Acoustic Investigation of the Affricates of English Loanwords in Iraqi Mosuli Arabic

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
Article information	Abstract
	English loanwords used in daily conversation of Mosuli dialect that contain the affricates voiceless /t͡ʃ/ and voiced /d͡ʒ/ attract little or no attention as far as the acoustic cues are concerned: "friction duration" (FD) and "silence duration" (SD). Mosuli EFL learners from department of English, college of Education for Humanities took part in this research pronouncing English words and Mosuli English loanwords containing English and Mosuli Arabic affricates; [t͡ʃ, d͡ʒ]EN,MA and /t͡ʃ, d͡ʒ/EN,MA used in the same context in daily conversation. The basic aim of this research is to conduct an acoustic investigation between the English loanwords used in Mosuli dialect and English ones containing affricate sounds in various positions. Results showed that Iraqi Mosuli EFL learners were able to differentiate between the pronunciation of the affricates [t͡ʃ]EN, /t͡ʃ/MA and [d͡ʒ]EN, /d͡ʒ/ MA in certain contexts. Additionally, mother tongue Mosuli sounds /t͡ʃ/MA, /d͡ʒ/MA had a significant role in learning [t͡ʃ]EN, [d͡ʒ]EN of isolated words since Iraqi EFL learners did not have a difficulty in pronouncing [t͡ʃ]EN, /t͡ʃ/MA and [d͡ʒ]EN, /d͡ʒ/ MA in certain contexts.

دراسة صوتية لتأثيرات الكلمات الإنجليزية المستعارة في اللهجة العربية الموصلية العراقية

أحباب لازم البدوي
الخلاصة

الكلمات الإنجليزية المستعارة المستخدمة في المحادثة اليومية باللهجة الموصلية والتي تحتوي على الأصوات المصاحبة غير الصوتية / /t͡ʃوالمجهور / /d͡ʒلا تجذب سوى القليل من الاهتمام فيما يتعلق بالإشارات الصوتية: "مدة الاحتكاك" (FD) و "مدة الصمت" (SD). يشارك طلاب اللغة الإنجليزية كلغة أجنبية الموصليون من قسم اللغة الإنجليزية بكلية التربية للعلوم الإنسانية في هذا البحث في نطق الكلمات الإنجليزية والكلمات الإنجليزية المستعارة الموصلية التي تحتوي على أصوات مصاحبة إنجليزية وعربية موصلية؛ [t͡ʃ, d͡ʒ]EN,MA و /t͡ʃ, d͡ʒ/EN,MA المستخدمة في نفس السياق في المحادثة اليومية. الهدف الأساسي من هذا البحث هو إجراء تحقيق صوتي بين الكلمات الإنجليزية المستعارة المستخدمة في اللهجة الموصلية والكلمات الإنجليزية التي تحتوي على أصوات مصاحبة في مواضع مختلفة. أظهرت النتائج أن متعلمي اللغة الإنجليزية كلغة أجنبية من العراقيين الموصليين تمكنوا من التمييز بين نطق الحروف المصاحبة [t͡ʃ]EN /t͡ʃ/MA، [d͡ʒ]EN و /d͡ʒ/MA/ في سياقات معينة. بالإضافة إلى ذلك، كان لأصوات اللغة الأم الموصلية /t͡ʃ/MA، /d͡ʒ/MA دورٌ هامٌ في تعلم [t͡ʃ]EN، [d͡ʒ]EN للكلمات المعزولة، حيث لم يواجه متعلمو اللغة الإنجليزية كلغة أجنبية من العراقيين صعوبةً في نطق [t͡ʃ]EN، /t͡ʃ/MA و [d͡ʒ]EN و /d͡ʒ/MA في سياقات معينة.

