

**AN ANALYSIS OF YEMENI EFL
UNDERGRADUATES' PRODUCTION OF
ENGLISH LEXICAL STRESS**

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ENGLISH LEXICAL STRESS**

by

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LIST OF ABBREVIATIONS

CA	Contrastive Analysis
CLA	Classic Arabic
EFL	English Foreign Learners
F0	Fundamental Frequency
F1	Formant 1
F2	Formant 2
HA	Hadhramai Arabic
MT	Metrical Theory
QI	Quantity Insensitive
QS	Quantity Sensitive
STM	Stress Typology Model

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**ANALISIS PENGHASILAN STRES LEKSIKAL BAHASA INGGERIS
DALAM KALANGAN SISWA EFL YAMAN**

ABSTRAK

Tekanan leksikal bahasa Inggeris boleh menjadi ciri suprasegmental penting yang mengawal kebolehfahaman pertuturan bahasa Inggeris. Pelajar EFL sering mengalami kesukaran untuk mencapai penghasilan corak tekanan yang betul dalam bahasa Inggeris. Namun begitu, kajian terdahulu tidak menangani secara menyeluruh jenis kesilapan yang dilakukan oleh pelajar EFL Yaman semasa mencari suku kata yang ditekankan dengan betul atau isyarat fonetik mana yang paling sukar. Kajian ini menyiasat kesan pemindahan tekanan leksikal L1 dalam menghasilkan tekanan leksikal bahasa Inggeris oleh mahasiswa EFL Yaman yang bertutur dalam bahasa Arab Hadhrami (HA). Kesan panjang perkataan juga disiasat dalam perkataan bersuku kata dan trisuku kata. Kajian ini membandingkan penggunaan isyarat fonetik dalam menghasilkan kontras tekanan leksikal bahasa Inggeris oleh 10 penutur asli Amerika dan 69 pelajar EFL Yaman. Kajian ini mengguna pakai Teori Corak Bunyi Bahasa Inggeris, teori Metrik dan Model Tipologi Tekanan untuk menyokong asas penyelidikan ini. Kajian ini melaksanakan dua eksperimen pengeluaran menggunakan sesi rakaman untuk mengumpul data daripada sampel secara individu. Perisian PRAAT digunakan untuk mengukur perbezaan antara suku kata bertekanan dan tidak bertekanan menggunakan nisbah isyarat fonetik, iaitu, tempoh vokal, intensiti dan frekuensi asas (F0). Keputusan eksperimen pertama menunjukkan bahawa pelajar EFL Yaman menghadapi kesukaran dalam memberikan suku kata yang ditekankan. Walau bagaimanapun, ralat tidak boleh semuanya berkaitan dengan pemindahan tekanan leksikal HA. Berdasarkan penemuan, pelajar EFL Yaman menghadapi lebih banyak

kesukaran apabila suku kata terakhir terdiri daripada vokal tegang, menunjukkan pengurangan panjang vokal yang salah. Keputusan juga membayangkan bahawa pelajar EFL Yaman mengalami lebih banyak kesukaran dalam perkataan trisuku kata berbanding perkataan dissilabic. Mahasiswa EFL Yaman menghasilkan isyarat fonetik secara berbeza berbanding dengan penutur Amerika. Namun, keputusan menunjukkan bahawa mengisyaratkan suku kata yang ditekankan tidak boleh dibetulkan berdasarkan struktur dan kedudukan suku kata yang ditekankan. Dapatan kajian mempunyai implikasi pedagogi yang signifikan untuk pengajaran dan pembelajaran sebutan Bahasa Inggeris sebagai Bahasa Asing, khususnya dalam kalangan pelajar EFL Yaman. Guru boleh menggunakan arahan sasaran yang memfokuskan pada pola tekanan dalam perkataan dengan vokal tegang, mewujudkan kesedaran tentang cabaran panjang perkataan, dan menekankan isyarat fonetik seperti tempoh vokal, keamatan dan kekerapan asas. Penilaian boleh menentukan kesukaran individu, manakala kaedah pengajaran pelbagai mod, interaksi rakan sebaya, dan mekanisme penilaian dan maklum balas yang berterusan memastikan sokongan menyeluruh, membolehkan pelajar menguasai penghasilan tekanan leksikal bahasa Inggeris dengan berkesan.

