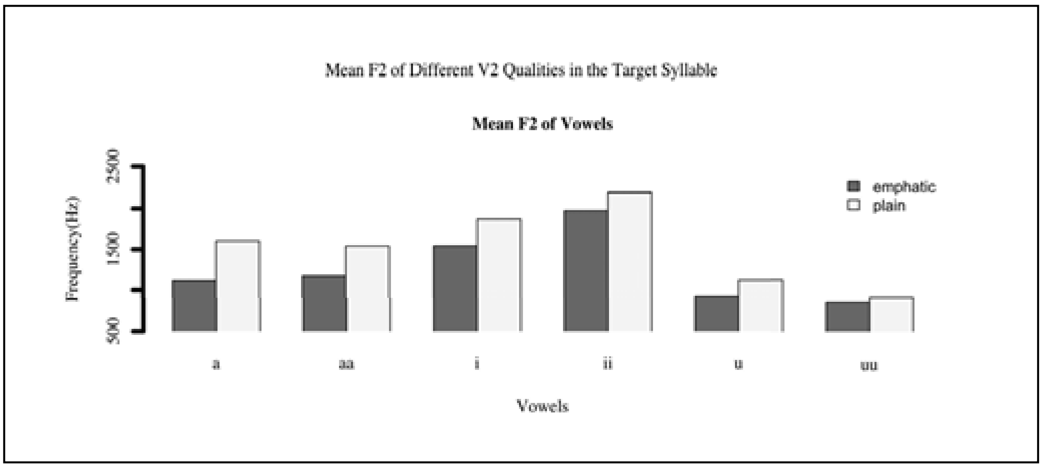


Figure 4.11 Bar plot illustrating different emphatic effect on vowels when they appear word-finally based on their qualities

In general, it shows that short vowels were the most affected emphatic words occurring in word-final positions, while the least emphatic vowels were the high back vowels / u:/. However, long vowels close to emphatic sounds had stronger affects at Point 75, while much less at Point 50 and Point 25 when the emphatic effect was initially originated in a word.

In consideration of some figures separately showing differences between plain and emphatic vowels, Figure 4.12 presents bar plots illustrating different emphatic effects on short vowels based on their qualities at different vowel points of measurements.

Effect of stress on F2

Alammar (2015), opined that word-initial emphatics exert affection more than the final ones. He mentioned that all adjacent vowels are stressed word-initially rather than word-finally. The stress role on emphatic effect on neighboring vowels is possibly tested in the differences between F2 environments. This calls for the investigation of the effect of initial emphatic consonants on the following vowels, e.g., /t ? abbad/ while the effect of word-final emphatic consonants are utilized as e.g., /bat t ad/. It is clear that the target vowel is positioned in the first syllable.

Having stress on the initial syllable, on the other hand, resulted in smaller F2 values for all points of measurement: at Point 25, the difference was 560 Hz [1120 vs.1680]; at Point 50, the difference was 480 Hz [1140 vs. 1620]; at Point 75, the difference was 667 Hz [1160 Hz vs 1718 Hz]. Figure 4.16 presents the shifting of stress to the final position of the syllable, indicating bigger differences between emphatic and plain. F2 values in measurement of the three points took place when emphatic words occurred word-medially. At the closest point to the consonant, Point 25, the difference was 470Hz [1130 Hz vs.1600 Hz]; at Point 50, the difference was 600Hz [1090 Hz vs.1690 Hz]; at Point 75 with the difference was 540 Hz [1120 Hz vs. 1660 Hz].

