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The Application of Linking by Jordanian EFL Students While Pronouncing English Words That Begin With Vowels

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***Abstract*—This paper investigates the application of linking as a feature of connected speech by Jordanian English Language senior university students at the Hashemite University. The paper specifically examines Consonant-Vowel (CV) and Vowel-Vowel (VV) environments using audio-recordings of students reading a controlled set of sentences. The recordings were converted into waveforms to facilitate their analysis and comparison with those of a native speaker. The main results show that students applied linking in the CV environments in percentages that exceeded those in the VV environments. Furthermore, when collectively analyzed, data showed that students in the sample failed to apply linking in more than half of the environments of the instrument. The research recommended that EFL teachers should be trained on methods of teaching pronunciation as students could benefit from receiving instruction regarding the application of linking.**

***Index Terms*—L1 interference, linking, phonology, pronunciation, foreign language acquisition**

I. Introduction

Pronunciation is an essential component of learning a foreign language. Mispronouncing words during free speaking could lead the listener to misunderstand the message behind what is being said. Furthermore, mispronunciation negatively affects the comprehensibility of the learner. Being accustomed to mistaken pronunciation of words reduces the ability of the learner to recognize correctly pronounced words when uttered by a native speaker.

When introducing students to English pronunciation, it is crucial to introduce them to the target behind teaching and learning pronunciation. According to Burns and Claire (2003), English pronunciation is taught to achieve the below objectives:

1. "intelligibility (the speaker produces sound patterns that are recognizable as English)
2. comprehensibility (the listener is able to understand the meaning of what is said)
3. interpretability (the listener is able to understand the purpose of what is said)". (p. 5)

Harmer (2007) defines pronunciation as the way the sounds of a language are made, including the correct placement of stress in words and sentences and the use of pitch and intonation as indicators of the speakers' feelings and intended meanings. Richards and Schmidt (2002) define pronunciation as the way in which sounds of a language are produced. They believed pronunciation is an essential component of English because mispronunciation hinders the listener's correct comprehension of the meaning of sentences.

English pronunciation covers segmental and suprasegmental aspects. Segmentals are phonemes that can change the meaning of the word if pronounced incorrectly (Burns & Claire, 2003). Suprasegmentals on the other hand are features of speech that exceed the boundaries of single consonants and vowels (Ladefoged, 2006). They can be referred to as prosodic features because they extend beyond the singularity of the sound in an utterance, such as intonation and stress (Clark et al., 2007).

According to Coniam (2002), segmental features of phonology are comparatively easier to explain and teach than suprasegmental features. Therefore, the majority of research in the area of pronunciation tends to shed light on segmental elements. This paper, however, will tackle one of the suprasegmental features of pronunciation known as linking.

A. Research Questions

Do senior EFL students at the university level apply linking to English words that begin with a vowel?

B. Problem and Objective

Practicing the teaching of English as a foreign language at the university level for years, the researchers came to notice that a majority of students in Jordan fail to apply linking in CV and VV environments. Instead, a linking environment is substituted for a slight pause followed by a glottal stop, such as pronouncing 'stop it' as [stɑp.ʔɪt] instead of [stɑpɪt] and 'cup of' as [kʌp.ʔʌv] instead of [kʌpəv]. In some cases of VV environments, students might apply linking, but when they do, they use the wrong glide sound.

The present study aims at understanding the level of application of the phenomenon of linking by EFL learners of English at the university level, bearing in mind the impact of applying this suprasegmental feature on learners' comprehensibility.

II. Literature Review

A. Instruction on English Pronunciation

It is important to note that applying a feature as specific as linking is not an easy task for learners, especially if they did not receive any instructions regarding its application. Jordanian schools and universities tend to ignore the teaching of speaking. Mainly because teachers and professors did not receive suitable training on methods of teaching pronunciation (Murphy, 2014) nor did they have confidence to teach English pronunciation due to limited subject matter knowledge (Dixo-Lieff & Pow, 2000). Furthermore, Jordanian curriculum sections addressing English speaking are marginal and small, which allows teachers to ignore them and focus on other skills such as writing, reading and grammar.

Students at the school level scored the lowest in speaking compared to reading and writing in the Quality Control National Test conducted annually by the Jordanian Ministry of Education (Directorate of Examinations and Tests, 2019). Furthermore, students at the university level are argued to have 'low' speaking proficiency levels due to negligible instruction of speaking skills within university courses affiliated to both the faculties of languages and those of educational sciences (Al-Jamal & Ghadeer, 2014).

Limited instruction on English language oral skills negatively affects segmental and suprasegmental features of pronunciation. The assumption is that students in the sample received limited instruction on English speaking in general and on suprasegmental features (linking) in particular, which explains why they failed to apply linking in more than half of the environments within the controlled sentences of the instrument.

B. Differences Between L1 and L2

It is acknowledged by many researchers that learning to speak a different language is by far the most difficult part of learning (Alonso, 2014). Speaking "involves a complex process of constructing meaning which requires speakers to make decisions about why, how and when to communicate depending on the cultural and social context in which the speaking act occurs" (Martínez-Flor et al., 2006, p. 139). English pronunciation is a difficult skill to master for students whose mother tongue is Arabic due to several reasons (Szpyra-Kozlowska, 2015, p. 5), among which are the lack of correspondence between English phonology and Arabic phonology (several sounds exist in Arabic that do not exist in English) and lack of correspondence between English spelling and pronunciation as "English spelling is probably the least satisfactory example of (an alphabetic writing system where one letter is representing one sound), partly because there are only (26) letters available for the (44) phonemes and because the spelling of many words represent the way they were pronounced centuries ago" (Marks & Bowen, 2012, p. 17). The Arabic language has (28) letters that represent (28) phonemes, and the spelling of words depend almost entirely on the pronunciation of those words as the spelling of Arabic is intensely regular (Kharma & Hajjaj, 1997, p. 14). When learning English, Arabs face a problem in speaking because they are used to pronouncing words as they are spelt. "In their Arabic classes, students are encouraged to give great attention to the written forms and consequently develop spelling pronunciations. They carry over this habit when learning English with disastrous results because of the non-phonemic nature of English spelling" (Elhalees, 1986).

