Stress Misassignment in the Pronunciation of English by Arabic-speaking Learners: Erratic Practice or Crosslinguistic Influence?

https://doi.org/10.33806/ijaes2000.22.1.5

Rami A. Sa'di[1], Talha A. Sharadgah[1], and Maha S. Yaseen[2]
[1]Prince Sattam bin Abdulaziz University, KSA
[2]Al-Ahliyya Amman University, Jordan

Received on 15.2.2021 Accepted on 14.7.2021 Published on 1.1.2022

Abstract: *The role of L1 interference in English stress assignment produced by Arabic-speaking EFL learners has received little research attention. This study aims to investigate whether faulty stress assignment by Arab learners is arbitrary or systematic. It also attempts to discover a linkage, if any, between Arabic phonotactic rules of stress placement and stress misplacement in English by Saudi learners. 120 learners from Prince Sattam bin Abdulaziz University were randomly chosen from 3 different levels of English proficiency (lower-intermediate, upper-intermediate, advanced); they were asked to pronounce 72 stimulus words that covered all morpho-syllabic word structures that the learners often mispronounced. The recordings were analysed using WASP spectrogram software and also by two independent raters. Results strongly indicated that crosslinguistic influence may have caused the learners to consistently a) place the stress on a specific syllable in a word even when this word has multiple stress assignments with a difference in meaning, b) stress the second item in a compound noun instead of the first, c) place the stress on the penultimate syllable of most polysyllabic words, d) place the stress on the second syllable of contracted negative auxiliary verbs , and e) misplace stress irrespective of their level of English proficiency.*

Keywords: Arabic-speaking EFL learners, crosslinguistic influence, phonotactic rules, stress misplacement, syllable structure

1. Introduction

The topic of language transfer (L1 influence) and its effects on second and foreign language acquisition has been discussed profusely in the realms of linguistics, applied linguistics and foreign-language acquisition (e.g., Ringbom 1992; Robinson 2008; Han 2004), and the body of research on this aspect of language acquisition continues to grow. The older the learner, it has been argued in much of the literature, the more pronounced is L1 influence on the learning of a foreign language Mashaqba et al. (2021). indicate that when children speak, their acoustic representations are very different from those of adults at around the age of four, but very similar to adults a year later. In light of this, it may be posited that as early as at the age of five, L1 influence is likely to show in the process of learning a new language.

Ringbom (1992) describes two types of L1 influence on L2 acquisition. There is a positive type, which occurs when structure is identical or similar for both

languages, and this type has a facilitative effect on learning. On the other hand, the negative type of language transfer occurs when the languages are dissimilar, and this type impedes acquisition. However, Lightbown and Spada (2000) state that L1 does not always have to influence L2 acquisition. They mention that "Second language (L2) acquisition research has confirmed that certain characteristics of learners' knowledge and use of the L2 are typical of learners, regardless of their first language (L1)" (p. 198). The present study will be guided by these theories in its attempt to ascertain whether or not (or to what extent) the erroneous stress assignments in English as spoken by Arab learners are triggered by their L1.

One fundamental issue in crosslinguistic influence that has attracted considerable interest is pronunciation (Tsang 2019; Collins and Mees 2003; Goto 1971; Kim and Billington 2018). It can be argued that pronunciation is one important language skill where the difference between native and non-native speakers' use of language is instantly palpable. Previous research has addressed topics like: pronunciation difficulties facing L2 learners (Farrah and Halahlah 2020; Simonet and Amengual 2020; Munro 2018; Thomson and Derwing 2015); cultural identity and pronunciation of EFL learners (Shabani and Alipoor 2017); pronunciation modelling of non-native speakers (Bouselmi et al. 2012); and pronunciation preferences among native and non-native speakers of English (Lasagabaster and Sierra 2002). Owing to the importance of pronunciation, research on pronunciation-related L1 influence, which has for decades been rife and diversified, is still relevant today as it always has been.

In many languages, including English, one key element of pronunciation is stress, and the study of how stress placement in L2 can be affected directly or indirectly by the learner's L1 is an important area of crosslinguistic influence. Karjo (2016) posits that stress placement rules in the L1 phonology can cause learners to misplace stress in L2 in ways that directly mirror the phonotactic rules (possible phoneme sequences) of L1. The current study aims to scrutinise the causes of stress misplacement in English by Saudi EFL learners, in an attempt to deduce learning/ teaching implications for both learners and educators as well as research implications for ELT professionals who are interested in crosslinguistic influence at the phonological level. Although the focus is on Saudi students of English, the scope of the present study may reach out, to a large extent, to learners from other countries in the Middle East whose mother tongue is Arabic. This study may also be of relevance to any other EFL learners further afield, as it is an investigation of an important aspect of learning English that poses a challenge to many EFL learners, viz. stress assignment.

1.1 What is stress?

A stressed syllable in a word is perceived as more prominent, i.e., louder than unstressed syllables, or it may be longer in duration, and pitch that accompanies the stressed syllable may be different from the other syllables. Moreover, the stressed syllable may be noticeably different in quality from the other syllables within a word (Roach, 2009). Ladefoged and Johnson (2014) state that "a stressed syllable

is usually produced by pushing more air out of the lungs in one syllable relative to others… A stressed syllable thus has greater respiratory energy than neighbouring unstressed syllables" (p. 119).

It is worth mentioning that categorising syllables into stressed and unstressed is an over-simplification. That is because stress in English has levels: in polysyllabic words, one syllable could have a primary stress and another syllable a secondary stress, in addition to unstressed syllables (Mattys, 2000). However, for purposes of the current study, the researchers will confine their discussions to the stressed/unstressed binary distinction, partly because in many words only a primary stress exists, and because in many polysyllabic words the secondary stress is often elusive and is beyond the scope of the present study.

Stress in English is phonemic (Giegerich, 1992). That means stress placement is dictated by well-defined rules, and its placement within a word can affect the meaning of that word; the shifting of stress from one syllable to another within a word can either distort the pronunciation or alter the meaning of that word. That is why knowing where to assign stress within a word is an integral part of knowing the correct pronunciation of that word (O'Connor, 1998). For example, the word *import* can have the stress either on the first syllable /**Im**pO:t/, in which case it is a noun, or it can be stressed on the second syllable /Im**pO:t**/, in which case the word-class has changed to verb.

1.2 Stress in Arabic

Unlike in English, stress in Arabic is non-phonemic. That means stress plays no role at all in determining the syntactic category of a word, i.e., whether a word is a noun, adjective, adverb, etc., nor does it change or distort meaning if moved from one syllable to another. For example, the word ***tha****hab* in Arabic can mean *gold* (a noun) or *He went* (a statement). The word *athhabah* means *He caused it to vanish*. Typically, stress would be placed on the first syllable of this word (***ath****habah*). However, if stress is shifted from the first to the second syllable, i.e., (*ath****ha****bah*), the word still means exactly the same.