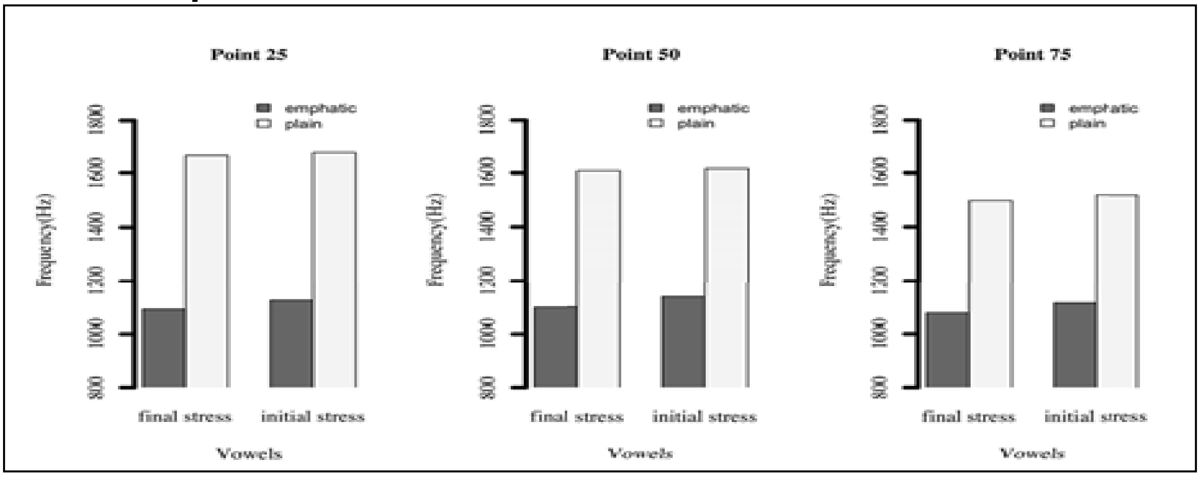


Figure 4.16 Bar plots illustrating the amount of F2 depression at different point of measurements when initial vowel is stressed vs. unstressed in words with word-initial

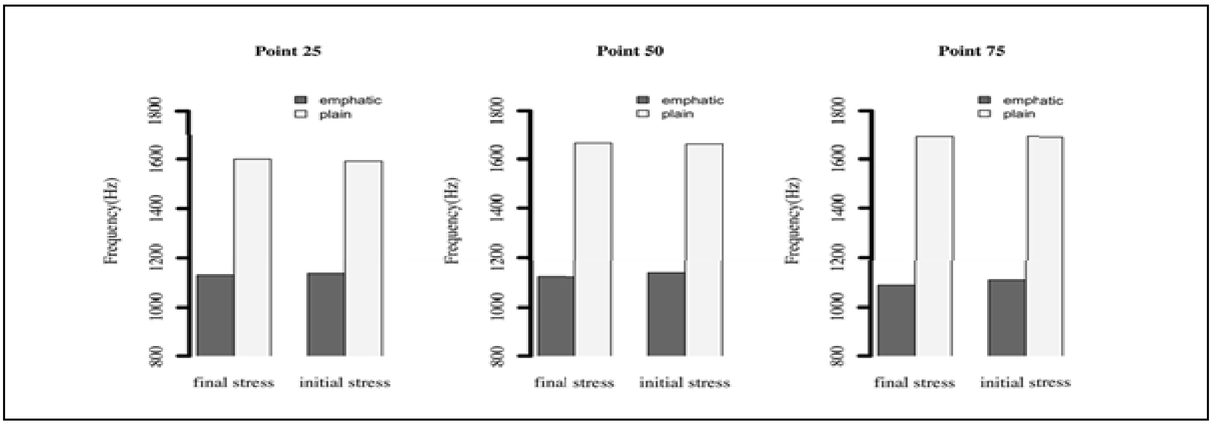


Figure 4.17 Bar plots illustrating the amount of F2 depression at different point of measurements when initial vowel is stressed vs. unstressed in words with word-medial

Stress on the initial position of the syllable resulted in smaller F2 values (see Figure 4.17). At Point 75 with the differences was 580 Hz [1110 Hz vs. 1690 Hz]; at Point 50, the difference was 520 Hz [1140Hz vs. 1160 Hz]; at the Point 25, the difference was (460 Hz [1130 Hz vs.

1590 Hz]. In addition, stress data indicates similar effects of the main data on word-initial and word-final emphatic positions.