الكلمات المفتاحية: الكلمات المستعارة، مدة الاحتكاك، الترابط، مدة الصمت

Introduction

1.1 English Affricates

Authors varied in their specification of the English affricates; the complex consonants as being single phonemes [ʧ, ʤ]; pairs of two harmonic fortis/ lenis consonants or two separate phonemes of [t+ʃ] and [d+ʒ]; having different productions (1). The International Phonetic Alphabet (IPA) combines the plosive elements and fricative elements and used the ligature symbol [͡] to tie these two parts to be a single consonant; [ʧ͡], [ʤ͡] and not consonant clusters (2). As to the production of the English affricates, O'Conner (3) state "that the tip of the tongue touches the back part of the alveolar ridge while the soft palate is raised. And, the air stream is trapped for a short time behind the tongue-tip and the ridge as it is the case of an alveolar stop. The rest part of the tongue takes the position and shape of the fricatives /ʃ/ and /ʒ/. Then, the tip of the tongue moves away from the ridge, and the whole tongue takes the position for the /ʃ/ and /ʒ/. Hence, a short duration of friction becomes audible". These two phonemes have additional consonantal gestures in the sense that in production of the voiceless [ʧ͡] and voiced [ʤ͡] sounds, the tip or the blade of the tongue comes up to make contact with the back part of the alveolar ridge to form stop closures which are slackened by the approximately the same place of articulation of fricatives (2). Philip (4) adds that there are "constriction of complete closure followed by a release phase in which friction occurs". Furthermore, some phoneticians transcribed the two English affricates as a one single symbols; as [č] and [ǰ]. Finally, The English voiceless and voiced alveolar affricates are freely distributed in all positions; initially, medially and finally.

1.2 Affricates of English Loanwords

 Recently, affricates of English loanwords used in daily conversation are in need to be studied acoustically in different language and Arabic is one of them. Mosuli community is in rich with a good number of English loanwords which are used in daily conversation. Loanwords are transferred from one language to another language under certain circumstances, globalization and language changing are one of them (5-7). Mosuli people tend to use these loanwords with the same English vocabularies and little bits of intonation, and phonology as they treated them as Arabic-origin (8, 9), hence becoming an essential part of daily Mosuli mother tongue dialect dictionary. The Mosuli Arabic dialects can be distinguished into Gilta, Gilit and Qəlt. All the former Mosuli dialects have the consonantal affricates /ʧ/ and /ʤ/ which are used as daily loanwords conversation brought from several language and English language is one of them (10-11) dialects the affricate /ʧ/,

/ʤ/ are treated as separate phonemes, and have no allophones in the Mosuli sound system (12)..Al-Hattami (2010) and Al Abdely and Hardan (2021) (13,14). add that the production of the Mosuli Arabic voiceless- voiced palate-alveolar affricates "require a complete closure between the tongue and the alveolar ridge, then the tongue moves away slowly leaving a chance to the sound to be released from a narrow opening causing a fricative release". The sounds; /ʧ/ and /ʤ/ in Mosuli Arabic loan words are distributed in all positions; initially, medially and finally.

1.3 Hypotheses

Regarding the main hypothesis, this research hypothesizes that Iraqi EFL learners will not have any difficulty in pronouncing English [ʧ͡] and [ʤ͡] that are found in the English words, since these sounds are found in their mother tongue language; the English loanwords of Mosuli dialect. As for the sub hypothesis, it is hypothesized that Iraqi EFL learners are able to pronounce the English /ʤ/ easily, since it exists in Standard Arabic language. While, / ʧ/ is not found in standard Arabic language but it is found in certain English loanwords, hence, they may encounter some difficulty in its pronunciation.

1.4 Research Question

As far as the acoustic parameters are concerned, does the pronunciation of the affricates /ʧ/ and /ʤ/that are found in English loanwords used in Mosuli dialect daily conversation ease the learning of the English affricates [ʧ͡] and [ʤ͡] that are found in the same words or not? In other words, is this research affirms the hypotheses mentioned above (pronouncing English and loanwords easily or facing certain difficulty?

1.5 The Aim of the Research

To the best of our knowledge, none of the previous studies have investigated the relationship between the English loanwords containing the Mosuli Arabic [ʧ, ʤ MA] used in daily conversation and the English [ʧ͡, ʤ͡ EN] by Iraqi Mosuli EFL learners, theoretically or acoustically. This study aims to fill this gap by conducting acoustic analysis comparing between the English loanwords of Mosuli dialect and English ones containing the affricate sounds in various word positions as far as the acoustics cues are concerned; "friction duration" and "silence duration".

1.6 Procedures and Data Collection

1- As to the participants of this research; students of Mosuli origin, from College of Education for Humanities, English department will participate in the research sessions.
2- The students are going to pronounce certain English words and Mosuli English loanwords containing affricates [ʧ͡, ʤ͡]EN,MA and /ʧ,ʤ/EN,MA (having the same meaning and used in the same context) in both languages (see table 1) in three different words position in isolation

Table1: Words containing affricates [t͡ʃ , d͡ʒ]EN,MA, /ʧ,ʤ/EN,MA in various positions