Weak pronunciation capacities of Arab EFL learners forces them to resort to paying attention to every word within any natural oral production in English, which results in their speech sounding robotic and choppy (Morley, 1994). Treating words as separate units could be attributed to differences between Arabic and English regarding the number of sounds in the utterance and their distribution, which may encourage students to "insert a temporal pause and a glottal stop to compensate for what is missing in the phonological schema of their first language" (Melenca, 2001, p. 17). The treatment of words as separate units could also be attributed to an interlanguage phenomenon in relation to the orthography, that is, where there is white space on the page; students reflect this space in their speech (Gilbert, 2005) causing unnecessary stops after words and resulting in robotic speech.

C. Linking as a Concept

In order to fully comprehend the "Linking' feature, two different concepts will be discussed. The first is the use of 'linking" as a synonym of connected speech, which entails pronunciation changes happening to a word when combined to other words in connected speech that do not occur when the same word is pronounced in isolation. This kind of linking takes the shape of two common phenomena: Elision and Assimilation. Elision entails omission of syllables, sounds or phonemes when in a final position while assimilation entails "moving the place of articulation (of a sound) to a position closer to that of the following sound" (Alameen, 2007, p. 1). The second concept of linking entails "combining two sounds

at word boundaries without changing their phonetic qualities, as in (1), (2), (3), and (4), or by inserting a brief [ʷ] or [ʲ] sound between the sounds, as in (5)" (Sardegna, 2011, p. 105).

- "First type: Consonant-to-Vowel Linking: an‿error; is‿awesome; give‿in.
- Second type: Consonant-to-Same-Consonant Linking: some‿music; Sue's‿snake.
- Third type: Consonant-Stop-to-Other-Consonant-Stop Linking: enthusiastic‿dad; adep‿t.
- Fourth type: Consonant-to-Similar-Consonant Linking: come‿back; improve‿further.
- Fifth type: Vowel-to-Vowel Linking: so‿exciting; di‿agonal; go‿in; play‿out". (Sardegna, 2011, p. 105)

Linking is one of the important suprasegmental features of English pronunciation. Kenworthy (1987, p. 9) states that when speaking, native speakers do not generally make pauses between words, they rather move smoothly from one word to the following. Linking is one procedure that natives of English use for their speech to sound connected and natural. However, a "closer examination of linking shows it has a more profound effect on English pronunciation than is usually recognized, and that its neglect leads to misrepresentations and unnatural expectations" (Temperley, 1987, p. 65).

The present paper tackles two of the linking types (Sardegna, 2011, p. 105) that are associated with words starting with a vowel: Consonant-Vowel linking (CV- Type 1) and Vowel-Vowel linking (VV- Type 5).

In a consonant-vowel linking environment (CV), the final consonant of one word is followed by the vowel beginning the next, forcing the consonant to be "pronounced as a medial consonant, i.e. a consonant occurring in the middle of a word" (Alameen, 2007, p. 8). According to Celce-Murcia, Brinton and Goodwin (1996), in both (CC+V) and (VC+V) clusters, the consonant ending the cluster is uttered within the following syllable, a process that simplifies the consonant cluster by breaking it down (Hewings & Goldstein, 1999). An example of (CC+V) sequence is the phrase 'find out' which is pronounced as [faɪn‿ daʊt] rather than [faɪnd ʔaʊt] (Kodera, 2012, p. 182), while an example of a (VC+V) sequence is 'give in' which is pronounced as [gɪ‿ vɪn] rather than [gɪv ʔɪn] (Alameen, 2014, p. 14).

Vowel-to-vowel linking (VV) takes place when the final sound of a word is a vowel and is followed by a word that is initiated with a vowel as well. Errors in vowel production are argued to be the most common among Arab learners (Bauman-Waengler, 2009). This is because Arabic has only six monophthongs, three long vowels [a:], [i:], [u:] and three short ones indicated with diacritical marks. English, on the other hand, has more than twenty vowels that have diverse lengths depending on the variety of English in question.

In a VV environment "speakers insert a junctural glide, a very short [ʷ] or [ʲ] sound to link the two vowels together and avoid a gap between the sounds" (Alameen, 2014, p. 15). The type of the vowel at the end of the first word determines the choice of the linking glide. If the first word ends with a high front vowel, such as [ɪ], then the junctural glide will be [ʲ] as in 'my ear' [maɪ‿ ʲir] (Alameen, 2014, p. 15). If the word ends with a high back vowel, such as [u:], then the linking sound will be [ʷ] as in 'blue ink' [bluːʷɪŋk] (Kodera, 2012, p. 182). In the case of other vowels that are usually smoothly linked, no junctural glide is needed (Hewings & Goldstein, 1999).