AN ANALYSIS OF YEMENI EFL UNDERGRADUATES' PRODUCTION OF ENGLISH LEXICAL STRESS

ABSTRACT

English lexical stress can be an essential suprasegmental feature that controls English speech intelligibility. EFL learners often experience difficulties attaining the correct production of stress patterns in English. Nevertheless, prior research has not thoroughly addressed the types of errors Yemeni EFL learners make while correctly locating the stressed syllable or which phonetic cues are the most difficult. The present study investigated the effect of L1 lexical stress transfer in producing English lexical stress by Yemeni EFL undergraduates who speak Hadhrami Arabic (HA). The effect of word length was also investigated in disyllabic and trisyllabic words. This study compared the use of phonetic cues in producing English lexical stress contrasts by 10 American native speakers and 69 Yemeni EFL undergraduates. The study adopted the English Sound Pattern Theory, Metrical theory and the Stress Typology Model to underpin the grounds of this research. The study implemented two production experiments using recording sessions to collect data from samples individually. PRAAT software was used to measure the differences between the stressed and the unstressed syllables using phonetic cues ratio, namely, vowel duration, intensity and fundamental frequency (F0). Results of the first experiments show that Yemeni EFL undergraduates encounter difficulties in assigning the stressed syllable. However, errors cannot be all related to HA lexical stress transfer. Based on the findings, Yemeni EFL undergraduates encounter more difficulties when the last syllable consists of a tense vowel, indicating incorrect vowel length reduction. Results also imply that

Yemeni EFL learners experience more difficulties in trisyllabic words than disyllabic words. Yemeni EFL undergraduates produced the phonetic cues differently compared to American speakers. Yet, results indicate that cuing the stressed syllable cannot be fixed which is based on the structure and position of the stressed syllable. The study's findings have significant pedagogical implications for teaching and learning English pronunciation as a Foreign Language, particularly among Yemeni EFL learners. Teachers can employ targeted instruction focusing on stress patterns in words with tense vowels, create awareness of word length challenges, and emphasize phonetic cues like vowel duration, intensity, and fundamental frequency. Assessments can pinpoint individual difficulties, while multimodal teaching methods, peer interaction, and ongoing assessment and feedback mechanisms ensure comprehensive support, enabling learners to master English lexical stress production effectively.

CHAPTER 1

INTRODUCTION

1.1 Background

With the increasing demand for English as a Lingua-Franca, English EFL learners have become more attracted to mastering English pronunciation. However, EFL learners encounter many challenges pronouncing English language intelligibility (Jahara & Abdelrady, 2021). Pronunciation challenges can be attributed to the wrong production of segmental features (consonants and vowels) and suprasegmental features (rhythm, stress, intonation) of the English language (Al-Thalab et al., 2018; Ghosh & Levis, 2021). In an EFL setting, likely identification of English segmental pronunciation errors by EFL learners is a longstanding goal in teaching English pronunciation (Rehman et al., 2020).

English suprasegmental features play an essential role in English language pronunciation. However, these features are mostly ignored for various reasons, including lack of proper pronunciation practises in classrooms and the use of old teaching methods that focus more on grammar and translation (Nguyen, 2021; Maghrabi, 2021). As a result, a phenomenon known as foreign-accented speech is raised in this scenario, affecting speech intelligibility, and potentially causing communication breakdowns (Levis, 2018).

Recent studies have shown an increasing interest in the essential impact of English-intelligible speech on oral communication (Tuan, 2018; Ghosh & Levis, 2021). Since 1955, scholars have argued over the value of English stress patterns used by EFL learners in improving their understanding of English speech recognition (Koffi, 2021). Researchers concurred that diversity among languages' phonological

and phonetic systems is the source of the debate towards the significance of the stress patterns in enhancing intelligibility while speaking the English language (Fry, 1955; Ladefoged, 2001; Altmann, 2006; Tremblay, 2009; Zhang & Francis, 2010; Khazneh, 2015; Levis, 2018; Zuraiq & Sereno, 2021; Koffi, 2021).

English stress patterns can be manifested at lexical and sentence levels. At the lexical level, stress occurs when one syllable in a word becomes more dominant than the other syllables (Zurairq & Sereno, 2021). Such as the stressed syllable in the word *photograph*; the first syllable is more prominent than the other syllables. Cutler et al. (1997) state that lexical stress patterns are critical in word recognition and structure information. The same conclusion has been reached by subsequent investigations concluding that producing correct English stress patterns improves the comprehension and the intelligibility of the transmitted message and makes word recognition more accurate (Jenkins, 2002; Zhang et al., 2008; Khazneh, 2015; Tuan, 2018; Al-Thalab et al., 2018; Lee, Shin & Garcia, 2019; Levis, 2018; Saha & Mandal, 2018; Zurairq & Sereno, 2021).