English Affricates	English Words	Transcription	Arabic Affricates	Meaning of English loanwords in Mosuli dialect	Transcription
Initial [t͡ʃ]	Chips	[t͡ʃɪps]	Initial /ʧ/	چبس	/ ʧibs/
Medial [t͡ʃ]	Cream-chop	[kri:m t͡ʃɒp]	Medial /ʧ/	كريم چاب	/kriim ʧaap/
Final [t͡ʃ]	Switch	[swɪt͡ʃ]	Final /ʧ/	سويچ	/swiiʧ/
Initial [t͡ʃ]	Chocolate	[ˈt͡ʃɒkələt]	Initial /ʧ/	چقليت	/ʧiqleet/
Medial [t͡ʃ]	Puncture	[ˈpʌŋk.t͡ʃər]	Medial/ʧ	بنچر	/panʧar/
Final [t͡ʃ]	Clutch	[klʌt͡ʃ]	Final /ʧ/	كلچ	/klaʧ/
Initial [d͡ʒ]	Jeans	[ˈd͡ʒi:nz]	Initial /ʤ/	چينز	/ʤiinz/
Medial [d͡ʒ]	Pajamas	[pɪˈd͡ʒɑ:məz]	Medial/ʤ/	بيجامات	/biʤaamat/
Final [d͡ʒ]	message	[ˈmesɪd͡ʒ]	Final /ʤ/	مسج	/massiʤ/
Initial [d͡ʒ]	Jell	[d͡ʒel]	Initial /ʤ/	جل	/ʤel/
Medial[d͡ʒ]	syringes	[sɪˈrɪnd͡ʒɪz]	Medial /ʤ/	سرنجات	/srinʤaat/
Final [d͡ʒ]	Sponge	[ˈspʌnd͡ʒ]	Final /ʤ/	سفنج	/sfinʤ/

3- The English words presented in table (1) and their transcriptions are printed on flash cards (8cm x 12cm) with a font size of 100. These flash cards are presented to the participants before starting the recording sessions.

4- The Mosuli English loanwords presented in table (1) are presented in a form of a picture printed on flash cards (8cm x 12cm) without any transcription since Mosuli participants are familiar with such words as they are used in their daily conversation.

5- A head microphone is connected to "think Pad- laptop computer and used in all the recording sessions with a distance to the mouth of each participant of 5 centimeters.

6- All the recordings were analyzed by using the computer software Praat (15) with a rate of (22100) Hz using a mono channel. - "Praat" measure and analyze "friction duration" and "silence duration" of the words presented in table (1) and saved as wav. Files.

7- "Praat" measure and analyze "friction duration" and "silence duration" of the words presented in table (1) and saved as wav. Files.

8- *"Friction duration"* for English and Mosuli English loanwords is measured in all positions, while "silence duration" is measured in medial and final positions only since it
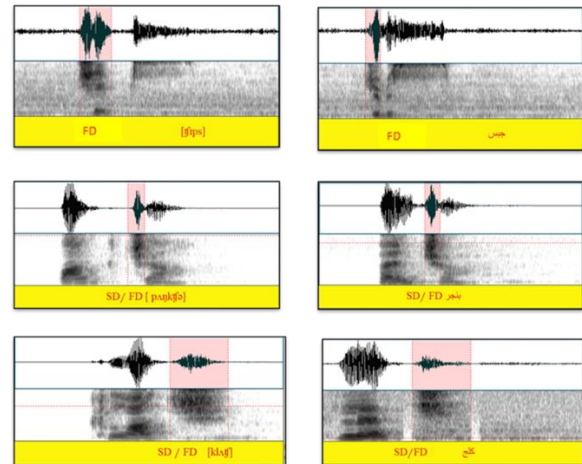

Figure1:Acoustic affricates [t͡ʃ], /ʧ/ (FD) and (SD)of English and Mosuli English Loanwords in Various Positions
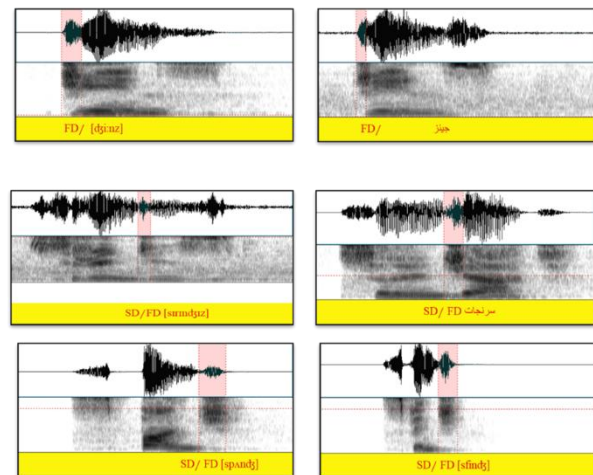

Figure 2: Acoustic affricates [d͡ʒ] ,/ ʤ/ (FD) and (SD)of English and Mosuli English Loanwords in Various Positions