D. Waveforms

In her book, Low (2014) describes how the fluctuation of air pressure caused by the vibration of the speaker's vocal folds causes the listener's eardrums to vibrate thus enabling the hearing of sounds being produced. Sound traveling over the distance between the speaker and the listener causes what is known as the sound wave. Low used visual sound waves of speakers to study features of pronunciation. She concluded that vowels have more energy than consonants, voiced sounds have more energy than voiceless sounds and that sounds differ in terms of pitch, loudness and duration (Low, 2014, p. 39). Waveforms were also utilized in practicing English intonation, rhythm, stress, and syllables (Anderson-Hsieh, 1992).

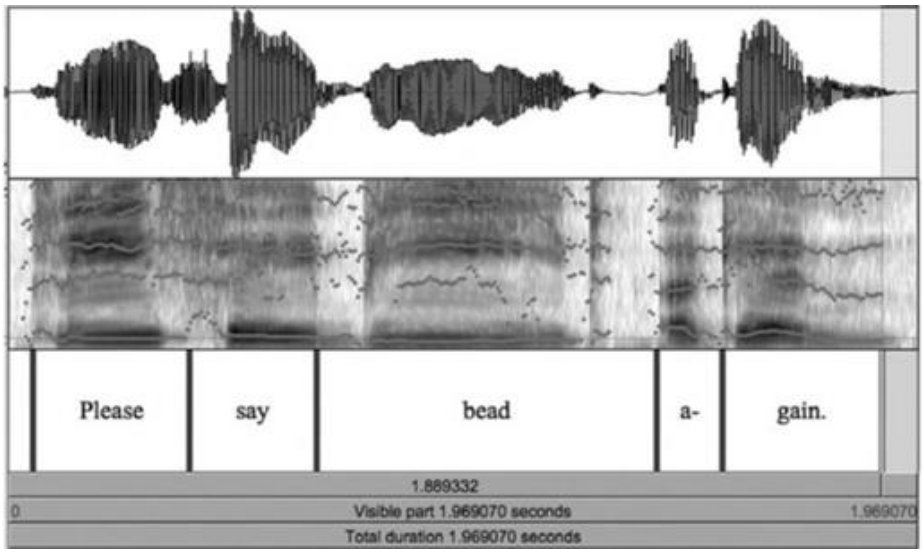

Figure 1. Sound Wave and Spectrogram of a Female Speaker Producing the Sentence "Please Say Bead Again" (Low, 2014, p. 39)

Waveforms were used in this paper to study the application of linking following the lead of Alameen (2014). Looking at the waveform can simply tell a viewer if a link or no-link was applied. The wave resulting from a well performed CV or VV linking is connected and chained, while unlinked words have a narrow or interrupted waveform as the examples shown in Figure 2. In the first visualization, representing the sentence I am on the train uttered by a native speaker, the wave is long and connected. However, the visualization of the same sentence takes the shape of two separated clouds that are connected with a thin line when uttered by one of the students in the sample.

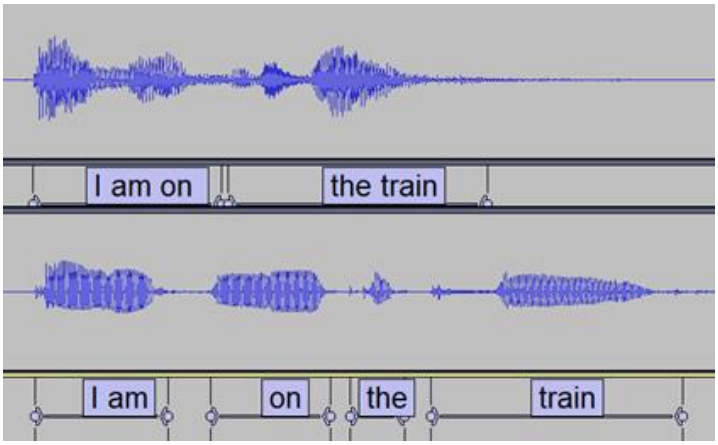

Figure 2. Waveforms of the Sentence 'I Am on the Train' by a Native Speaker and by a Student From the Sample

E. Error Analysis

The Contrastive Analysis Hypothesis (Lado, 1957) was built on the assumption that where the first and second languages share linguistic structures, a process of positive transfer takes place, resulting in native-like utterances. On the other hand, negative transfer occurs when structures of the first and second languages are distinct, resulting in errors and non-native-like speech (Wong et al., 2021, p. 4). During the 1970s, the Contrastive Analysis (CA) faced harsh criticism as empirical studies conducted by linguists such as Nemser (1971); Corder (1981) and James (2013) showed that learner's first language interference is not the only cause of errors made in L2. Furthermore, it showed that a learner goes through various stages of acquisition; each has its own errors depending on the level of competence the learner reaches (Al-Sobhi, 2019, p. 52).

In his Speech Learning Model (SLM), Flege (1995) agrees that differences between the first and second languages create pronunciation difficulties for learners. He also suggests that similarities between languages might be problematic. The model was based on the notion of equivalence classification. It argues that sounds of L2 that are similar or equivalent to sounds of L1 might be challenging to acquire accurately because the learner classifies both sounds in the same cognitive category. On the contrary, if a sound from L2 is distinct from its closest sound of L1, it is more likely for a learner to accurately produce it because a new phonetic category is cognitively established for this sound. Thus, the learnability of L2 is dependent on the learner's perception of the L2 in relation to the L1, which agrees with Major's (1987) earlier Similarity Differential Rate Hypothesis (SDRH) which suggested that dissimilar phenomena are acquired at faster rates than similar phenomena.

However, Major's (2001) Ontogeny Phylogeny Model (OPM), which he defined as "the life cycle of an individual's language" (p. 81), argues that transfer plays various roles at the different stages of L2 phonological development; the pattern of interlanguage development in the OPM is: "L2 increases, L1 decreases, and U increases and then decreases" (p. 82) with the U element referring to developmental processes of acquisition, substitutions and errors.