Producing English stress patterns is a natural process for native speakers, which involves the realisation of one or multiple phonetic cues such as duration, intensity, fundamental frequency (F0) and vowel formants. However, studies reported that producing English lexical stress is challenging for English language learners, especially those who speak a language with fixed stress patterns in all words, such as Arabic (Khazneh, 2015; Helal, 2014; Zurairq & Sereno, 2021). Researchers have looked at how English lexical stress is acquired to gain a deeper knowledge of how EFL learners produce English lexical stress (Tuan, 2018; Saha & Mandal, 2018; Jaiprasong & Pongpairoj, 2020; Zurairq & Sereno, 2021).

By convention, the production of English lexical stress has been studied in contemporary linguistics through two disciplines: phonology and phonetics. Many longitudinal studies investigated the production of English lexical stress from phonological bases. That is to say, researchers from different language backgrounds attempted to examine the effect of the L1 phonological system on the production of English lexical stress (Ghaith, 1993; Youssef & Mazurkewich, 1998; Anani, 1989; Derwing & Rossiter, 2002; Eckman, 2003; Jun, 2005; Altmann, 2006; Major, 2008; Ernestus & Neijt, 2008; Jangjamras, 2011; Helal, 2014; Cheng & Zhang, 2015; Khazneh, 2015; Al-Khulaidi, 2017; Liu, 2017; Tuan, 2018; Jaiprasong & Pongpairoj, 2020). In particular, these previous studies concentrated on the differences between L1 and English stress patterns to predict EFL learners' challenges in producing English lexical stress patterns. Investigating the effect of mother tongue influence proposed some motivating understandings of the cross-linguistic influence on prosodic processing (Chrabaszcz et al., 2014). However, results cannot be generalized as each language has different phonological specifics. Therefore, the previous studies reported different challenges and recorded different performances produced by learners of the English language (Levis, 2018). Studies that used this paradigm tried to answer the issue of where EFL learners locate the primary stress in English speech at the word level. The fundamental issue examined earlier was the idea of stress being shifted to another syllable.

On the other hand, there has been less discussion about the production of English lexical stress at the phonetic level. Relatively, several studies attempted to determine the phonetic cues that learners of English rely on to encode the lexical stress in English speech and whether these correlates interfere with speech intelligibility and increase foreign accentedness (Zhang & Francis, 2010; Jung & Rhee, 2018; Saha &

Mandal, 2018; Modesto & Barbosa, 2019; Jeong et al., 2020; Zuraiq & Sereno, 2021). These studies utilized the phonetic software PRAAT to describe stress patterns acoustically by measuring each vowel's duration, intensity, pitch and fundamental frequency of syllables, and compared production of L1 learners to American native speakers' production of English stress pattern. Therefore, the previous findings showed different views based on the effect of the first language and the methods conducted in these studies. Aside from the work of Zuraiq and Sereno (2021), nothing was said regarding the use of English lexical and phonetic cues in the production of Arab EFL learners.

In both investigation paradigms, previous studies used production tasks to investigate the ability to produce English lexical stress by learners of English. However, most of these studies used acceptability ratings to reach the results at phonetic or phonological levels. That is to say, raters assessed data as they listened to the production of the samples (Cheng & Zhang, 2015; Khazneh, 2015; Al-Khulaidi, 2017; Liu, 2017; Tuan, 2018; Jaiprasong & Pongpairoj, 2020; Ali, 2021). Recent studies, however, implemented the analysis of acoustic measurement to understand the production of English stress patterns by EFL/ESL learners. Figure 1.1 summarises the perspectives used to analyse the production of English by speakers from different language backgrounds.