Results for F1

The emphatic word affecting target and non-target vowels in the values of F2 was investigated. Investigation was carried out on the second values of acoustic F1 that were affecting neighboring vowels. A question arose whether emphatic effect took place during pharyngealization process where F2 dropped and F1 increased or during the uvularization/velarization process where F2 dropped and F1 remained unchanged.

Rightward Raising Effect on Short Vowels

Figure 4.18 shows that in short target vowel testing, the initial word of emphatic consonants in the values of F1 goes up to the average of 55Hz [480 Hz vs 425 Hz] while the non-target vowel of F1 was slightly raised up to the average of 10 Hz [520 Hz vs. 510 Hz]. To investigate the three points of short target vowels, the effect of emphatic consonants on the vowel was diminished gradually. As shown in Figure 4.19, the closest point of the emphatic consonants, F1 value was raised by 65 Hz (485 Hz vs. 420 Hz) and the effect is gradually decreased with the difference of 55 Hz (495 Hz vs. 440 Hz) at the midpoint of the vowel and down to a difference 50 Hz (470 Hz vs.420 Hz) at the point of measurement.

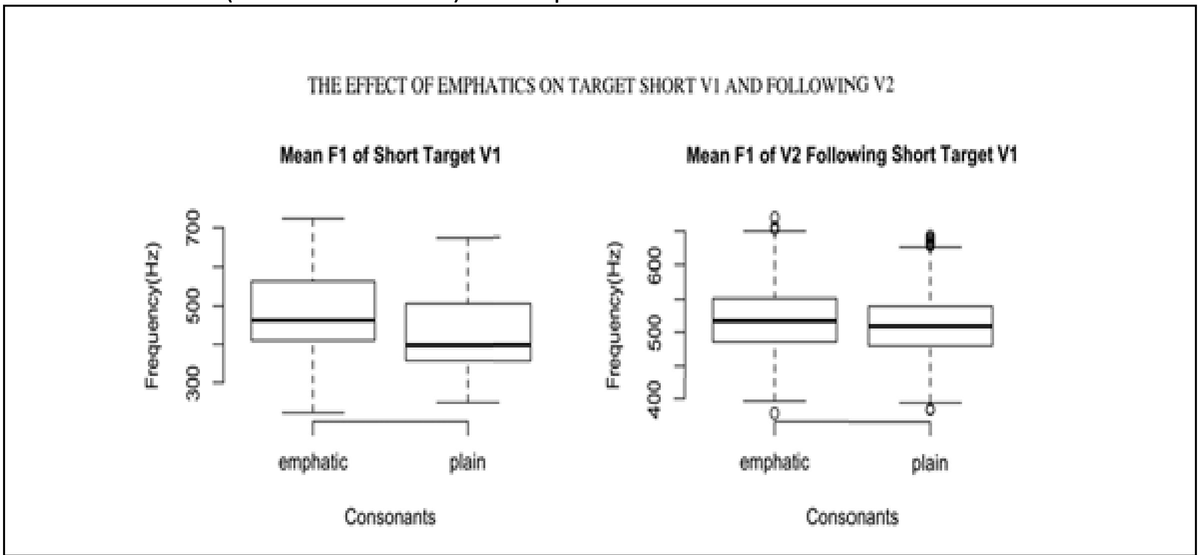


Figure 4.18 Box plots illustrating effect of emphatics on target short vowel (V1) and non-target one (V2) in terms of F1

Rightward Raising Effect on Long Vowels

The long vowels in the word-initial position of the emphatic consonant raised the F1 of adjacent target long vowels by an average of 30 Hz (490 Hz vs. 460 Hz). Thus, we can see that the effect on the non-target vowel on the non-adjacent syllable barely raised F1 with a difference of 5 Hz (520 Hz. 5 Hz).

Each point of measurement of the vowel exerted an increasing effect on the word initial emphatic consonants. Figure 4.21 indicates that this effect on the target long vowel decreased gradually with an average of 30 Hz (500 Hz vs. 470 Hz) at the closest point to the emphatic consonant. The effect gradually weakened with a difference of 50 Hz (490 Hz vs. 440 Hz) at the midpoint of vowel and a difference of 45 Hz (450 Hz vs. 1670 Hz) at the farthest point of the measurement.