III. Methodology

A. Participants

An equal number of male to female English Language senior students of The Hashemite University participated in the study. The eight participants were randomly chosen from English language courses. They volunteered to participate in this study and their consent was secured via email.

Participants were fourth-year students majoring in English language and literature, they were chosen on the assumption that they have already obtained intermediate English language skills, have good fluency and accuracy, effectively use English language for various situations and have the ability to express their ideas on complex topics. Authors used pseudonyms to protect the privacy of participant identity.

B. Recording Procedures

Participants were asked to record themselves reading a set of selected sentences sent to them via WhatsApp (to circumvent constraints on face-to-face meetings imposed by COVID19) and send the recordings back to the researchers.

Individually recording WhatsApp voice messages reduced the impact of transferred learning and eliminated any shortcomings resulting from participants feeling that they are being observed by their colleagues. The recordings were then gathered and analyzed by comparing them to those of a native speaker uttering the same set of sentences. The researchers used a system called Audacity (audacityteam.org) to compare the model pronunciation of the native speaker to that of the students to measure the frequencies of applying linking while speaking. The software made possible instant comparisons between pronunciation of the learners and the native speakers through visualized waveforms.

C. Stimuli

The researchers used ten sentences (Table I) with ten linking positions as an instrument for the study. The sentences which are simple in nature and could be easily produced by students, focused on the two types of linking the researchers are interested in studying, namely CV and VV environments. The sentences were taken from two videos (https://rb.gy/vmdll8 and https://rb.gy/vbbucx) for an American native speaker.

TABLE 1
POSITIONS AND TYPES OF LINKING IN THE TOOL

Phrase	**CV or VV**	**Phonetic Transcription**
What is it?	CV	[wʌ‿ dɪ‿ zɪt]
It's his anniversary.	CV	[ɪts hɪ‿ zænəˈvɜɹsəɹi]
I am on the train.	CV	[aɪ‿ mən]
That's what I thought.	CV	[wʌ‿ daɪ θɔt]
Forget about it.	CV	[fəɹ gɛ‿ dəˈbaʊ‿dɪt]
I actually did.	VV	[aɪ‿ ʲˈæk ʧu ə li dɪd]
Don't fence me in.	VV	[doʊnt fɛns miː‿ ʲɪn]
She wants to be alone.	VV	[ʃi wɑnts tə biː‿ ʲəˈloʊn]
I'd like the yellow apple	VV	[ðə ˈjɛloʊ‿ ʷˈæpəl]
I like Woody Allen movies.	VV	[aɪ laɪk ˈwʊdiː‿ ʲˈælən ˈmuviz]

IV. RESULTS

Results displayed in the pie charts below show percentages of students who applied linking to the sentences of the stimuli (in blue) and students who failed to apply linking to the same set of controlled sentences (in orange) in both the CV and the VV environments.

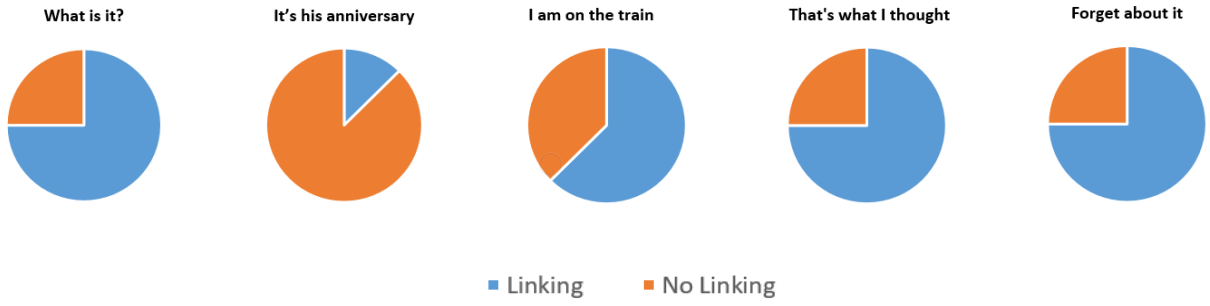

Figure 3. CV Environments Representation in Pie Charts

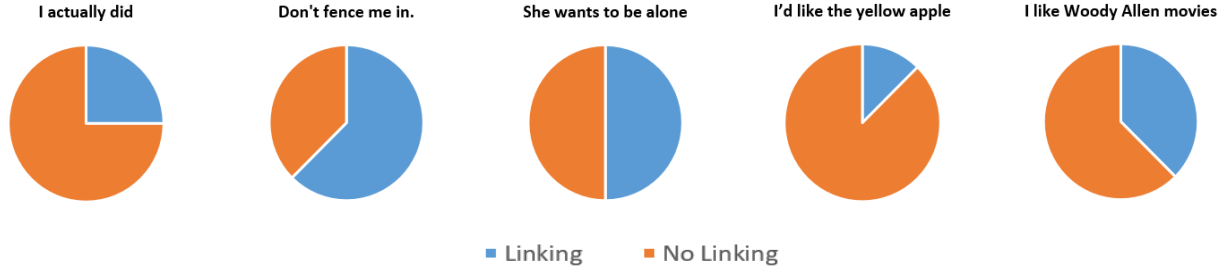

Figure 4. VV Environments Representation in Pie Charts

It is observed in the first set of pie charts (Figure 3), that the percentage of students in the sample who applied linking in the CV environment exceeded those who failed to apply it, with the exception of the sentence It's his anniversary, where only one student managed to apply linking.