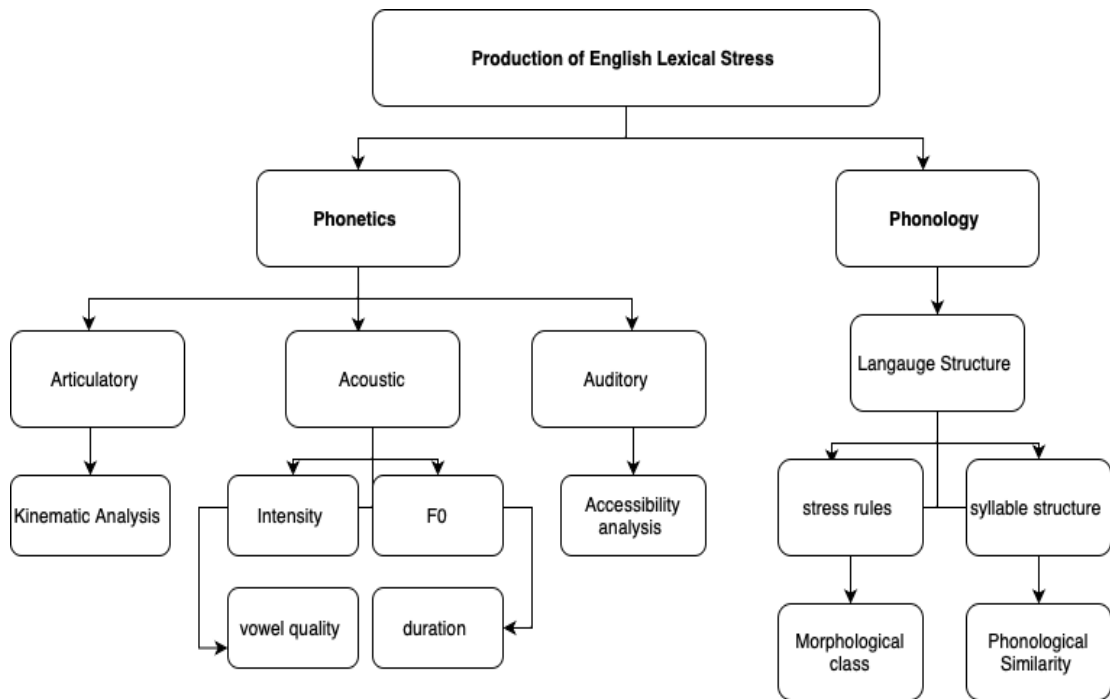


Figure 1.1 Perspectives of Analysing English Lexical Stress Production in Prior Research

The above illustration shows that previous studies have examined the production of the English lexical stress from different fields of language. Those studies that investigate the production of the English lexical stress from the phonological view focused on the structure of the of the language as in the studies of Al-Khulaidi (2017), Tuan (2018) and Maghrabi (2021). Yet, these studies conducted accessibility analysis to indicate the placement of the stressed syllable based on human judgements. Most of the studies in these paradigms also followed the linear phonology which has been criticised frequently in followed studies.

On the other hand, the studies that analysed the production of English lexical stress phonetically used acoustic analysis (e.g. Zuraiq & Sereno, 2021) and kinematic analysis (e.g. Li, 2023). The current study, however, investigate the production of English lexical stress by integrating both fields focusing in language structure and acoustical analysis.

1.2 Production of English Lexical Stress by Arab EFL Learners

The production of English lexical stress by Arab speakers has been a topic of interest among researchers for nearly three decades (Youssef & Mazurkewich, 1998; Zuraiq & Sereno, 2021). Based on online published studies, nearly 13 studies were carried out to investigate the production of English lexical stress by Arab speakers (Aziz, 1980; Anani, 1989; Younes, 1984; Ghaith, 1993; Youssef & Mazurkewich, 1998; Altmann, 2006; Helal, 2014; Almbark, 2014; Khazneh, 2015; Al-Khulaidi, 2017; Zuraiq & Sereno, 2021; Ali, 2021; Maghrabi, 2021). The focus of these studies was the location of primary stress at the phonological level. Most of these researchers testified a profound relationship between the learners' ability to acquire English lexical stress and the Arabic language stress pattern system. The evidence for this relationship is highly regarded as Arabic-specific interference in transferring stress rules from Arabic to English lexical stress production.

English and Arabic are both classified as stress-timed languages (Sandouka & Alotaibi, 2021), and each language has its specifics that differentiate the English language from Arabic. Thus, researchers reported that errors increase in the production of English lexical stress when differences exist. However, the English language stress rules are neither predictable nor fixed (Levis, 2018). There are no simple rules or regularities to account for which syllable will receive the primary stress in a single word in English (Levis, 2018). By contrast, stress patterns in Arabic are fixed and regular based on the structure of syllables (Al-Thalab et al., 2018; Albadar, 2019; Zuraiq & Sereno, 2021). That is to say, the existence of similarity between English and Arabic stress pattern will not always occur in all English words. Therefore, similarity might also cause difficulty and confusion for Arab learners producing English stress patterns successfully. For example, syllable structures such as CVCC at the final

syllable (ultimate) do not always attract the primary stress in English words like *almond* /'ɑ:l.mənd/ and *convince* /kən'vɪns/, on the other hand, falling stress at the ultimate syllable that consists of consonant, vowel and consonant cluster CVCC (heavy syllable) is a fixed rule in the Classical Arabic language. Therefore, Khazneh (2015) classified CVCC as a significant problem for Syrian EFL learners because of transferring the Arabic rule from Arabic to English speech.