The role of L1 phonology in influencing stress misplacement in English as spoken by Arab learners has been investigated by Anani (1989), who examined the differences in English word stress placement between six native speakers of American English and six EFL learners from Jordan. He concluded that it was highly likely that Jordanian EFL learners sometimes misplaced stress in English words when the phonological structure of the syllables in those words had a corresponding syllable structure in Arabic.

The behaviour of Arabic stress has been attracting research in recent years (e.g., Ryding, 2005), but perhaps the most comprehensive and detailed recent accounts of stress in Modern Standard Arabic (MSA) can be found in Watson (2011) and in Halpern (2009). The present study is going to list the syllable types and the stress assignment rules in Arabic as described in Watson and in Halpern to investigate their influence, if any, on the production of incorrect stresses in English as produced by Arabic-speaking EFL learners. In the present study, the researchers

use some of the commonest abbreviations and symbols used by phoneticians in the literature.[1]

Watson (2011) and Halpern (2009) identify three types of syllable in MSA: light, heavy and superheavy:

A. A light syllable consists of a consonant followed by a short vowel (CV), e.g. لِ (meaning *for*, pronounced /li/), and وَ (meaning *and*, pronounced /wə/).

B. A heavy syllable consists of a consonant followed by a long vowel or a diphthong, or a consonant followed by a short vowel followed by a consonant, e.g. كي /kaɪ/ (meaning *in order to*) consists of CV_d; the first syllable in حامد /ˈħa:.mid/ (meaning *thankful*) consists of CV_L, and the second syllable in the same word consists of CVC.

C. A superheavy syllable consists of a consonant followed by a long vowel or a diphthong followed by one consonant or a consonant cluster, or a consonant followed by a short vowel followed by a consonant cluster, e.g. عيد (meaning *anniversary*, pronounced /ʕi:d/) consists of CV_LC, موز (meaning *banana*, pronounced /maYz/) consists of CV_dC, and ذنب (meaning *sin*, pronounced /ðanb/) consists of CVCC.

Below are the MSA stress rules as explained in Watson and in Halpern, which will be referred to throughout the discussion.

1. If the final syllable of a word is superheavy, that syllable receives the primary stress, irrespective of how many syllables there are in that word.
2. A stressed monosyllabic word has its stress on its only syllable.
3. Unless the second syllable is superheavy, disyllabic words have the stress on the first syllable.
4. In polysyllabic words (three or more syllables), stress falls on the penultimate syllable if that syllable is heavy or superheavy. If it is light, stress falls on the antepenultimate syllable.

1.3 The present study

This study aims to investigate whether faulty stress assignment in the pronunciation of English by Arabic-speaking EFL learners from Saudi Arabia is arbitrary or systematic. Moreover, using rigorous objective technological tools such as spectrograms, this study attempts to determine whether stress misplacement patterns exist. One primary concern of the present study is to attempt to investigate in depth and detail the linkage, if any, between MSA phonotactic rules of stress placement and stress misplacement in English by Saudi EFL learners.

The present study will attempt to address the following questions:

1. Is there a degree of uniformity or consistency with regards to stress misplacement in English words as spoken by Saudi Arabic-speaking learners of English, or is this phenomenon of stress misplacement rather erratic?
2. If Saudi learners of English whose first language is Arabic do misplace stress consistently and systematically as they speak English, what L1 factors could be causing this?

3. Is the misplacement of stress by Saudi EFL learners peculiar to certain levels of English proficiency?

1.4 Limitations of the study

This study sheds some light on the issue of vowel change in the mispronounced words but does not delve extensively into the question of whether the vowel change is triggered by the stress shift or the other way around. This relationship between stress shift and vowel change in the pronunciation of EFL speakers is potentially an interesting venue for future research. Additionally, the paper does not study function words such as prepositions and auxiliary verbs.

2. Method

Before conducting this piece of research, the researchers obtained ethics approval from the Deanship of Scientific Research at PSAU.

2.1 Participants

For purposes of the current study, the researchers have collected pronunciation data from 120 participants; all of them were current students of one or both of the first two researchers. All students were enrolled in the BA degree in the English department at Prince Sattam bin Abdulaziz University (PSAU) in Saudi Arabia. The data were collected during the academic year 2019-2020. The participants were all native speakers of Arabic. They were randomly chosen from different levels of English proficiency. 40 students were pre-intermediate; they had completed one or two semesters as English majors at PSAU. They were in the range of CEFR A2 – CEFR B1 in English proficiency. 40 students were upper-intermediate; they had completed 2-3 years as English majors at PSAU; they were in the CEFR B2 level. 40 students were advanced; they were in the final semester of their 4-year programme of study; they were in the CEFR C1 level. The participants had to be selected from different levels of English proficiency in order to ascertain whether stress misplacement by Saudi EFL learners was peculiar to certain levels of English proficiency or if it were a common phenomenon that happened even amongst the more advanced and more fluent learners.

2.2 Data collection

The researchers made a list of 72 English words that they chose carefully to illustrate the various stress assignment arguments in this study. The stimulus words were put into longer utterances (full sentences). It was essential that the stimulus words be put into full sentences so that the participants' pronunciation would come out more natural and more true to their usual pronunciation. The stimulus words were further embedded within longer utterances, so that the participants had no idea that it was only a particular lexical item in the utterance that the researchers were interested in. To ensure the clarity of the pronunciation of the stimulus words and the accuracy of the data collected, the participants were asked to utter each sentence twice at a comparable rate of speech, with a short (one- or two-second) pause between the two utterances. The participants provided the data in a controlled

environment. The researchers met them in a computer lab, one at a time so that no participant hears or is influenced by the pronunciation of other participants. They were given a headset connected to a computer and were requested to read the stimulus sentences out loud to record their readings into the computer using the WASP application version 1.80, a program for the recording, display and analysis of speech, developed at University College London. The WASP application was used to accurately determine stress placement in the pronunciation of the participants. As each pronunciation elicited from a participant was recorded into WASP, the software provided a spectrographic representation of the pronunciation, which, in the stage of data analysis, made it easy for the researchers to determine which syllable in a given word was more prominent by being louder, longer in duration or noticeably different in quality from the other syllables. The researchers did not rely solely on listening to the pronunciations to determine how each individual word was pronounced and where stress was placed, but instead they used the WASP software in order to ensure objectivity and reliability, as the visual representations from WASP of the elicited pronunciations helped the researchers avoid observational bias affecting the data.