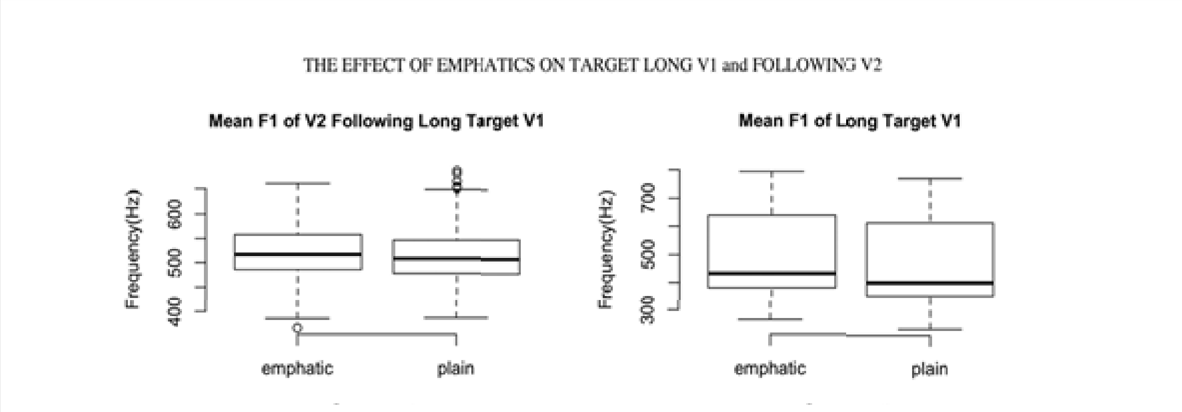


Figure 4.21 Box plots illustrating effect of emphatics on the target long vowel (V1) and the non-target short one (V2) in terms of F1

Raising Effect and Vowel Quality

As mentioned above, the emphatic effect varied from one vowel to another based on their qualities. The measure of F1 values for all vowels based on their qualities are presented in Figure 4.24. Table 4.11 and the foregoing Figure 4.22 indicate that the emphatic consonants were strong in raising the values when they occurred in word-initial positions on the adjacent short high vowel/ i/ with an average difference of 60 Hz (420 Hz vs. 360 Hz), followed by short high vowel / a / with a difference of 55 Hz (590 Hz vs. 535 Hz). This suggests that the short back vowel / u/ indicates a difference of 50 Hz (435 Hz vs. 385 Hz) while the long high vowel / i:/ has a difference of 50 Hz (375 Hz vs. 330 Hz). The long low vowel / a:/ and back vowel /u:/ indicated differences of 30 Hz (680 Hz vs. 650 Hz) and 30 Hz (425 Hz vs 395 Hz), respectively. Figure 4.25 and Figure 4.26 below show the effects on each vowel over time.

Table 4.11
Averaged F1 values for all vowels in plain and emphatic environments adjacent to word-initial emphatics

Vowel type	**Type of consonant**		**Difference in Hz**
	Emphatic	**Plain**	
I	420	360	60
A	590	535	55
U	435	385	50
i:	375	330	50
a:	680	650	30
u:	425	325	30