Figure 4 shows that percentages of students in the sample who failed to apply linking in the VV environment exceeded those who managed to apply it, with the exception of the sentence Don't fence me in, where five students of eight applied linking.

The total percentage of students who applied linking to those who did not among both of the environments tested was (48.75%) to (51.25%), which indicates that students in the sample failed to apply linking in more than half of the environments of the instrument.

V. Discussion

The size of the sample of this exploratory study is too small to make any conclusive findings. However, the results of the data collected suggests that Jordanian students at the university level apply linking in higher percentages in CV environments than in VV environments and that they fail to apply linking in more than half of the environments they encounter.

Students in the sample failed to apply linking in more than half of the environments tested. That is, they failed to combine the two sounds at word boundaries in each of the controlled environments of the stimuli, inserting a glottal stop at the beginning of the second word instead.

"Unintentional insertion of glottal stops could be attributed to a number of reasons including lack of or insufficient knowledge of the rules of linking, stumbling over speech, L1 interference, phonological environment, and word frequency" (Alameen, 2014, p. 98). Although more than one of those reasons could explain the results of this study, researchers are interested in shedding light on the impact of L1 interference on the application of linking.

Glottalization is a common sound pattern for persons whose first language is Arabic. Producing a glottal stop "entails a full closure of the vocal folds followed by a short release burst" (Skarnitzl et al., 2021, p. 3). A process that is easy for speakers of Arabic to perform as the glottal stop is a basic variant of a phoneme in Arabic (Maddieson, 1984, p. 263) and is represented by the Hamza (ء) (Parkinson, 1990, p. 270).

Hamza (ء) is a pharyngeal sound that is produced along with five other different sounds; (غ،خ،ع،ح،ه) showed below in Figure 5.

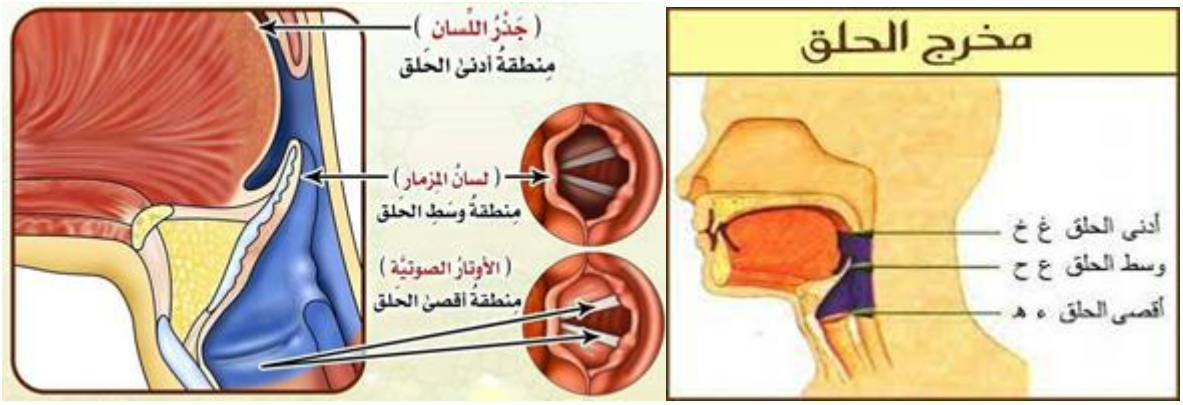

Figure 5. Glottal Stop - Hamza (ء)

Linking is common in Arabic as well. Arabic phonological system has three main long vowels [ɑ:], [u:], [i:] (Ryding, 2005, p. 25) and three short vowels represented by small symbols (Harakaat) added above or beneath letters; those are the Kasrah / ِ / [ɪ], the Fat-ha / َ / [e] and the Dhamma / ُ / [u] as in /بِ/, /بَ/, /بُ/, [bɪ], [be] and [bu].

Linking mainly takes place in Arabic when two silent sounds meet (a silent sound has none of the three symbols (Harakaat)). The meeting of two silent sounds results in choppy and slurred pronunciation that speakers of Arabic avoid by applying linking. Arabic speakers use the three short vowels (Harakaat) as glides to link two words, the first of which ends with a silent sound and the second begins with one. The following examples from (Mubarak & Rahi, 2017, p. 33) demonstrate the usage of Harakaat as glides:

- Kasrah / ِ / [ɪ]: 'An-i-drib (to hit) (Ash-Shu'ara, verse. 63) 'أنِ اضرب
- Fat-ha / َ / [e]: 'Min-a-aljinnati (from the Jinn) (Al-Nas Surah, verse. 6) 'منَ الجِنة
- Dhamma / ُ / [u]: 'Ishtaraw-u-dalalata (bought misguidance) (AL-Baqarah, verse. 16) 'اشتروُا الضلالة

Arabic glides entail the integration of orthography when applying linking in Arabic. The language has high correspondence between the said and the written. When Harakaat are used to link, they are reflected in the written form and in the oral form.

Linking as a phenomenon takes place in both Arabic and English. It is used mainly to avoid hiatus and interruption. Glides in English are [ʷ] and [ʲ] ([r] as well, although not discussed in this paper), all of which are consonant sounds.

However, glides in Arabic are [ɪ], [e], and [ʊ], all of which are short vowels which could explain why students applied linking more in CV environments than in VV environments. Researchers believe that an Arabic speaker cognitively accepts a CV formation as it is a main morphological formation of Arabic segments. It is hard however, for an Arabic speaker to produce a VCV formation resulting from the VV linking and the addition of the glide in between ([ʷ] or [ʲ]), because Arabic segments never start with a vowel. However, researchers could not find any literature that provides an explanation for the tendency of Arabic speakers to produce CV linking at a higher frequency than VV linking.