The researchers created 120 folders for the 120 participants. After each of the 79 sentences (72 stimulus words, where 7 were used in 2 sentences each. See section 3.4 below) had been recorded by each participant, the researchers saved the recording as a WAV audio file and also saved the spectrograph for the sentence at hand as a jpeg file in that participant's folder. At the end of this process, each of the 120 folders contained 79 WAV audio files and 79 jpeg spectrographs representing the 79 sentences.

2.3 Stimulus words

The 72 stimulus words were all common, frequently used English words, and they were chosen carefully in a way that they would encompass the range of syllable structures and stress assignment issues where the learners typically made errors as illustrated in Table (1) below:

Table 1: The 72 Stimulus Words Used in the Study and the Rationale(s) for Using Each

Category No.	Stimulus words	Rationale for using them / purpose they serve
1	*background; bedroom; banknote; earthworm; eyelid; football; handcuffs; lighthouse; loophole*	These words exemplified compound nouns composed of noun plus noun, so if a stress placement pattern was observed in those words from the pronunciations of (most of) the participants, it would be assumed that the pattern would remain the

		same for words of a similar morpho-syllabic structure.
2	*bullseye; earache; firearm; headache; know-all; sit-ins*	These exemplified compound nouns that pose a stress placement challenge because in many instances it seems that many of the learners equally stress both syllables in these compounds.
3	*although; compel; compute; forget; happy; kingdom; protect; fortune; result; syntax*	These are disyllabic words, and they were used for the purpose of investigating stress assignment patterns in disyllabic English words in the speech of the participants.
4	*isn't; wasn't; hasn't; haven't; hadn't; couldn't; didn't; mustn't*	These are also disyllabic. Analysis of the pronunciation of these words may explain why Saudi learners habitually place the stress in these negative auxiliaries on the second syllable instead of on the first.
5	*Washington; develop; interval; faculty; industry; Manchester; hamburger; microwave*	These are polysyllabic words. They were used to explain stress patterns in polysyllabic words as uttered by Saudi learners.
6	*computer; instructor; happily; happiness; protected; creative; creatively; negative; negatively; instinctive; instinctively; wonderful; cowardly; emergency; efficiency*	These are also polysyllabic. They too were used to examine stress patterns in polysyllabic words, and they also explained how or whether the addition of one or more suffixes like *-er*, *-or*, *-ly*, *-ness*, *-ive*, *-ed*, *-cy* and *-ful* affected stress assignment in the data.
7	*commission; correction; division; nation; position; recognition; transition; climatic; organic*	These were used because the suffixes -tion, -sion and -ic in English affect stress placement within a word, and so it would be interesting to find out whether Saudi learners place stress in suffixed words correctly according to English phonotactic rules or incorrectly but systematically because of L1 influence.
	upgrade; import; decrease; increase; record; convert; update	These words can be a noun or a verb depending on context, with a difference in stress placement. The

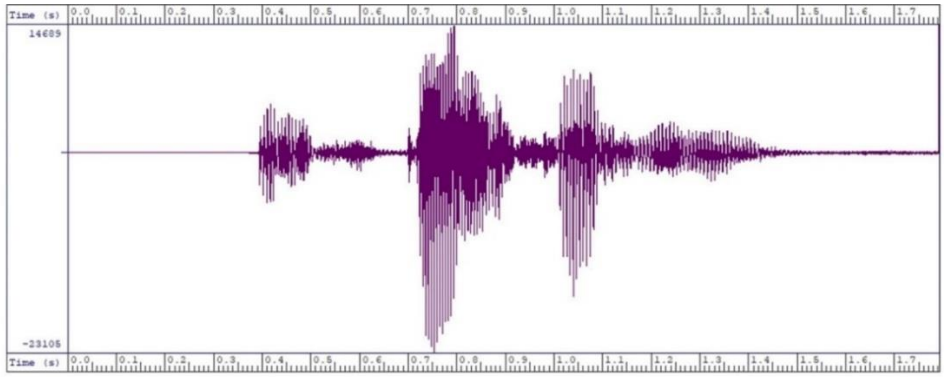
8		word class dictates where to place the stress in these words. The researchers are interested in finding out how Saudi learners place stress in these words of variable stress.
9	*No monosyllabic words were used.*	Monosyllables typically pose no challenge to the L2 learner with regards to stress placement. In English, a word that is made up of one syllable is either unstressed or has a stress on that one syllable (see section 1.2 above).

The pronunciations/mispronunciations from the elicited data were to be tested against the rules of stress placement in MSA, for the ultimate purpose of finding out whether those stress misplacements were in any way influenced by the phonology of the learner's L1.

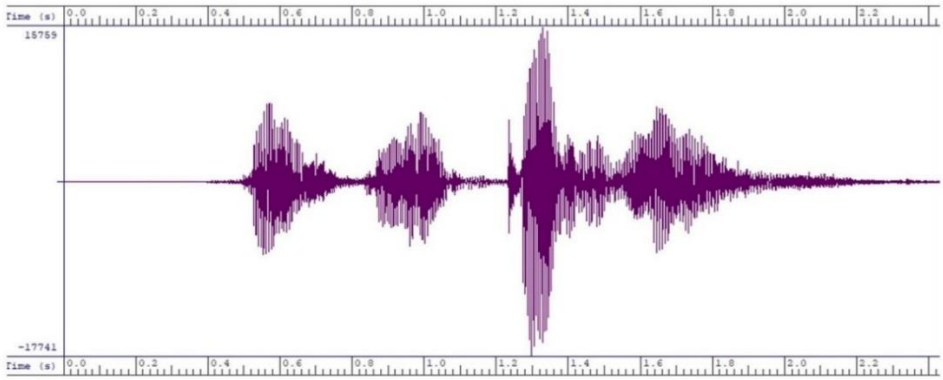
2.4 Data analysis

Once all the data had been obtained from the 120 participants, the researchers listened attentively to the recordings one by one and, using International Phonetic Alphabet (IPA) symbols, transcribed the pronunciation of each of the 72 stimulus words for each participant separately exactly as uttered by that participant. Although the main interest in this study is stress assignment, full IPA transcription of each stimulus word was used since in the course of the discussion there will be some reference to other, strongly related aspects of mispronunciation, such as vowel change.

Stress placement in every word was recorded in the transcription exactly as uttered by the participant. The researchers relied on the WASP spectrographs to determine stress placement. Figure 1 shows an example of how WASP showed an accurate representation of sound wave length and amplitude for each individual sound in each utterance. This helped determine unequivocally which syllable received the stress. Also, to achieve an acceptable level of inter-rater reliability, two specialists in phonetics and phonology later listened to the recordings and analysed them independently. Discrepancies were fixed through subsequent discussion between the researchers and the two raters, and a final agreed-on stress placement was assigned.