Furthermore, English lexical stress has a contrastive function, which means that changing the place of the primary stress in some English words indicates a different meaning (Levis, 2018). For example, the word *present* is a noun /'prez. ənt/ has a different meaning when the location of the primary stress changes to the final syllable, as in the verb /pri'zent/. By contrast, stress pattern is not contrastive in the Arabic language; however, it is attracted by a heavy syllable that contains a tense vowel (long or a diphthong) or a close syllable such as CVV/ CVC/CVVC/ CVCC structure (Khazneh, 2015; Zuraiq & Sereno, 2021).

The studies mentioned above addressed the questions of the extent to which Arab EFL learners are influenced by their L1 in producing English lexical stress. This issue has been widely investigated within the frameworks of linear phonology following the grounds of the Contrastive Analysis Hypothesis (Lado, 1957). Until 2021, researchers state that EFL Arab learners have the tendency to produce the English primary stress at the penultimate (the first syllable in disyllabic words) stress or the antepenultimate (the syllable before the penultimate in polysyllabic words). Thus, Al-Khulaidi (2017) and Maghrabi (2021) reported that Arab EFL learners assign the English primary stress at the penultimate stress even in words that contain two tense vowels, like the word *rotate* /rəʊ'teɪt/.

On the other hand, other scholars in phonetics and phonology criticized the assumption of linear phonology because it could not explain all stress patterns of language. In contrast, non-linear phonology was developed in the framework of Metrical Theory by Liberman and Prince (1977) and Hayes (1995). Researchers argued that Metrical Theory can explain the unpredictable stress pattern of English and how EFL learners may encounter such challenges through L1. Few studies have adapted the framework of the Metrical Theory to predict the difficulties that Arab EFL learners encounter in English lexical stress. Helal (2014) and Khazneh (2015) reported that errors in English stress patterns are related to the parameter of quantity-sensitivity (weight of a syllable) that English and Arabic have, yet it is fixed in Arabic and unpredictable in the English language. Thus, Khazneh (2015) reported that most Syrian Arab EFL learners could shift the primary stress of English to the second, which contradicted the results of Maghrabi (2021).

In fact, stress location and quantity sensitivity correlate. That is to say, the first parameter does not occur unless quantity sensitivity is achieved (Garcia, 2019). Yet, this idea is mostly ignored among researchers, especially those investigating the production of English stress patterns by Arab EFL learners. Researchers tend to focus more on the position of stress and disconnect these two parameters from each other (Helal, 2014; Almbark, 2014; Khazneh, 2015; Al-Khulaidi, 2017; Zuraiq & Sereno, 2021; Ali, 2021; Maghrabi, 2021).

Based on the Stress Typology Model (STM) by Altmann and Peperkamp (2002), Arab speakers will encounter more difficulties identifying the correct placement of lexical stress. However, Altmann (2006) suggested studying the production of the English lexical stress by Arabic speakers using nonce words that consist of closed and open syllables. That is because the Arabic language extensively

allows closed syllables. Yet, Altmann (2006) used stimuli with only open syllables to ensure the phonetic constraints of the languages examined in the study of Altmann (2006).

The earlier studies have examined the production of English lexical stress by Arab EFL learners using real English words produced by a small number of participants (Anani, 1989; Younes, 1984; Ghaith, 1993; Youssef & Mazurkewich, 1998). Khazneh (2015) explained that a small sample size might reduce the generalizability of the findings. Al-Thalab et al. (2018) indicated that it is necessary to use a nonce (unreal) and unfamiliar real word as stimuli to investigate the prosodic structure underlying stress placement in English. After Altman's (2006) study, reliable studies have been conducted to investigate the perceptual ability of English lexical stress by Arab learners (Al-Thalab et al., 2018; Albadar, 2019). On the other hand, the recent studies that examined the production of English lexical by Arab speakers replicated the old methods that have frequently been criticized for using small sample sizes, real English words.

Noteworthy, previous research on this subject focused on the effect of Arabic stress rules that focus on the pattern of the syllable structure and its influence in changing the placement of the English primary stress. However, Arabic speakers' production of English lexical stress cannot be merely seen through Arabic stress and syllable pattern rules. The nature of English lexical stress is controlled by several factors rather than the English stress system. Factors such as the acoustical cues of Arabic, word length, language proficiency, and exposure to English phonetic rules have an essential impact on altering the placement of English lexical stress produced by Arab learners (Ernestus & Neijt, 2008; Levis, 2018; Al-Thalab., 2018; Ghosh & Levis, 2021). Despite that, there has been little investigation regarding how Arab EFL

learners encode the phonetic measurement to produce English stress patterns as affected by the Arabic acoustical cues, word length and language proficiency effect in the production of the lexical stress by Arab ESL/EFL learners.