2. Literature Review
2.1Previous Arabic and English Researcher

Various researchers are interested in studying, English affricates, Arabic affricates and English affricates loanwords (16) (160 states some of the spelling diffculties and problems that may face Arab learners learning. One of these problems is that [ʧ] and [ʤ] are not found in Arabic. He concludes ″that spelling and pronunciation are highly consistent in Arabic but highly inconsistent in English‟. Shariq, 2015 (17)investigates a phonetic and phonological study of Arabic and English consonants. He adds that Arabic has one affricate; the voiced palatal-alveolar [dʒ] that occur in all positions such as "[[جنوب[dʒʊnu:b] 'south', [[شجرة[ʃədʒərah] 'tree' and [[عالج[ʕɪla:dʒ] 'treatment'. In addition, Salman and Mansoor (2017) (18) mention certain English mobile phone, computer and internet loanwords that became a part of spoken Iraqi Arabic. They also mention the phonological adaption of these words to be as if Arabic words, eg. 'Messages', مسجات[mesidʒa:t], 'save the message',سيف المسج[seijivhalilmesidʒ];. Abdul-Rahman and Mohammed (2023) (19) as well conduct a study on the phonotactic adaptation of 300 English loanwords in Arabic. Also, Al-Quraishi and Mansour (2020) (7) make a phonological study to show the medical English loanwords used in Iraqi hospital as a daily conversation of the Iraqi medical staff. They illustrate certain medical words containing the affricates [ʧ, dʒ] such as; chapter, [tʃæptə], English word; فصل,check, [ətʃek], اجيك,English words; Branch, [brɑ:ntʃ], . برانجAl Abdely and Hardan (2021) (14) conduct an acoustic and statistical study to measure the duration of the fricatives in the affricates related to Iraqi, British and American speakers of English. The results showed certain differences in the duration of /ʃ/ and /ʒ/ in the pronunciation of all participants and the consistent need for further training as far as the pronunciation of the English affricates are concerned. Certain studies dealt with the phonological adaption process of the Loanwords in Mosuli Arabic (203). They make a list which contains certain car mechanics loanwords; giving, origin transcriptions, meaning in English. 'Clutch', [klaʧ], كلهجEnglish origin; Part of the shock absorber, [ʧibna], جبنة,English origin.

2.2 The Acoustics of the Affricates
Certain previous researchers specify the acoustics of the English and Arabic consonants in general and Arabic and English affricates in individual as far as the "acoustics cues" are concerned: "friction duration" and "silence duration". Certain researchers analyzed acoustically the "friction durations" for each waveform in their researches (21-23). and other researchers analyzed acoustically the "silence durations" .Repp, et al., 1978; (24,25) 23Ezzat and Hassan, 2019) (2023). Usually, the "friction duration"; the noise duration for both the English words and English loanwords are started from the burst of the affricates till the ending of the friction of the same sounds. And, 'the silence duration"; the beginning and the ending duration of the gab; usually started from the beginning of the closure; the end of the preceding vowel till the end of the closure; the burst release of the affricates in medial and final positions only.

3. The Data Analysis and the Discussion
3.1 The Data Analysis
Depending on all participants measurements of the friction durations and silence durations in milli seconds that are presented in appendices (1, 2) and their total averages that are presented in the below tables (2, 3) of the English and Mosuli Arabic affricates in all positions, results show the followings:

3.1.1 FD and SD of Initial [ʧ]
The FD average of initial [ʧ]EN of the word [ʧips] is (53) ms and FD average of initial[ʧ]MA for the word /ʧibs/ is (81) ms. While the FD average of initial [ʧ]EN of the word ['tʃɒkələt] is (36) ms . and FD average of initial [ʧ] MA for the word /ʧiqleet/ is (55)ms (see table 2, figure 3). The SD average of initial [ʧ]EN of the word [ʧips] and SD average of initial[ʧ] MA for the word /ʧiqleet/ are not measured. The SD average of initial [ʧ]EN of the word ['tʃɒkələt] and the SD average of initial[ʧ]MA for the word /ʧibs/ are not measured too (see table 2, figure 4).

3.12. 2FD and SD of Medical [ʧ]
The FD average of ʧEN of the word [kri:m ʧɒp] is (32) ms . and FD average of medial [ʧ]MA for the word /kriim ʧaap/ is (83) ms . While the FD average of medial [ʧ]EN of the word ['pʌŋk.tʃər] is (54) ms . and FD average of medial [ʧ] MA for the word /panʧar/ is (57)ms (see table 2, figure 3). The SD average of medial [ʧ]EN of the word [kri:m ʧɒp] is (43) ms . and SD average of medial [ʧ]MA for the word /kriim ʧaap/ is (39) ms . While the SD average of medial [ʧ]EN of the word ['pʌŋk.tʃər] is (61) ms . and SD average of medial [ʧ] MA for the word /panʧar/ is (34)ms (see table 2, figure 4).