Correct pronunciation of *instinctively* /ɪnˈstɪŋk.tɪv.li/ with stress on second syllable. Spectrographic representation of the stressed syllable, which starts at circa 0.70 ms and ends at circa 0.92 ms, shows that the stressed syllable is longer in duration and significantly greater in sound wave amplitude than the other syllables.



Incorrect pronunciation of *instinctively* /ɪn.stɪŋkˈtɪv.li/ with stress on penultimate syllable. Spectrographic representation of the stressed syllable, which starts at circa 1.21 ms and ends at circa 1.51 ms, shows that the stressed syllable is longer in duration and is significantly greater in sound wave amplitude than the other syllables.

Figure 1: WASP Spectrographic Representations of the Correct Pronunciation of the Word 'instinctively' and an Incorrect Pronunciation of the Same Word

The researchers then created a table that listed the 72 stimulus words, the IPA transcriptions of their correct pronunciations (which were copied from the online Cambridge Learner's Dictionary[2]), the IPA transcriptions (produced by the researchers, guided by the WASP analysis) of the incorrect pronunciation(s) of each stimulus word, and the numbers (n) and percentages (100n/120) of participants who misplaced the stress for each stimulus word.

3. Results and discussion

Fifteen stimulus words were pronounced correctly by all participants. Those were *eyelid*, *compute*, *computer*, *instructor*, *happy*, *happily*, *happiness*, *kingdom*, *protect*,

protected, *creative*, *nation*, *correction*, *instinctive* and *negative*. In 16 words, stress was misplaced by all respondents. In 11 words, stress was misplaced by all respondents but four. Each of the remaining words was mispronounced by more than 100 students, i.e. by over 83% of the participants.

Table 2: The 72 Stimulus Words, IPA Transcription of the Correct Pronunciation of each Word, IPA Transcription(s) of any Mispronunciation(s), Frequency and Percentage of Mispronunciation

Category	Stimulus words and their correct pronunciations (Stressed syllable is preceded by stress mark ˈ)	Mispronunciations		
		IPA transcription(s) of incorrect pronunciation(s)	No. of participants with incorrect pronunciations (out of 120)	% of incorrect pronunciations (out of 120)
1	background /ˈbæk.graʊnd/ bedroom /ˈbed.ruːm/ banknote /ˈbæŋk.nəʊt/ earthworm /ˈɜːθ.wɜːm/ eyelid /ˈaɪ.lɪd/ football /ˈfʊt.bɔːl/ handcuffs /ˈhænd.kʌfs/ lighthouse /ˈlaɪt.haʊs/ loophole /ˈluːp.həʊl/	/bækˈgraʊnd/ /bedˈruːm/ /bæŋkˈnəʊt/ /ɜːrθˈwɜːrm/ /fʊtˈbɔːl/ /hændˈkʌfs/ /laɪtˈhaʊs/ /luːpˈhəʊl/	116 120 120 114 0 116 120 118 116	97 100 100 95 0 97 100 98 97
2	bullseye /ˈbʊl.zaɪ/ earache /ˈɪə.reɪk/	/bʊlzˈʔaɪ/ /ˈbʊlzˈʔaɪ/ /ɪəˈreɪk/ /ˈɪərˈʔeɪk/ /ˈhed.ʔeɪk/ /ˈhedˈʔeɪk/	80 40 81 39 86 34	67 33 68 32 72 28

	headache /ˈhed.eɪk/ firearm /ˈfaɪər.ɑːm/ know-all /ˈnəʊ.ɔːl/ sit-ins /ˈsɪt.ɪnz/	/faɪərˈʔɑːrm/ /ˈfaɪərˈʔɑːrm/ /ˈnəʊ.ʔɔːl/ /ˈnəʊˈʔɔːl/ /ˈsɪtˈʔɪnz/	84 28 116 4 120	70 23 96.7 3.3 100
3	although /ɔːlˈðəʊ/ compel /kəmˈpel/ compute /kəmˈpjuːt/ forget /fəˈget/ happy /ˈhæ.pi/ kingdom /ˈkɪŋ.dəm/ protect /prəˈtekt/ fortune /ˈfɔː.tʃuːn/ result /rɪˈzʌlt/ syntax /ˈsɪn.tæks/	/ˈɔːlðo/ /ˈkom.pel/ /ˈfor.get/ /fɔːrˈtʃuːn/ /ˈrɪ.zəlt/ /sɪnˈtaks/	112 110 0 114 0 0 0 110 108 116	93.3 91.7 0 95 0 0 0 91.7 90 96.7
4	isn’t /ˈɪ.zn̩t/ wasn’t /ˈwɒ.zn̩t/ hasn’t /ˈhæ.zn̩t/ haven’t /ˈhæ.vn̩t/ hadn’t /ˈhæ.dn̩t/ couldn’t /ˈkʊ.dn̩t/ didn’t /ˈdɪ.dn̩t/ mustn’t /ˈmʌ.sn̩t/	/ɪˈzɪnt/ /wəˈzɪnt/ /həˈzɪnt/ /həˈvɪnt/ /həˈdɪnt/ /kʊˈdɪnt/ /dɪˈdɪnt/ /mʌˈsɪnt/	112 112 114 116 112 112 118 114	93.3 93.3 95 96.7 93.3 93.3 98.3 95
5	Washington /ˈwɒ.ʃɪŋ.tən/ develop /dɪˈve.ləp/	/wɒˈʃɪŋg.tən/ /ˈdɪ.vɪ.lop/ /ɪnˈtʌr.vəl/ /ɪnˈtɜːr.vəl/	116 120 84 36	96.7 100 70 30

	interval /ˈɪn.tə.vl̩/ faculty /ˈfæ.kl̩.ti/ industry /ˈɪn.də.stri/ Manchester /ˈmæn.tʃes.tə/ hamburger /ˈhæm˧bɜː.gə/ microwave /ˈmaɪ.krə.weɪv /	/fæˈkʌl.ti/ /fæˈkɪl.ti/ /ɪnˈdʌs.tri/ /mænˈtʃes.tər/ /hæmˈbɜːr.gər/ /maɪ.kroˈweɪv/	88 32 118 118 116 118	73.3 26.7 98.3 98.3 96.7 98.3
6	computer /kəmˈpjuː.tə/ instructor /ɪnˈstrʌk.tər/ happily /ˈhæ.pə.li/ happiness /ˈhæ.pi.nəs/ protected /prəˈtek.təd/ creative /kriˈeɪ.tɪv/ creatively /kriˈeɪ.tɪv.li/ negative /ˈne.gə.tɪv/ negatively /ˈne.gə.tɪv.li/ instinctive /ɪnˈstɪŋk.tɪv/ instinctively /ɪnˈstɪŋk.tɪv.li/ wonderful /ˈwʌn.də.fl̩/ cowardly /ˈkaʊ.əd.li/ emergency /ɪˈmɜː.dʒən.si/	/kri.eɪˈtɪv.li/ /ne.gəˈtɪv.li/ /ɪn.stɪŋkˈtɪv.li/ /wʌnˈdʌr.fʊl/ /kaʊˈʌrd.li/ /ɪ.mɜːrˈdʒen.si/ /ɪ.fɪˈʃen.si/	0 0 0 0 0 0 120 0 120 0 120 104 116 120 118	0 0 0 0 0 0 100 0 100 0 100 86.7 96.7 100 98.3