According to scholars Guion et al. (2003), Levis (2018), and Ghosh and Levis (2021), vowel quality and word length are additional characteristics that impact English stress rules. However, these findings are contradictory and very little is known about them in the literature. Guion et al. (2003) indicated that word length is a factor that can change English stress patterns, which might confuse EFL learners when pronouncing English lexical stress. Furthermore, Ghosh and Levis (2021) assigned the effect of changing vowel quality as the most crucial parameter to change the location of stress. However, most researchers focus on the structure of the syllable, which is not always the indicator of stress among world languages and between dialects in the Arabic language in specific.

Within the context of Yemen, little has been mentioned about the production of English lexical stress by Yemeni learners. The latest study was carried out by Al-Khulaidi (2017), who studied the production of English lexical stress by Yemeni speakers. Through the underpinning of the Contrastive Analysis framework, Al-Khulaidi (2017) tested the pronunciation of learners who live in Ibb city. This study focused on how Yemeni speakers assign the primary stress in English words that consist of suffixes and prefixes. Al-Khulaidi (2017) stated that Yemeni learners face many challenges in producing primary English stress in English words. According to the findings of Al-Khulaidi (2017), errors in English lexical stress are related to the influence of the Arabic language on the production of Yemeni EFL learners who tend to emphasize the first syllable.

Nevertheless, Al-Khulaidi (2017) used only 10 participants in his study and tested the production of real English words that were familiar to the participants' knowledge. In addition, the analysis of English lexical stress was done purely based on the auditory impressions of the researcher himself. In other words, the researcher listened to the recorded data and assigned the stressed syllable accordingly, which decreased the validity and increased the bias in the study.

There has been no reliable evidence that clarifies how Arab EFL learners produce English lexical stress acoustically using phonetic cues measurements other than the study of Zuraiq and Sereno (2021), who studied the effect of grammatical class in changing the location of the English primary stress in 8 minimal pairs. Thus, more research is needed to understand the location of the primary stress and the quantity sensitivity based on the quality of the vowels and the phonetic cues, namely duration, intensity and fundamental frequency (F0).

Furthermore, few recent studies examined the effect of specific Arabic dialects over the effect of Standard Arabic on acquiring English lexical stress. Meanwhile, dialectal variances exist among Arabian regions. Almbark et al. (2014) explained that the acoustic cues of stress patterns could differ in some Arabic variations. Therefore, it is more reliable to investigate the participants' dialectal backgrounds to understand the effect of L1. Indicating a syllable as light, heavy or super heavy also exists between Arabic dialects, which may induce different results in stressing English syllables (Al-Thalab, 2018). Thus, few studies regarding the production of English stress by Arabic speakers from different dialectical backgrounds, particularly Baghdadi Iraqi, Carian Egyptian, and Tunisian dialects (Helal, 2014; Ali, 2021; Zuraiq & Sereno, 2021; Koffi, 2021). Most Arabic dialects share the same syllable structure as Classical Arabic and are quantity sensitive. However, syllable patterns and quantity sensitivity differ in

some Arabic dialects due to the regional and traditional differences in Baghdadi, Meccan, and Hadhrami dialects (Bamakhramah, 2010; Watson, 2011; Al-Thalab, 2018).

Furthermore, the acoustic correlates of stress differ between the Arabic dialects (Almbark et al., 2014). The study investigates the Yemeni EFL undergraduates who speak the Hadhrami Arabic dialects, which is distinguished by specific characteristics that may have an effect in altering the location of the stress, therefore, understanding the phenomenon of stress in depth. The analysis was based on the effect of the Hadhrami Arabic to induce more accurate results.

1.3 Teaching English Pronunciation in Yemen

One of the aims of teaching English at Yemeni schools and universities is to develop the communicative competence in which students can express themselves orally and fluently inside and outside classrooms (Al-Tamimi, 2014; Bin-Hady, 2016). However, the importance of teaching English pronunciation represents overall neglect that has been reported not only in teaching English in classroom settings but also in teachers' and students' perceptions and cognition (Al-Tamimi, 2014; Bin-Hady, 2016; Asaad, 2019). Previous studies have approved this neglect as one of the main reasons for Yemeni EFL learners' incompetence to produce English segmental and suprasegmental features (Bataineh, Thabet & Bataineh, 2011; Al-Ageeli, 2013; Motair & Abdulwahab, 2018).