Results of higher frequency of application of CV linking over VV linking agrees with the results of Zhang (2011, p. 137) who examined the recordings of 42 Chinese EFL learners reading 20 English sentences at two different times, one in their first semester and the other in their fourth semester at university. Zhang found that CV linking was applied in around (60%) of the contexts in both times, while VV linking was seldom used, with a percentage of about (10%). Zhang (2011) did not provide an explanation of the result that is related to the acquisition of the language, instead she thought that students at the university level were capable of producing CV linking more than VV linking the reasons being that 'i) CV linking occurs frequently in connected speech, ii) the condition under which it takes place is relatively easy to remember and iii) CV linking is often introduced in English textbooks in high schools in China'.

It is important to note that the use of glides (Harakat) to prevent the meeting of two silent sounds in Arabic is one way of linking words, as it is mainly applied in CC and VC environments. Another, is the insertion of the glottal stop, that is mainly used when the second word starts with a vowel (which is the area of interest of this paper). In Arabic, no word or syllable begins with a vowel. Arabic speakers, therefore, use a glottal stop (Hamza) before any of the three vowels of the language when they appear at the beginning of a word such as:

- [ɑː]: ʔAmal: Hope أمل
- [uː]: ʔumma: Nation أمة
- [iː]: ʔiftar: Breakfast إفطار

Arabic speakers inserting the glottal stop [ʔ] to make their pronunciation easier when uttering words with initial vowels in Arabic, explains their tendency to insert the glottal stop while linking in English. Linking vowels is related to the glottal stop in the schemata of an Arabic speaker in a plain example of L1 interference.

A. It's His Anniversary

Only one student managed to perform linking in the sentence 'It's his anniversary' [hɪ‿zænəˈvɜrsəri] (see Figure 6), other students, however, inserted a glottal stop and uttered a chopped version of the sentence [hɪz ʔænəˈvɜrsəri].

The Arabic words never start with a vowel- rule makes linking vowels one of the most difficult skills to acquire for Arab learners. Arab learners insert the glottal stop phoneme before English words beginning with a vowel because that is what they do when faced with a word that starts with a vowel in Arabic. The glottal stop is a very common phoneme in Arabic, but inserting it before words that begin with vowels in English "distorts the natural stress pattern and results in a staccato-like rhythm. For example, in English an Arab would tend to say [?Ann's ?office ?is ?always ?open]. To counteract this tendency, students must be taught to link the sounds so that there is a smooth, unobtrusive transition from one sound to another" (Yorkey, 1974, p. 11).

It is worth mentioning though that Anderson-Hsieh, Riney and Koehler (1994) study results showed that in CV and VV clusters, the word boundaries were maintained through the insertion of glottal stops although participants were ten Japanese ESL learners whose insertion of a glottal stop in VV linking could not be attributed to L1 interference. Authors could not explain the failure of participants to link word-initial vowels with other segments at word boundaries. They thought "it is possible that the tendency to keep vowels intact may be related to a concern for intelligibility, although it is not clear why vowels, and not consonants, would be singled out" (Anderson-Hsieh et al., 1994, p. 45), which may suggest that adding a glottal stop before vowels is a more natural or universal process than linking.

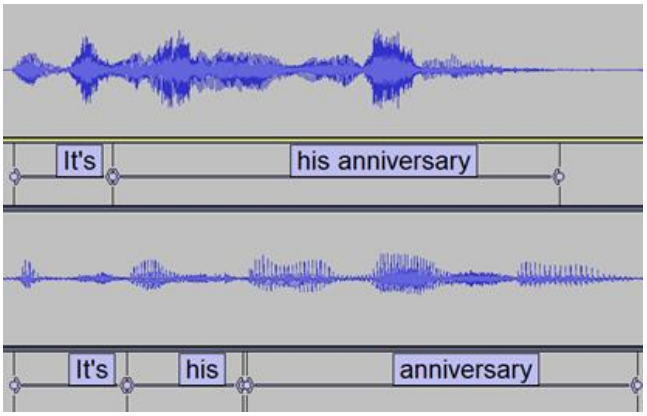

Figure 6. 'It's His Anniversary' No Linking by Student (Hassan)

B. Don't Fence Me in

Five students applied linking to me in [mi:ˌjɪn] in the sentence 'Don't fence me in' (see Figure 7). Although the sentence is an example of VV linking, which was applied less frequently than that of the CV linking, students managed to apply linking to this sentence. A possible explanation could be that the long [i:] in 'me' is compatible with the short [ɪ] in 'in'. Justifying the natural application of this type of linking, Underhill (2005, p. 67) states that [ɪ] and [i:] form the starting point for the semi-vowel [j], which facilitates the insertion of the glide that enables the application of linking.