3.1.3 FD and SD of Final [ʧ]
The FD average of final [ʧ]EN of the word [swɪtʃ] is (52) ms and FD average of final [ʧ]MA for the word/swiiʧ/ is (78) ms . While the FD average of final [ʧ]EN of the word [klʌtʃ] is (87) ms and FD average of final [ʧ] MA for the word/klaʧ/ is (81)ms (see table 2, figure 3). The SD average of final [ʧ]EN of the word [swɪtʃ] is (46) ms and SD average of final [ʧ]MA for the word /swiiʧ/ is (32) ms. While the SD average of final [ʧ]EN of the word [klʌtʃ] is (57) ms and SD average of final [ʧ] MA of the word /klaʧ/ is (40)ms (see table 2, figure 4).
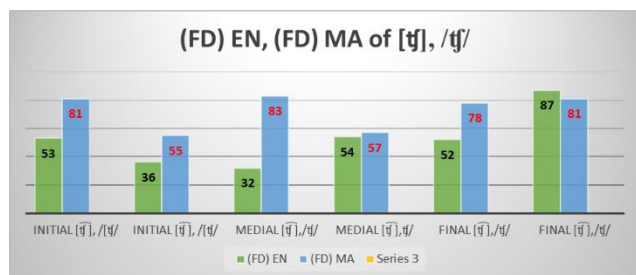
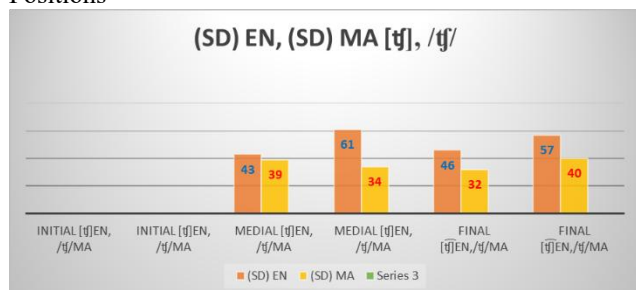Figure 3: The FD averages of [t͡ʃ]EN and [t͡ʃ]MA in Various Positions

Figure 4: The SD Averages of [t͡ʃ]EN and /t͡ʃ/MA in Various Positions

3.1.4 FD and SD of Initial [d͡ʒ]

The FD average of initial[d͡ʒ]EN of the word ['d͡ʒi:nz] is (37) ms and FD average of initial /d͡ʒ/MA for the word /d͡ʒiinz/ is (47) ms . While the FD average of initial[d͡ʒ] EN of the word [d͡ʒel] is (51) ms and FD average of initial /d͡ʒ/MA for the word/d͡ʒel/ is (44)ms (see table 2, figure 5). The SD average of initial[d͡ʒ]EN of the word['d͡ʒi:nz] and SD average of initial/d͡ʒ/MA for the word/d͡ʒiinz/ are not measured. The SD average of initial[d͡ʒ]EN of the word [d͡ʒel] and the SD average of initial/d͡ʒ/MA for the word /d͡ʒel/ are not measured too (see table 2, figure 6).

3.1.5 FD and SD of Medial[d͡ʒ]

The FD average of medial[d͡ʒ] EN of the word [pɪˈd͡ʒɑ:məz] is (61) ms . and FD average of medial /d͡ʒ/MA for the word /bid͡ʒaamat/ is (36) ms. While the FD average of medial [d͡ʒ]EN of the word [sɪˈrɪnd͡ʒiz] is (47) ms . and FD average of medial /d͡ʒ/MA for the word/srind͡ʒaat/ is (37)ms (see table 2, figure 5) . The SD average of medial [d͡ʒ] EN of the word word [pɪˈd͡ʒɑ:məz] is (30) ms . and SD average of medial/d͡ʒ/MA for the word /bid͡ʒaamat/ is (21) ms .. While the SD average of medial [d͡ʒ]EN of the word [sɪˈrɪnd͡ʒiz] is (21) ms . and SD average of the medial /d͡ʒ/MA for the word /srind͡ʒaat/ is (37)ms (see table 2, figure 6).