	efficiency /ɪˈfɪ.ʃən.si/			
7	commission /kəˈmɪ.ʃn̩/ correction /kəˈrek.ʃn̩/ division /dɪˈvɪ.ʒn̩/ nation /ˈneɪ.ʃn̩/ position /pəˈzɪ.ʃn̩/ recognition /rek.əgˈnɪ.ʃən/ transition /trænˈzɪ.ʃn̩/ climatic /klaɪˈmæ.tɪk/ organic /ɔːˈgæn.ɪk/	/ˈko.mɪ.ʃən/ /ˈdɪ.vɪ.ʒən/ /ˈpo.zɪ.ʃən/ /rɪˈkog.nɪ.ʃən/ /ˈtræn.zɪ.ʃɪn/ /ˈklaɪ.mə.tɪk/ /ˈɔːr.gə.nɪk/	104 0 110 0 112 108 104 112 116	86.7 0 91.7 0 93.3 90 86.7 93.3 96.7
8	upgrade n: /ˈʌp.greɪd/ v: /ʌpˈgreɪd/ import n: /ˈɪm.pɔːt/ v: /ɪmˈpɔːt/ decrease n: /ˈdiː.kriːs/ v: /dɪˈkriːs/ increase n: /ˈɪn.kriːs/ v: /ɪnˈkriːs/ record n: /ˈrek.ɔːd/ v: /rɪˈkɔːd/ convert n: /ˈkɒn.vɜːt/ v: /kənˈvɜːt/ update n: /ˈʌp.deɪt/ v: /ʌpˈdeɪt/	/ʌpˈgreɪd/ For both n and v /ɪmˈpɔːrt/ For both n and v /dɪˈkriːs/ For both n and v /ɪnˈkriːs/ For both n and v /rɪˈkɔːrd/ For both n and v /konˈvɜːrt/ For both n and v /ʌpˈdeɪt/	120 120 120 120 120 120 116	100 100 100 100 100 100 96.7

		For both n and v		

Table 2 shows that whenever stress was misplaced, the same error was uniform amongst nearly all the respondents who misplaced it. It will naturally be assumed that influence of their L1 phonology was the culprit, and therefore the stress error will be tested against the rules of MSA phonology outlined in section 1.2 above.

At this point, it is important to point out that the terms *light*, *heavy*, and *superheavy* apply to syllable structure classification in Arabic, not English. However, these classifications will be used in the present study to refer to English syllables from the perspective of the Arabic-speaking learner, since the purpose of the present study is to find out whether the Saudi EFL learner is unconsciously applying the phonotactic rules of his/her L1 when they speak English.

3.1 Compound nouns (categories 1 and 2)

According to English phonology, words like *bedroom* and *football* are to be stressed on the first syllable because in compound lexical items composed of two nouns the stress typically falls on the first constituent word (Roach 2009). In the present study, all 120 participants placed the stress on the second syllable of *bedroom*, and all but four on the second syllable of *football*. Except for *eyelid*, the same trend can be seen for all other compounds in category 1 in Table 2. This stress misplacement in the pronunciation of the participants is evidently uniform, as the same error is committed invariably by nearly all speakers irrespective of their level of English proficiency. This error may also be assumed to be a sign of crosslinguistic influence. From the perspective of the MSA-speaking learners and the phonology of their first language, the second syllables of *bedroom* and *football* are both superheavy: they are both CV_LC. In *background*, the second syllable structure is CCV_dCC, which is also superheavy. In MSA phonology, if the final syllable in a word is superheavy, that syllable receives the primary stress (see Rule 1 in section 1.2 above). This clearly explains why the vast majority of Arabic learners of English do not seem to adhere to the English phonological rule of stress assignment in compound nouns, but rather they tend to be influenced by the phonology of their L1. The compound *eyelid* was pronounced correctly by all students. The syllable structure of this word is different from that of all others in category 1: $V_d{\cdot}CVC$. Students may have pronounced this word correctly because of either of two possibilities. They were either familiar with the correct pronunciation, or, since in MSA phonology a disyllabic word has the stress on the first syllable if the second is not superheavy, they were influenced by their L1 even when they happened to produce correct pronunciation.

However, the compounds in category 2 were more complicated as stress was more elusive. While only 8 participants pronounced *firearm* correctly, all other compounds were mispronounced by all participants. 84 participants placed the

stress on the second syllable in *firearm* for example, and 28 pronounced it in a way that defies any traditional classification. Those 28 students seemed to equally stress both component nouns. This error may not be easily explainable by recourse to MSA stress rules since there are no such rules in Arabic for multiple primary stresses within an individual word. Moreover, the structure of the second component (ʔɑːrm/) from an Arabic speaker's perspective may also defy any traditional classification that is common amongst English phoneticians: in British English for example, /ɑːm/ consists of a long vowel followed by a consonant, i.e. V_LC; in a rhotic English accent such as American or Canadian[3], the syllable structure of /ɑːrm/ is V_LCC, but from an Arabic speaker's standpoint it may consist of a consonant (the glottal stop /ʔ/) followed by a long vowel followed by the consonant cluster of /r/ and /m/, hence the most accurate transcription would be /ʔɑːrm/ (see Alhawary, 2011). Therefore, the syllable structure from an Arabic speaker's viewpoint is CV_LCC, which is a superheavy syllable. This may explain why 70% of the students stressed the second syllable in *firearm*. But in this context it should be pointed out that also in English, some phoneticians would argue that any word that starts with a vowel actually has a glottal stop first followed by that vowel. However, since syllable weight does not determine stress placement in English the way it does in Arabic, the discussion of this potential explanation, i.e., the word *arm* above, being a superheavy syllable rather than heavy, will be confined to the EFL speakers' pronunciation. The same arguments hold true for all the other compounds in category 2.

3.2 Disyllabic words (categories 3 and 4)

It has been mentioned earlier that the words *happy, protect, compute, kingdom* and *nation* were amongst the stimulus words that were pronounced correctly by all respondents. It can be assumed that the participants pronounced those words correctly because they knew the correct pronunciation, but since the misplacement of stress in English words by Saudi learners is so common, it may be tentatively assumed that stress in those four words was placed correctly because it incidentally conformed to Arabic phonology. The second syllable in *protect* for example, from an MSA perspective, is superheavy CVCC. Rule 1 in section 1.2 above states that a final superheavy syllable always receives the primary stress. In light of this, it may be posited that stress was placed correctly in the word *protect* due to this reason. The same argument applies to *compute*.