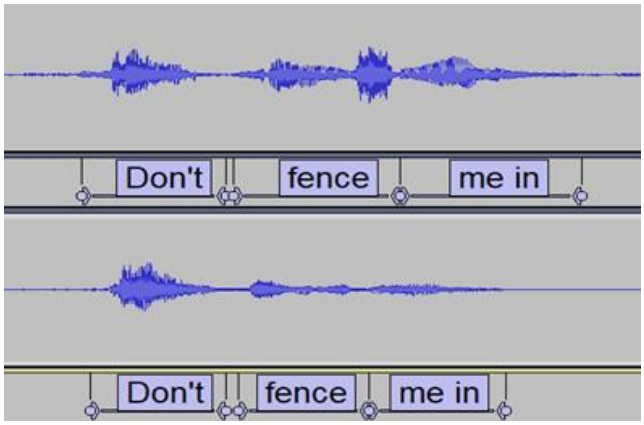

Figure 7. 'Don't Fence Me in' Linking by Student (Yazeed)

VI. Conclusion and Recommendations

A. Conclusion

In more than half of the CV and VV environments of the tool, senior students from the Hashemite University failed to apply linking. They unintentionally applied more linking in CV environments than in VV environments. Difficulties in applying linking were mainly due to the lack of instruction on the linking and the negative interference of L1 in the practice of L2. The natural use of glottal stops before vowels at the beginning of Arabic words was systematically and unintentionally carried over to L2 by students in the sample. They used glottal stops before words starting with vowels in English.

"The prevalent tendency of a language to either link words together or to separate them using glottalization is an important part of the prosodic patterning of a language, contributing to each language's specific rhythm" (Skarnitzl et al., 2021, p. 3). Therefore, while glottalization and linking are opposites in English, Arabic speakers use glottalization as a linking technique which explains the tendency of students in the sample to add a glottal stop when linking in English.

B. Recommendations

It is recommended that students be instructed on the proper application of linking during school and university classes. Teaching linking in EFL classes requires the training of teachers on methodologies of teaching pronunciation features. Teaching the feature requires the modification of the curriculum and equipping schools and universities with audio labs that facilitates the acquisition of English phonological features.

Instruction on linking will result in students applying this feature while speaking. This assumption is verified by the findings of Kuo (2009), Melenca (2001) and Sardegna (2011), all of which have examined the effectiveness of linking instruction on L2 learners and found positive improvement.

References

[1] Alameen, Gh. (2014). *The effectiveness of linking instruction on NNS speech perception and production*. PhD dissertation. Iowa, USA: Iowa State University, Digital Repository. Available (May 2020) at https://core.ac.uk/download/pdf/38925988.pdf

[2] Alameen, Gh. (2007). *The use of linking by native and non-native speakers of American English*. master's thesis. Iowa, USA: Iowa State University, Digital Repository. Available (July 2020) at https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=16027&context=rtd

[3] Al-Jamal, D. A. & Ghadeer, A. J. (2014). An Investigation of the Difficulties Faced by EFL Undergraduates in Speaking Skills. *English Language Teaching*, *7*, 19-27.

[4] Al-Sobhi, B. M. S. (2019). The nitty-gritty of language learners' errors–Contrastive analysis, error analysis and interlanguage. *International Journal of Education and Literacy Studies*, *7*, 49-60.

[5] Alonso, R. A. (2014). Teaching Speaking: An Exploratory Study in Two Academic Contexts. *Porta Linguarum*, *22*, 145-160.

[6] Anderson-Hsieh, J., Timothy, R. & Kenneth, K. (1994). Connected speech modifications in the English of Japanese ESL learners. AUTHOR Dickerson, Wayne B., Ed.; Kachru, Yamuna, Ed. *Issues and Developments in English Applied Linguistics*, *7*. Available (March 2021) at https://files.eric.ed.gov/fulltext/ED400691.pdf#page=34

[7] Anderson-Hsieh, J. (1992). Using electronic visual feedback to teach suprasegmental. *System*, *20*, 51–62.

[8] Bauman-Waengler, J. A. (2009). *Introduction to Phonetics and Phonology: From Concepts to Transcription*. USA: Pearson Education.