The Ministry of Education in Yemen has adopted different teaching methods to develop the English competence of Yemeni students (Asaad, 2019). This attempt was made by changing the English textbooks based on the Communicative Competence Approach. The developmental aspects that the Yemeni Ministry of

Education sought to improve the pronunciation of the English language to encourage students to be engaged in oral communication, interact, and participate in communicative classroom activities (Ahmed, 2018). For example, the teacher's book emphasizes practising speaking skills using different activities. However, the method of teaching the English language in Yemen is teacher-centred (Bin-Hady & Al-Tamimi, 2021). Although the textbook used to teach English in Yemeni schools has been designed based on the communicative language teaching approach, teachers have been following the old-fashioned method of teaching English, especially grammar. Speaking skills are taught to Yemeni students using explicit rules separately, repeating words and sentences after teachers. Bin-Hady and Al-Tamimi (2021) testify that oral English communication breakdown can also be related to the teachers' failure to practice pronunciation and speaking classroom goals that are insufficiently limited in the Yemeni English textbooks.

Furthermore, Yemeni teachers focus on the English structures and rules rather than the English language functions in real-life communication (Ahmed, 2018). Researchers such as Asaad (2019) and Thabet (2002) have pointed out the reasons behind the dominance of structure-based methods. Among these reasons is the general lack of knowledge of the teaching English language methods and the principles of communicative language teaching (CLT). Other reasons can also be attributed to teaching English speaking skills, such as using poor traditional teaching methods, large classes, the low motivation of students to learn English, and limited teaching materials (Ahmed, 2018).

With respect to English lexical stress production, the Yemeni Ministry of Education has taken no policies to address issues related to the production or perception of English lexical stress (Al-Shamiry & Alduais, 2013; Ahmed, 2018).

Furthermore, the Yemeni English primary and secondary textbooks do not provide lessons related to primary and secondary stress in English words (Al-Shamiry & Alduais, 2013; Al-Khulaidi, 2017; AlAhmed, 2018). However, English stress patterns are given to undergraduate students of English department in a few lessons in phonology and phonetics courses. Yet, there is a lack of practising the production of English lexical stress inside classrooms (Al-Shamiry & Alduais, 2013; Al-Khulaidi, 2017; Ahmed, 2018).

According to Ahmed (2018), the condition of teaching English language in Yemen can be regarded as the tendency to follow the old-fashioned method of teaching English, especially grammar. In addition, the types of instructions set for English-speaking classes frequently contemplate artificial objectives that demand more attention to the grammatical aspects, which are rarely needed in daily life (Bin-Hady & Al-Tamimi, 2021). As a result, studies reported that Yemeni students could identify grammar accurately but failed to express themselves orally (Assad, 2019; Bin-Hady & Al-Tamimi, 2021).

This condition is also common among the Yemeni undergraduates who live in Hardhamout district, Mukalla city, Yemen. Hadhramout University students must pass eight semesters to get a degree in the English language. In the first year, students start to learn the English language's pronunciation in listening and speaking courses. Teachers expose students to the English language in these courses through authentic videos and audio. In the second year, students learn an introduction to linguistics, in which phonetics and phonology are a chapter in this course. In the third year, students have a phonetics and phonology course, in which rules and patterns of the English lexical stress are slightly introduced in some lessons. In the last year, students got involved in other courses to develop English competence in general.

1.4 Problem Statement

Researchers from all over the world have speculated on the significance of the stress pattern in English speech (Fry, 1955; Ladefoged, 2001; Altmann, 2006; Tremblay, 2009; Zhang & Francis, 2010; Khazneh, 2015; Levis, 2018; Zuraiq & Sereno, 2021; Guo, 2022). According to their findings, mastering the production of English stress patterns improves the intelligibility of English oral communication. Nonetheless, many EFL learners face numerous challenges in producing English lexical stress correctly, which affects their speaking competence and comprehension (Laredj & Fiala, 2018; Jung & Rhee, 2018; Saha Mandal, 2018; Ali, 2021; Zuraiq & Sereno, 2021).

Yemeni Arab EFL students, among them, face difficulties in producing clear and accurate English pronunciation (Al-Tamimi, Abdullah & Bin-Hady, 2020). This condition becomes more prevalent when producing the English suprasegmental features, especially in producing English lexical stress. According to Al-Khulaidi (2017), the wrong placement of lexical stress is one of the reasons for the unintelligibility of English speech in Yemeni EFL learners. This issue poses a significant challenge for Yemeni EFL learners, resulting in communication breakdowns when communicating with speakers from different language backgrounds (Al-Khulaidi, 2017; Motair & Abdulwahab, 2018; Al-Tamimi, Abdullah & Bin-Hady, 2020).