The disyllabic words *happy* and *nation* have the syllable structures CV·CV and CV_d·CVC, respectively. Again, the participants could have pronounced them correctly because they were aware of the correct pronunciation. However, it may also be hypothesized that the pronunciations were dictated by MSA rules but just happened to be accidentally correct. In MSA phonology, stress in disyllabic words falls on the first syllable unless the second is superheavy. The second syllables in both *happy* and *nation* are not superheavy. That may have been the reason why the participants placed the stress on the first syllable. It is worth pointing out here, however, that the length of the first vowel in *happy* is shorter when pronounced by

Arab EFL speakers than native English speakers, which may make the stress here sound even more prominent.

In the word *although* /ɔːlˈðəʊ/, it is interesting to note that nearly all of the participants pronounced it /ˈɔːl.ðo/, with the stress erroneously placed on the first syllable instead of on the second, and with the diphthong in the second syllable reduced to a monophthong. In the pronunciation /ˈɔːl.ðo/ the second syllable /ðo/ is light (CV), and that is why stress has shifted to the first syllable. However, it is worth mentioning here that the monophthongization of the diphthong /əʊ/ in the second syllable has not had any influence on stress assignment. With the diphthong, the syllable was originally a heavy syllable (CV_d), and after the monophthongization it changed from heavy to light (CV). Either way, the second syllable is not superheavy, and so stress should fall on the first syllable of the disyllabic word according to MSA phonology. However, it can also be argued that since with a diphthong the second syllable is heavier, the word is more likely to be stressed on the second syllable with a diphthong that with a monophthong.

The word *result* /rɪˈzʌlt/ was mispronounced by 108 participants. The 12 students with the correct pronunciation were all advanced. The mispronunciation was /ˈrɪ.zəlt/, with the syllable structure of this mispronunciation being CV·CVCC. Those 108 students reassigned the stress from the second syllable to the first, and they also changed the open vowel /ʌ/ to the less open and more lax schwa /ə/. It may be posited that stress was erroneously reassigned to the first syllable because according to Rule 3 in section 1.2 above, stress in disyllabic words in MSA falls on the first syllable unless the second is superheavy. Interestingly, the second syllable in the mispronounced version of *result* does look like it is a superheavy one CVCC, but since the vowel in this syllable is a schwa, the students probably realised that this syllable could by no means be stressed. It is unclear, though, whether the students reassigned the stress to the first syllable because the second syllable contained a schwa and so by default it was unstressable, or if they reassigned the stress because they were applying Rule 3 above in MSA phonology.

One very common stress misplacement pattern in English as spoken by Arab learners that is evidenced in this study is that in the contracted negative auxiliary verbs *isn't*, *wasn't*, *didn't*, *hasn't*, *couldn't*, etc. All of these negative verbs in the contracted forms are disyllabic, and the stress should naturally fall on the first syllable. As a matter of fact, in English phonology, there are two types of syllable that cannot be stressed: when the nucleus of the syllable is a schwa or a syllabic consonant (Roach, 2009). The above auxiliaries all have either a schwa or a syllabic consonant functioning as the nucleus of the second syllable. The auxiliary verb *isn't* would normally be pronounced by a native English speaker thus: /ˈɪzənt/ or /ˈɪzn̩t/. Either way, the stress falls on the first syllable. However, the above auxiliaries are typically pronounced by most Arabic-speaking learners thus: /ɪˈzɪnt/, /wəˈzɪnt/, /dɪˈdɪnt/, /həˈzɪnt/, and /kʊˈdɪnt/. For one thing, since the Arabic language does not have syllabic consonants, a vowel (this time /ɪ/) has been epenthesized in the second syllables of all those auxiliaries, producing the following syllabic structure: CV·CVCC. Unlike a schwa, the vowel /ɪ/ can be stressed, and since the second

syllable is now from an MSA viewpoint a superheavy one, the stress falls on that syllable.

3.3 Polysyllabic words (categories 5, 6 and 7)

The word *Washington* /ˈwɒ.ʃɪŋ.tən/ was mispronounced by nearly all 120 students. Stress was shifted from the first syllable to the second /wɒˈʃɪŋg.tən/. Again, should an explanation for this uniform error be detected in MSA phonology, then the error could be imputed to crosslinguistic influence. In the Arabic learners' pronunciation of the penultimate syllable /ʃɪŋg/, this CVCC syllable is superheavy, and so it receives the primary stress.

The word *develop* /dɪˈve.ləp/, which was pronounced /ˈdɪ.vɪ.lop/ by all participants, may again be viewed as an example of crosslinguistic influence. In MSA phonology, stress falls on the penultimate syllable in a polysyllabic word if the penultimate is heavy; otherwise, stress falls on the antepenultimate. In the pronunciation /ˈdɪ.vɪ.lop/, the penultimate is light (CV), and this may explain why the participants placed the stress on the first syllable instead of on the second.

In English phonotactics, words that have the *-tion, -sion,* and *-ic* suffix endings always have the primary stress on the penultimate syllable that precedes the suffix, regardless of how many syllables there are in the word (Roach, 2009; O'Connor, 1998). The disyllabic word *nation* has already been discussed in section 3.2 above. The stress in *transition* /trænˈzɪ.ʃn̩/, which falls on the penultimate syllable, was shifted to the first syllable /ˈtræn.zɪ.ʃɪn/ by 104 participants. 16 participants, fourteen of them in the advanced English proficiency level and two upper-intermediate, pronounced the word correctly. The pronunciation is composed of CCVC·CV·CVC. The penultimate CV is not a heavy syllable, and so, according to MSA rules, stress should fall on the antepenultimate. The word *recognition* was mispronounced by 90% of the participants. The syllable structure of this word is thus: CV·CVC·CV·CVC. The penultimate is light, and this may explain why the students shifted the stress to the antepenultimate, according to Rule 4 in section 1.2 above.

The word *wonderful* /ˈwʌn.də.fl̩/ was pronounced correctly by 16 participants only. The remaining 104 not only shifted the stress from the first syllable to the penultimate one, but also changed the vowel in the penultimate syllable from the lax schwa /ə/ to the slightly more tense /ʌ/: /wʌnˈdʌr.fʊl/. This vowel change made it possible for them to stress the penultimate syllable, since a syllable with a schwa as its nucleus can never be stressed in English. Silverman (2011) states that schwa is always associated with weak syllables because by and large it is as a lax vowel, which means it is not produced with much articulatory energy. In the incorrect pronunciation of *wonderful*, the syllable structure is thus: CVC·CVC·CVC. This is a polysyllabic word, and again stress misplacement can be explained by recourse to MSA phonology: the stress falls on the penultimate syllable here, which is a heavy syllable.