3.1.6 FD and SD of Final[d͡ʒ]

The FD average of final[d͡ʒ] EN of the word ['mesɪd͡ʒ] is (67) ms . and FD average of final /d͡ʒ/ MA for the word /massid͡ʒ/ is (64) ms. While the FD average of final[d͡ʒ] EN of the word ['spʌnd͡ʒ] is (65) ms. and FD average of final /d͡ʒ/ MA for the word/sfind͡ʒ/ is (78)ms(see table 2, figure

5) . The SD average of final[d͡ʒ] EN of the word ['mesɪd͡ʒ] is (31) ms. and SD average of final /d͡ʒ/MA for the word /massid͡ʒ/ is (34) ms. While the SD average of final[d͡ʒ]EN of the word ['spʌnd͡ʒ] is (32) ms. and SD average of the final /d͡ʒ/MA of the word /sfind͡ʒ/ is (45)ms (see table 2, figure 6)..
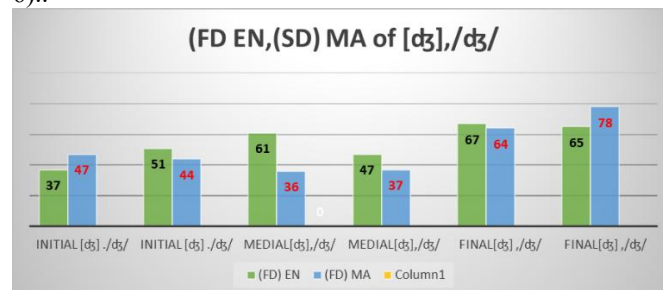

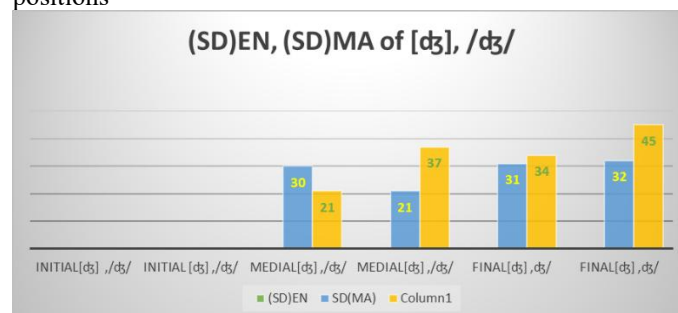Figure 5: The FD averages of [d͡ʒ]EN and /d͡ʒ/MA in various positions

Figure 6: The SD averages of [d͡ʒ]EN and /d͡ʒ/MA in various positions

4. Discussion

4.1A Significant Differences Between the Affricates[[t͡ʃ]EN, /t͡ʃ/ MA,[d͡ʒ]EN ,/d͡ʒ/ MA Appendix (1) shows brief numerical averages of each participants pronunciation of English and Mosuli Arabic Affricates in milli second. And, table (2) which shows the total numerical averages of the English and Mosuli Arabic Affricates in milli second. In addition to the acoustics spectrographic analyses as far as the friction durations (FD)EN, MA and (SD) EN, MA of the of the affricates [t͡ʃ]EN and, /t͡ʃ MA and [d͡ʒ]EN , /d͡ʒ MA in various positions presented in figures(3,4,5,6) related to Mosuli EFL learners. All have their own significant specifications (equals and differences) to distinguish affricates in isolated words. In other words, Iraqi EFL learners have or do not have the ability to produce each affricate with its acoustics characteristics (FD, SD) in ms. Besides the effect of mother tongue language sounds; Mosuli dialect affricates sounds on the English affricates sounds as the following:

4.2 (FD) and (SD) of English and Mosuli Arabic Affricates [t͡ʃ] and /t͡ʃ/ Friction durations in initial positions, as far as the words; [t͡ʃips] , / t͡ʃibs/ and ['t͡ʃɒkələt]. /t͡ʃiqleet / are concerned, it is noticed that the variation between (FD)EN and (FD)MA of these words are at least (38)ms, (19)ms.

Such differences are regarded as a considerable one. In other words, initially, as far as the (FD)EN, MA are concerned, it is found that Iraqi Mosuli EFL learners tend to produce the initial [ʧ]EN of all initial words longer than (initial /ʧ/ MA of all initial words (see table, figure). In medial positions, as far as the words; [kri:m ʧɒp], /kriim ʧaap/ and [ˈpʌŋk.ʧər], /panʧar/ are concerned, it is noticed that the variation between (FD)EN and (FD)MA of these words are at least (51) ms., (3)ms. Hence, medially, (FD)MA is longer than (FD)EN of the words; /kriim ʧaap/, [kri:m ʧɒp], and seems to be equal for the words; [ˈpʌŋk.ʧər] and /panʧar/ (see table 2, figure 3). In final positions, as far as the words; [swɪʧʃ], /swiiʧ/ and [klʌʧʃ], /klaʧ/ are concerned, it is found that the variation between (FD)EN and (FD)MA of these words are at least (26)ms, (6)ms. Hence, finally (FD)MA is longer than (FD)EN for the words; /swiiʧ/, [swɪʧʃ], and seems to be equal for the words [klʌʧʃ], /klaʧ/ (see table 2, figure 3).