[9] Burns, A. & Stephanie, C. (2003). *Clearly Speaking: Pronunciation in Action for Teachers*. Sydney: Macquarie University, National Center for English Language Teaching and Research.
[10] Celce-Murcia, M., Donna, M. B. & Janet, M. G. (1996). *Teaching Pronunciation: A Reference for Teachers of English to Speakers of Other Languages*. New York: Cambridge University Press.
[11] Clark, J., Collin, Y. & Janet, F. (2007). *An Introduction to Phonetics and Phonology*. Victoria: Blackwell.
[12] Corder, S. P. (1981). *Error Analysis and Interlanguage*. Oxford: Oxford University Press.
[13] Coniam, D. (2002). Technology as an awareness-raising tool for sensitising teachers to features of stress and rhythm in English. *Language Awareness*, *11*, 30-42.
[14] Directorate of Examinations and Tests. (2019). *Results of National Test for Education Quality Assurance for the Scholastic year 2018-2019 for Eighth Graders*. Jordan: Ministry of Education.
[15] Dixo-Lieff, C. & Elizabeth, P. (2000). Understanding and Empowering the Learner-Teacher in Pronunciation Instruction: Key Issues in Pronunciation Course Design. *Humanising Language Teaching Magazine*, *2*. Available (August 2020) at http://old.hltmag.co.uk/nov00/sart6.htm
[16] Elhalees, Y. (1986). The teaching-learning situation of English pronunciation in Jordan. *System*, *14*, 59-70.
[17] Flege, J. E. (1995). Second language speech learning: Theory, findings, and problems. In Winifred Strange (ed.) *Speech perception and linguistic experience: Theoretical and methodological issues*. Timonium, Md.: York Press. 233-277.
[18] Gilbert, J. B. (2005). *Clear Speech Teacher's Resource Book: Pronunciation and Listening Comprehension in American English*. Cambridge: Cambridge University Press.
[19] Harmer, J. (2007). *The Practice of English Language Teaching*. London: Pearson and Longman.
[20] Hewings, M. & Sharon, G. (1999). *Pronunciation Plus: Practice Through Interaction*. New York: Cambridge University Press.
[21] James, C. (2013). *Errors in language learning and use: Exploring error analysis*. London: Routledge.
[22] Kenworthy, J. (1987). *Teaching English Pronunciation*. London: Longman.
[23] Kharma, N. & Hajjaj, A. (1997). *Errors in English among Arabic speakers: Analysis and Remedy*. Beirut: York Press.
[24] Kodera, M. (2012). Teaching Connected Speech and High School English Education in Japan. *Hannan ronshū. Jimbun, shizen kagaku-hen*, *47*, 173-192. Available (June 2021) at from https://core.ac.uk/download/pdf/229783787.pdf
[25] Kuo, H. (2009). *The effect of English linking instruction on EFL elementary school students' speech production and phonological awareness.* Master's Thesis, Chiayi, Taiwan: National Chung Cheng University.
[26] Ladefoged, P. (2006). *A Course in Phonetics*. Boston: Thomson Wadsworth.
[27] Lado, R. (1957). *Linguistics across cultures: Applied linguistics for language teachers*. Michigan: University of Michigan press.
[28] Low, E. (2014). *Pronunciation for English as an International Language: From Research to Practice*. UK, Abingdon: Routledge.
[29] Maddieson, I. (1984). *Patterns of sounds*. Cambridge: Cambridge University Press.
[30] Major, R. C. (2001). *Foreign accent: The ontogeny and phylogeny of second language phonology*. New York: Psychology Press.
[31] Major, R. C. (1987). A model for interlanguage phonology. In Georgette Ioup and Steven H. Weinberger (Eds.) *Interlanguage phonology: The acquisition of a second language sound sys*tem. Cambridge, MA: Newbury House. 101-124.
[32] Marks, J. & Bowen, T. (2012). *The Book of Pronunciation: Proposals for a Practical Pedagogy*. Peaslake: Delta Publishing.
[33] Martínez-Flor, A., Esther U. & Eva, A. S. (2006). Towards Acquiring Communicative Competence through Speaking. In Esther Usó and Alicia Martínez-Flor (eds.), *Current Trends in the Development and Teaching of the Four Language Skills*. Berlin: Mouton de Gruyter. 139-157.
[34] Melenca, M. A. (2001). *Teaching connected speech rules to Japanese speakers of English so as to avoid a staccato speech rhythm*. Master's Thesis, Quebec, Canada: Concordia University.
[35] Morley, J. (1994). *Pronunciation Pedagogy and Theory: New Views*, New Directions. USA, Indiana University: Teachers of English to Speakers of Other Languages.
[36] Mubarak, A. S. & Rahi H. J. (2017). A Contrastive Phonological Study of Linking in English and Arabic. *Journal of Education and Practice*, *8*, 29-36.
[37] Murphy, J. (2014). Teacher Training Programs Provide Adequate Preparation in How to Teach Pronunciation. In Linda Grant (ed.) *Pronunciation Myths. Applying Second Language Research to Classroom Teaching*. USA: University of Michigan Press. 188-224.
[38] Nemser, W. (1971). Approximate Systems of Foreign Language Learners. *International Review of Applied Linguistics in Language Teaching*, *9*, 115-124.
[39] Parkinson, D. B. (1990). Orthographic Variation in Modern Standard Arabic: The Case of the Hamza. In *the Annual Symposium on Arabic Linguistics*, Volume II, Salt Lake City, Utah: Brigham Young University. 269-295.
[40] Richards, J. & Schmidt, R. (2002). *Longman Dictionary of Language Teaching and Applied Linguistics*. London: Longman.
[41] Ryding, K. C. (2005). *A Reference Grammar of Modern Standard Arabic*. Cambridge: Cambridge University Press.
[42] Sardegna, V. G. (2011). Pronunciation learning strategies that improve ESL learners' linking. In *Pronunciation and intelligibility: Issues in research and practice. Proceedings of the 2nd Pronunciation in Second Language Learning and Teaching Conference*. USA, Iowa: Iowa State University. 105-121.
[43] Skarnitzl, R., Čermák, P., Šturm, P., Obstová, Z., & Hricsina, J. (2021). *Glottalization and linking in the L2 speech of Czech learners of Spanish, Italian and Portuguese*. Second Language Research. Available at https://doi.org/10.1177/02676583211015803
[44] Szpyra-Kozlowska, J. (2015). *Pronunciation in EFL Instruction: A Research-Based Approach*. Great Britain: Multilingual Matters.
[45] Temperley, M. S. (1987). Linking and deletion in final consonant clusters. In Joan Morley Current (ed.) *perspectives on pronunciation: Practices anchored in theory*. Washington, DC: Teachers of English to Speakers of Other Languages. 59-82.
[46] Underhill, A. (2005). *Sound foundation: learning and teaching pronunciation*. UK: Macmillan Publishers Limited.
[47] Wong, S. W., Dealey, J., Leung, V. W., & Mok, P. P. (2021). Production of English connected speech processes: an assessment of Cantonese ESL learners' difficulties obtaining native-like speech. *The Language Learning Journal*, *49*(5), 581-596.

[48] Yorkey, R. (1974). *Practical EFL Techniques for Teaching Arabic-Speaking Students*. Defense Language Institute: Lackland Air Force Base. ERIC: ED117990. Available (September 2020) at https://files.eric.ed.gov/fulltext/ED117990.pdf
[49] Zhang, Y. (2011). An Investigation of the Use of Linking by Chinese EFL Learners. In *The 16th Conference of Pan-Pacific Association of Applied Linguistics Conference Program*. Hong Kong: The Chinese University of Hong Kong. 134-139.

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