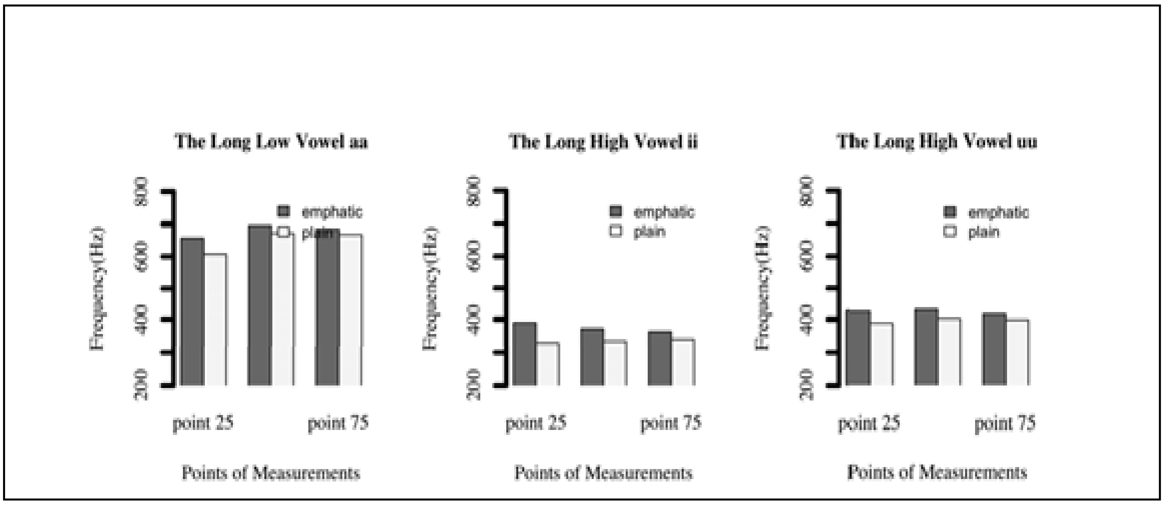


Figure 4.26 Bar plots illustrating different emphatic F1 raising effect on long vowels based on their qualities at different vowel points of measurements

The present study considered that the vowel was affected by sounds such as / u / more than sound / i:/ at Point 5. In F1, the long high vowel / i:/ and / ii / was affected more at Point 25. However, at Point 50, the midpoint consonant affected the long vowel rather than short ones. At the farthest point of measurement, the short vowel was indicative as the most affected vowel in the measurement. At Point 75, the long vowels were equally affected.

Conclusion

The results of the present study showed the effect of the strongest emphasis on adjacent vowels when the consonants occurred in the initial word rather than the final word. In the final syllable, the shifting stress to non-target slightly and insignificantly indicated the differences between plain and emphatic environments in F2.Thus, in F2 values, the non-adjacent showed that the vowel /a:/ was lowered when the emphatics occurred in final word. Thus, the anticipatory emphasis spread was less restricted and more salient than the carryover emphasis spread (Ghazeli, 1977; Watson, 2002; Al-Masri, 2009). One of the most important results of the present study is that pharyngealization in Malaysian Arabic is a phonetic rather than a phonological process that has effects on neighboring segments. Evidence shows that a phonetic sector of weakened vowels is the effect of emphatics in both directions, i.e., leftward and rightward. Another reason for the notion of pharyngealization in Malaysian Arabic is the phonetic process in word-final positions in which the emphatic effects is never blocked by high consonants. High vowels as in /i : u:/ are never blocked, whether the consonants occur in word-initial or word-final positions. The high vowel /i:/ indicates the least affected vowel for the back high vowel /u:/ based on the current study's results.

The paper concludes with findings that indicated Malay Arabic is mostly phonetic rather than phonological. Also , it displays a number of opaque difficult phonemes of Arabic involving : / t ت/, / θ ث / , / ħ ح/ , / ð ذ/ , / sˤ ص/, dˤ ض/, / ðˤ ظ / , /ʕ ع/ , / ɣ ~ ʁ غ/ , /q ق /, / k ك /,that can be unfamiliar for Malay students. The papers finds that Arabic emphasis spread can be a syllabic words or an entire phonologicalword. Thus, it is a fruitful filed that Arabic pronunciation difficulties has its implications to other researchers in phonetics and future phonological theory. Malay phonological Arabic system needs more intensive highlights studies for further researchers .

References

Al-Ani, S. (1970). Arabic phonology. The Hague: Mouton.

Ali, L., & Daniloff, R. (1974). A contrastive cinefluorographic investigation of the articulation of the emphatic–nonemphatic cognate consonants. Studia Linguistica, 26, 81–105.

Al-Masri, M. (2009). The acoustic and perceptual correlates of emphasis in urban Jordanian Arabic (Unpublished doctoral dissertation). The University of Kansas, Lawrence.