As to other acoustic parameter; silence durations, in initial positions for the words; [ʧips], / ʧibs/ and [ˈʧɒkələt],/ʧiqleet/, (SD)EN, MA are not measured since the [ʧ] and /ʧ/ are preceded by a silence, so, it is hard to be measured. In medial positions, as far as the words; [kri:m ʧɒp], /kriim ʧaap/ and [ˈpʌŋk.ʧər],/panʧar/, are concerned, it is noticed that the variation between (SD)EN and (SD)MA of these words are at least (4)ms., (27)ms. Hence, (SD)EN is equal to (SD)MA for the words [kri:m ʧɒp], /kriim ʧaap/ and (SD)EN is longer than (SD)MA for the words [ˈpʌŋk.ʧər] and /panʧar/ (see table 2, figure). In final positions, as far as the words; [swɪʧʃ], /swiiʧ/ and [klʌʧʃ], /klaʧ/ are concerned, it is noticed that the variation between (SD)EN and (SD)MA of these words are at least (14)ms, (17) ms. Hence, all Mosuli EFL learners tend to produce final (SD)EN longer than (SD)MA of these words in final position (see table 2, figure 4).

4.3.(FD) and (SD) of English and Mosuli Arabic Affricates [ʤ] and /ʤ/

Friction durations in initial positions, as far as the words; [ˈʤiːnz], /ʤiinz/ and [ʤel], /ʤel/ are concerned, it is found that the variation between (FD)EN and (FD)MA of these words are at least (10)ms, (7)ms. Such differences are not worth to be said as considerable ones since (FD)MA is little bit longer than (FD)EN for these words. In other words; it seems to be equaled for all words (see table 2, figure 5). In medial positions, as far as the words [pɪˈʤɑ:məz], /biʤaamat/ and [sɪˈrɪnʤiz], /srinʤaat/ are concerned, it is noticed that the variation between (FD)EN and (FD)MA of these words are at least (25)ms., (10)ms. Hence, Iraqi Mosuli EFL learners tend to produce the initial [ʤ]EN of with (FD)EN longer than initial /ʤ/MA of the words; [pɪˈʤɑ:məz], /biʤaamat/ and seems to be equal or little bit longer for the words [ʤel], /ʤel/ (see table 2, figure 5). In final positions, as far as the words [ˈmesɪʤ], /massiʤ/ and [ˈspʌnʤ], /sfinʤ/ are concerned, it is found that the variation between (FD)EN and (FD)MA of these words are

at least (3)ms, (13) ms. Hence, (FD)MA seems to be equal for the words; [ˈmesɪʤ], /massiʤ/ and (FD)MA is little bit longer than (FD)EN for the words; /sfinʤ/, [ˈspʌnʤ] (see table 2, figure 5).

As to silence durations in initial positions for the words; [ˈʤiːnz], /ʤiinz/ and [ʤel], /ʤel/, (SD)EN, MA are not measured too for the same reason mentioned previously (see 3.1). In medial positions, as far as the words; [pɪˈʤɑ:məz], /biʤaamat/ and [sɪˈrɪnʤiz], /srinʤaat/ are concerned, it is noticed that the variation between (SD)EN and (SD)MA of these words are at least (9)ms, (16)ms. Hence, (SD) EN seems to be little bit equal to (SD) MA for the words; [pɪˈʤɑ:məz], /biʤaamat/, and (SD)AM is longer than (SD)EN for the words; /srinʤaat/, [sɪˈrɪnʤiz] (see table 2, figure). In final positions, as far as the words; [ˈmesɪʤ], /massiʤ/ and [ˈspʌnʤ], /sfinʤ/ are concerned, it is noticed that the variation between (SD)EN and (SD)MA of these words are at least (3)ms., (13)ms. Hence, (SD)EN is equal to (SD)MA for the words; [ˈmesɪʤ], /massiʤ/ and (SD)MA is longer than (SD) EN for the words ;/sfinʤ/, [ˈspʌnʤ], (see table 2, figure 6).

4.4 The Role of Equal Friction Durations (FD) in Learning English Language

Mosuli Arabic dialect is rich with certain sounds though some sounds do not exist in Standard Arabic language and one of these sounds is the affricate /ʧ/. The equal length variation of the (FD)EN, MA have its own part in easing pronouncing of the English sounds, hence learning the English sounds.