The same argument for *wonderful* can be applied to the stimulus word *faculty* /ˈfæ.kl̩.ti/. Interestingly, all students mispronounced this word. Some of them came up with /fæˈkʌl.ti/, others with a slightly different pronunciation /fæˈkɪl.ti/. Since

Arabic has no syllabic consonants at all, Arabic-speaking EFL learners typically epenthesize a short vowel into English syllables that have a syllabic consonant, which automatically renders that consonant non-syllabic. In the case of *faculty*, most students inserted /ʌ/ into the second syllable, and 16 students inserted /ɪ/. Now the syllable structure of the word has become thus: CV·CVC·CV. As in the case of *wonderful* above, the stress falls on the penultimate heavy syllable.

The same stress shift paradigm observed in *wonderful* and *faculty* can also be observed in *interval* /ˈɪn.tə.vl̩/. This word was pronounced /ɪnˈtʌr.vəl/ by more than two thirds of the students, and the others pronounced it /ɪnˈtɜ:r.vəl/. The syllable structure of the mispronounced word is thus: CV·CVC·CVC. Since the schwa nucleus of the penultimate syllable has been substituted by either /ʌ/ or /ɜ:/, this syllable is no longer 'unstressable,' and according to MSA phonology as is the case for *wonderful* and *faculty*, the penultimate heavy syllable in this polysyllabic word receives the stress. So far, it seems, the phonotactic rules of MSA are very much alive and kicking in stress assignment in English utterances spoken by Saudi EFL learners even at advanced levels of English proficiency.

The word *instinctive* /ɪnˈstɪŋk.tɪv/ and its derivative *instinctively* /ɪnˈstɪŋk.tɪv.li/, and the word *negative* /ˈne.gə.tɪv/ and its derivative *negatively* /ˈne.gə.tɪv.li/, highlight an interesting pattern in stress misplacement. *Instinctive* and *negative* were pronounced correctly by all participants; *instinctively* and *negatively* were pronounced incorrectly by all participants. In English phonology, adding the suffix -ly to a word does not affect stress assignment (Roach, 2009). However, Saudi learners would stress *instinctive* and *negative* correctly but shift the stress to the penultimate syllable in *instinctively* /ɪn.stɪŋkˈtɪv.li/ and *negatively* /ne.gəˈtɪv.li/. If we applied MSA rules of stress placement, it would dispel the confusion. The word *instinctive* is polysyllabic, with the syllable structure being VCC·CVCC·CVC. The students have stressed the penultimate syllable, which is in unison with the rules of Arabic phonology. The syllable structure of *instinctively* is VCC·CVCC·CVC·CV, and if Arabic phonotactics were applied, the stress should fall on the heavy penultimate, i.e. /ɪns.tɪŋkˈtɪv.li/. The word *negative* is a polysyllabic word, with the syllable structure being CV·CV·CVC. The penultimate is light and so cannot have the stress on it. That is probably why all students placed the stress on the antepenultimate, which happened to be the correct pronunciation. *Negatively* is a polysyllabic word, and the same rule that applied to *instinctively* applies here. That is why the participants placed the stress on the penultimate again.

3.4 Words with various stress placement (category 8)

Finally, words like *upgrade*, *import*, *decrease*, etc, which can be a noun or a verb depending on context, with a difference in pronunciation, were used in two different stimulus sentences each. In one sentence the word was used as a noun, in the other as a verb. However, nearly all students placed the stress exactly the same way in both sentences for these words. These words are disyllabic, and according to Rule 3 in Section 1.2, stress should fall on the second syllable here because it is superheavy. It seems that because the concept of stress shift changing the class of

a word does not exist in Arabic (stress in Arabic is non-phonemic after all), most of the respondents were unaware of the importance of stress placement in words in which the word-class was determined by the stress placement.

Based on the discussions above of all morph-syllabic variants (compound nouns; disyllabic words, including the contracted negative auxiliaries; polysyllabic words, including suffixed ones; and words with various stress assignments), the most interesting finding is that mostly whenever stress was misplaced, the same error was consistent in the pronunciation of nearly all the respondents who misplaced that stress. This stress misplacement was sometimes accompanied by one or more vowels being changed in the given word. It can be argued that this vowel change was triggered by stress misplacement as has been shown in the discussion above. In the current study, when a stress was misplaced in any of the 72 stimulus words by all or most of the respondents, this indicated that this stress assignment error is systematic in the pronunciation of English by Saudi learners, which could be used as evidence of influence of the learners' L1 phonology. A second finding was that this systematic misplacement of stress was evidently due to L1 influence whenever the syllable structure of a given English word happened to have a corresponding syllable structure in Arabic. Another finding is that stress was misplaced by all participants in all levels of English proficiency; however, whenever stress was placed correctly, this correct pronunciation came almost exclusively from amongst the 40 participants in the advanced level of English proficiency.

4. Conclusions

Although stress assignment in English speech by Saudi EFL learners may seem wildly erratic, it has been shown that those errors are actually systematic because they are mostly the outcome of L1 influence. There is a high degree of consistency with regards to stress misplacement in English words as spoken by Saudi learners. This is a clear example of negative L1 transfer as described in Ringbom (1992). However, it was not always easy to establish for certain for each individual case of stress misplacement whether it was triggered by crosslinguistic influence: sometimes the stress placement was vague, as no syllable was given any acoustic prominence over others, and sometimes the error was not uniform amongst all learners. Therefore, there is also an indication that not all stress misplacements in English by Arabic EFL learners can be attributed to L1 influence. It has also been shown that as learners' English proficiency improves, stress assignment errors are more likely to be rectified, at least partially.

Acknowledgments

This work was funded by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University.

Endnote:

[1] Following are the symbols that are going to be used in the present study and their implications: C for consonant; V for short vowel; VL for long vowel; Vd for diphthong; · a dot in the middle of the line marks syllable boundary in literal Roman alphabet spelling (e.g. pro·tec·ted); . a dot on the line marks syllable boundary in phonetic IPA spelling (e.g. /prəˈtek.təd/); ˈ is the stress mark (Syllable that follows this symbol has primary stress.) When stress mark is used, it also marks syllable boundary, making the dot as syllable boundary redundant.

[2] Available on https://dictionary.cambridge.org/

[3]A rhotic accent in English, e.g., American English and Canadian English, is one where the /r/ sound is heard in the pronunciation of a word whenever the letter *r* occurs in the spelling of that word. A non-rhotic accent, e.g., most accents in England and Australia, is one where the /r/ sound is sometimes heard, sometimes not, depending on the phonetic environment wherein it occurs (Roach, 2009).