Al-Nassir, A. A. (1993), Sibawayh the phonologist: A critical study of the phonetic and phonological theory of Sibawayh as presented in his treatise Al-Kitab. London and New York: Kegan Paul International.

Boersma, P., & Weenink, D. (2015). Praat: Doing phonetics by computer [Computer program]. Version 5.4.06, retrieved 21 February 2015 from http://www.praat.org/

Card, E. (1983). A phonetic and phonological study of Arabic emphatics (Doctoral Dissertation). Cornell University: Ithaca

Davis, S. (1993). Arabic pharyngealization and phonological features. In V. M. Eid & C. Holes (Eds.), Perspectives on Arabic Linguistics (pp. 149-162). Amsterdam & Philadelphia: John Benjamins.

Davis, S. (1995). Emphasis in grounded phonology. Linguistic Inquiry, 26, 465– 498.

Dell, G. S., Burger, L. K. & Svec, W. R. (1997). Language production and serial order: A functional analysis and a model. Psychological Review, 104, 123- 47.

Ghazeli, S. (1977). Back consonants and backing coarticulation in Arabic (Unpublished doctoral dissertation). University of Texas at Austin, Austin.

Hansson, G. O. (2001). Theoretical and typological issues in consonant harmony (Order No. 3019668). Available from ProQuest Dissertations & Theses Global. (304683446). Retrieved from https://libproxy.cc.stonybrook.edu/login?url=http://search.proquest.com/docview/304683446?accountid=14172

Lehn, W. (1963). Emphasis in Cairo Arabic. Language, 39, 129–139.

McCarthy, J. (1994). The phonetics and phonology of Semitic pharyngeals. In P. Keating (ed) Papers in Laboratory Phonology III: Phonological Structure and Phonetic Form (pp. 191-283). Cambridge: Cambridge University

Moll, K. L., & Daniloff, R. G. (1971). Investigation of the timing of velar movements during speech. Journal of the Acoustical Society of America,50,678-684

Prince, A., Smolensky, P., & Prince, C. A. (1993). Optimality Theory. ms. Rutgers University and the University of Colorado at Boulder.

Shahin, K. (1997). Postvelar harmony: An examination of its bases and cross- linguistic variation (Doctoral dissertation). University of British Columbia, Vancouver.

Smolensky, P. and Legendre, G. (2006). The Harmonic Mind: From Neural Computation to Optimality Theoretic Grammar. Cambridge, MA: MIT Press.
Watson, J. (1999) Remarks and replies: The directionality of emphasis in Arabic.Linguistic Inquiry, 30, 289–300.

Watson, J. C. E. (2002). The phonology and morphology of Arabic. Oxford: Oxford University Press.

Wright, R., Nichols, D. (2014). Measuring Vowel Duration.Retrieved from https://zeos.ling.washington.edu/~labwiki/w/index.php?title=Measuring_Vowel_Duration&oldid=196

Younes, M. A. (1993). Emphasis spread in two Arabic dialects. In M. Eid and C. Holes (Eds.), Perspectives on Arabic linguistics V: Papers from the fifth annual symposium on Arabic linguistics (pp. 119–162). Amsterdam: John Benjamins Publishing.

Younes, M. A. (1994). On emphasis and /r/ in Arabic. Amsterdam studies in the theory and history of linguistic science series, 4, 215–215.

Zawaydeh, B. (1998). Gradient uvularization spread in Ammani-Jordanian Arabic. In M. Eid and E. Benmamoun (Eds.), Perspectives on Arabic linguistics (pp. 117–141). Amsterdam: Benjamins.

Zawaydeh, B. (1999). The phonetics and phonology of gutturals in Arabic(Doctoral dissertation). Indiana University.

Zawaydeh, B. A., and De Jong, K. J. (2011). The phonetics of localising uvularization in Arabic. In B. Heselwood & Z. Hassan (Eds.), Instrumental studies in Arabic phonetics (pp. 257 - 276). Amsterdam: John Benjamins Publishing.