Depending on the affricates acoustics spectrographic analyses as far as the friction durations (FD)EN, MA, the following findings are observed. In initial positions and due to the higher distinct significant variation of the numerical averages (FD)EN and (FD) MA of the affricates [ʧ]EN and, /ʧ/ MA. This study concludes that Iraqi Mosuli EFL learners have certain difficulty in pronouncing initial [ʧ]EN hence, /ʧ/ MA that are used in daily conversation will not ease learning [ʧ]EN. In other words; no significant role in learning [ʧ]EN in isolated initial words. In medial and final positions, also, it is noticed a higher distinct variation of the numerical averages (FD)EN and (FD) MA. of the words [kri:m ʧɒp], /kriim ʧaap/, words and [swɪʧʃ], /swiiʧ/ and no distinct variation or equal numerical averages (FD)EN and (FD)MA of the words [ˈpʌŋk.ʧər], /panʧar/ and[klʌʧʃ], /klaʧ/ .This means that Mosuli EFL learners have certain difficulty in learning [ʧ]EN of the isolated words [kri:m ʧɒp] and[swɪʧʃ], and no difficulty in learning [ʧ]EN of the isolated word [ˈpʌŋk.ʧər], [klʌʧʃ] . In other words, /ʧ/MA that are found in certain isolated words; in medial and final positions used in daily conversation does not and does ease learning [ʧ]EN in final and medial positions. In initial positions and due to equal numerical averages (FD)EN and (FDMA of the affricates [ʤ]EN and /ʤ/MA. This study concludes that Iraqi Mosuli EFL learners do not face difficulty in pronouncing initial affricates that are found in

words; ['d͡ʒiːnz], /d͡ʒiinz/ and [d͡ʒel], /d͡ʒel/. Hence, /d͡ʒ/MA that is used in daily conversation eases learning [d͡ʒ]EN. In medial and final positions, also, no distinct variation or equal numerical averages (FD)EN and (FD)MA of the words; [sɪˈrɪnd͡ʒiz], /srind͡ʒaat/;['mesɪd͡ʒ], /massid͡ʒ/ were observed. This indicates that Mosuli EFL learners do not face noticeable difficulty in pronouncing [d͡ʒ]EN of these words and they face a difficulty in pronouncing [d͡ʒ]EN of the medial and final isolated word [pɪˈd͡ʒɑːməz], /bid͡ʒaamat/ and ['spʌnd͡ʒ], /sfind͡ʒ/. In other words, /d͡ʒ/MA that are found in certain isolated words; in medial and final positions used in daily conversation eases learning [d͡ʒ]EN in final and medial of all isolated words except medial /d͡ʒ/MA of the word /bid͡ʒaamat/ which has no essential role in learning the medial [d͡ʒ]EN of the word [pɪˈd͡ʒɑːməz].

5. Conclusion

In light of the results presented previously and the detailed discussions of (FD)EN,MA and (SD)EN,MA which are related to Iraqi EFL learners and the significant role of learning the English sounds, the following conclusions are drawn:

1-Iraqi EFL learners, as far as FDs are concerned, are able to differentiate between the pronunciation of the affricates [t͡ʃ]EN and, /t͡ʃ/MA initially, medially (in certain context) and finally (in certain context).

2-Iraqi EFL learners, as far as FDs are concerned, are able to differentiate between the pronunciation of the affricates [d͡ʒ]EN and /d͡ʒ/MA medially (in certain context) and finally (in certain context).

3-Iraqi EFL learners, as far as SDs are concerned, are able to differentiate between the pronunciation of the affricates [t͡ʃ]EN and, /t͡ʃ/MA medially (in certain context) and finally (in all context).

4-Iraqi EFL learners, as far as SDs are concerned, are able to differentiate between the pronunciation of the affricates [d͡ʒ]EN and /d͡ʒ/MA medially (in certain context) and finally (in certain context).

5-Iraqi Mosuli EFL learners, as far as FDs are concerned, do not face difficulty in pronouncing medial and final [t͡ʃ]EN (in certain context). In other words; /t͡ʃ/MA (mother tongue Mosuli sound) plays a facilitative role in learning [t͡ʃ]EN of isolation.

6-Iraqi EFL learners, as far as FDs are concerned, do not face difficulty in pronouncing initial [d͡ʒ]EN and medially (in certain context) and finally (in certain context). In other words; /d͡ʒ/MA (mother tongue Mosuli sound) plays a significant role in learning [d͡ʒ]EN in isolation

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