Rami A. Sa'di (Corresponding author)
Prince Sattam bin Abdulaziz University
E-mail: slmss2002@yahoo.co.uk; r.alsadi@psau.edu.sa
ORCID: 0000-0002-6205-6144

Talha A. Sharadgah,
Prince Sattam bin Abdulaziz University
E-mail: yestalha@yahoo.com; t.alsharadgah@psau.edu.sa
ORCID: 0000-0001-6338-9605

Maha S. Yaseen,
Al-Ahliyya Amman University
E-mail: m.yaseen@ammanu.edu.jo
ORCID: 0000-0002-6719-4829

References

Alhawary, Mohammad T. (2011). *Modern Standard Arabic Grammar: A Learner's Guide*. Sussex, UK: Wiley-Blackwell.

Anani, Mohammad. (1989). 'Incorrect stress placement in the case of Arab learners of English'. *IRAL - International Review of Applied Linguistics in Language Teaching, 27*(1), 15-22.

Bouselmi, G., Fohr, D., & Illina, I. (2012). 'Multilingual recognition of non-native speech using acoustic model transformation and pronunciation modeling'. *International Journal of Speech Technology*, *15*(2), 203-213. https://doi.org/10.1007/s10772-012-9134-8

Collins, Beverley and Inger M. Mees. (2003), *The phonetics of English and Dutch*. Leiden, Netherlands: Brill.

Farrah, Mohammed and Nadia Halahlah. (2020). 'Pronunciation problems among Palestinian English major students in Hebron University'. *International Journal of Arabic-English Studies* (IJAES), *20*(1), 203-226. https://doi.org/10.33806/ijaes2000.20.1.11

Giegerich, Heinz. (1992). *English phonology: An introduction*. Cambridge: Cambridge University Press. doi:10.1017/CBO9781139166126.008

Goto, Hiromu. (1971). 'Auditory perception by normal Japanese adults of the sounds "L" and "R"'. *Neuropsychologia*, *9*(3), 317–323. https://doi:10.1016/0028-3932(71)90027-3

Halpern, Jack. (2009). 'Word stress and vowel neutralization in modern standard Arabic'. In *2nd International Conference on Arabic Language Resources and Tools* (pp. 1-7).

Han, ZhaoHong. (2004). *Fossilization in adult second language acquisition*. Clevedon, UK: Multilingual Matters Ltd. https://doi.org/10.21832/9781853596889

Karjo, Clara Herlina. (2016). 'Accounting for L2 learners' errors in word stress placement'. *Indonesian Journal of Applied Linguistics*, *5*(2), 199-208. https://doi.org/10.17509/ijal.v5i2.1344

Kim, Hyejeong and Rosey Billington. (2018). 'Pronunciation and comprehension in English as a lingua franca communication: Effect of L1 influence in international aviation communication'. *Applied Linguistics*, *39*(2), 135-158. https://doi.org/10.1093/applin/amv075

Ladefoged, Peter and Keith Johnson. (2014). *A Course in Phonetics*. Belmont, CA: Cengage Learning.

Lasagabaster, David and Juan Manuel Sierra. (2002). 'University students' perceptions of native and non-native speaker teachers of English'. *Language Awareness*, *11*(2), 132-142. https://doi.org/10.1080/09658410208667051

Lightbown, Patsy M. and Nina Spada. (2000). 'Do they know what they're doing? L2 learners' awareness of L1 influence'. *Language Awareness*, *9*(4), 198–217. https://doi.org/10.1080/09658410008667146

Mashaqba, Bassil, Anas Huneety, Nisreen Al-Khawaldeh and Baraah Thnaibat. (2021). 'Geminate acquisition and representation by Ammani Arabic-speaking children'. *International Journal of Arabic-English Studies* (IJAES), *21*(1), 219-242. https://doi.org/10.33806/ijaes2000.21.1.13

Mattys, Sven L. (2000). 'The perception of primary and secondary stress in English'. *Attention, Perception & Psychophysics*, *62*, 253–265. https://doi.org/10.3758/BF03205547

Munro, Murray J. (2018). 'How Well Can We Predict Second Language Learners' Pronunciation Difficulties?' *CATESOL Journal*, 30(1), 267-281.

O'Connor, Joseph Desmond (1998). *Better English Pronunciation*. Cambridge, UK: Cambridge University Press.

Ringbom, Hakan. (1992). 'On L1 transfer in L2 comprehension and L2 production'. *Language Learning*, *42*(1), 85-112. https://doi.org/10.1111/j.1467-1770.1992.tb00701.x

Roach, Peter. (2009). *English Phonetics and Phonology: A Practical Course*. Cambridge, UK: Cambridge University Press.

Robinson, Peter and Nick C. Ellis. (2008). *Handbook of Cognitive Linguistics and Second Language Acquisition*. Routledge. https://doi.org/10.4324/9780203938560

Ryding, Karin C. (2005). *A Reference Grammar of Modern Standard Arabic*. New York, NY: Cambridge University Press. https://doi.org/10.1017/CBO9780511486975

Shabani, Somayyeh and Iman Alipoor. (2017). 'The relationship between cultural identity, intrinsic motivation and pronunciation knowledge of Iranian EFL learners'. *International Journal of Education and Literacy Studies*, *5*(2), 61-66. https://doi.org/10.7575/AIAC.IJELS.V.5N.2P.61

Simonet, Miquel and Mark Amengual. (2020). 'Increased language co-activation leads to enhanced cross-linguistic phonetic convergence'. *International Journal of Bilingualism*, *24* (2), 208-221. https://doi.org/10.1177/1367006919826388

Silverman, Daniel. (2011). Schwa. In M. Oostendorp, C. J. Ewen, E. Hume, and K. Rice (Eds.), *The Blackwell Companion to Phonology* (pp.1-15). John Wiley & Sons, Ltd. https://doi.org/10.1002/9781444335262.wbctp0026

Thomson, Ron I. and Tracey M. Derwing. (2015). 'The effectiveness of L2 pronunciation instruction: A narrative review'. *Applied Linguistics*, *36*(3), 326-344. https://doi.org/10.1093/applin/amu076

Tsang, Art. (2019). 'The synergistic effect of phonology and songs on enhancing second/foreign language listening abilities'. *International Journal of Applied Linguistics*, *30*(2), 232-243. https://doi.org/10.1111/ijal.12276

Watson, Janet C. E. (2011). Word stress in Arabic. In Oostendorp, Van, M. Ewin, C. Hume, and K. Rice. *The Blackwell Companion to Phonology*, 1-29. https://doi.org/10.1002/9781444335262.wbctp0124