The phonological impact of the Arabic phonological system on the production of English stress patterns has been a focal point in research on English lexical stress production by Arab EFL learners (Ghaith, 1993; Youssef & Mazurkewich, 1998; Anani, 1989; Helal, 2014; Khazneh, 2015; Laredj & Fiala, 2018; Ali, 2021).

Researchers have primarily focused on the patterns of syllable structure, exploring how these influence the placement of primary stress in English words as influenced by Arabic syllabic rules. In Arabic, syllable structure and its weight serve as crucial determinants that influence the location of primary stress (Levis, 2018; Ali, 2021). In English, syllables are considered 'heavy' if they contain a long vowel or are closed by a consonant or consonant cluster (Levis, 2018). However, this rule does not consistently apply to all English words, leading to potential confusion for Arab EFL learners. For example, words like 'almond' /'ɑ:.mænd/ and 'attend' /ə'tend/ both have a final syllable structure of CVCC, which is 'heavy' in 'attend' but 'light' in 'almond.' Arab EFL learners may struggle when English primary stress falls on syllable structure patterns that appear 'heavy' but remain unstressed.

While there has been an attempt to identify areas of difficulty faced by Arab EFL learners when producing English lexical stress, prior research findings have been inconsistent. Predictability of Arabic stress patterns may suggest that Arab EFL learners would consistently struggle with English stress patterns differing from Arabic (Aziz, 1980; Anani, 1989; Younes, 1984; Ghaith, 1993; Youssef & Mazurkewich, 1998; Altmann, 2006; Al-Khulaidi, 2017; Ali, 2021; Maghrabi, 2021), contradictory results have emerged in studies conducted by Helal (2014), Almbark (2014), and Khazneh (2015). This debate has arisen due to researchers explaining English stress pattern difficulties from two phonological perspectives: linear and non-linear phonology. Both paradigms offer valuable insights into the challenges of English lexical stress acquisition, and it is essential to consider other factors that may contribute to the complexities faced by Arab EFL learners when trying to master English lexical stress patterns. However, this aspect has not been adequately addressed in the existing literature on Arab EFL learners' studies. Despite the need to investigate

the production of phonetic cues by Arab EFL learners, researchers from various contexts have emphasized the importance of studying the dialectal variation among participants involved in lexical stress production studies (Kallio & Suni, 2021; Guo, 2022). Different regional dialects may manifest distinct phonological systems, which can lead to varying research findings.

The present study takes a closer look at the production of English lexical stress by Yemeni EFL undergraduates who speak Hadhrami Arabic (HA). While HA and English share some similarities in stress and syllabic patterns, they also exhibit differences. For example, both languages have words with the syllable pattern CV.CVC.CVC where primary stress falls on the penultimate syllable (e.g., 'reception' in English and /ʃaː.híb.kum/ 'your friend' in HA). However, stress patterns can differ based on syllable structure. For instance, in English, 'reception' is stressed on the penultimate syllable, while in HA, 'ʃaː.híb.kum' is stressed on the ultimate syllable. This difference can also be observed in other syllabic patterns, such as CV.CVV.CVC, CCV.CV.CVVC, CCV.CVC, CVC.CV, and CVV.CVC. These similarities and variations lay the foundation for investigating how Yemeni EFL learners who speak HA approach the production of English lexical stress.

Within the framework of Metrical Theory, HA permits extrametrical syllables, which differs from other Arabic dialects that have been studied in the context of lexical stress production by Arab EFL learners, as seen in the works of Helal (2014) and Khazneh (2015). Extrametrical syllables in English are assumed to pose challenges for Arab EFL learners in accurately assigning stressed syllables. In HA, the ultimate syllable with tense vowels is always stressed, regardless of the presence of tense vowels in other syllables at the word level. This fixed rule in HA may further complicate stress assignment. Consequently, this study aims to highlight these

potential challenges and assess their implications, potentially contributing to the understanding of the premises of Metrical Theory.

According to the Stress Typology Model, learners may find it challenging to produce forms in the target language that do not exist in their L1. Therefore, it is hypothesized that Yemeni EFL learners, especially those who speak HA, might encounter difficulties in producing English lexical stress, particularly in words containing the CVCC pattern. Additionally, the stress in HA is not solely determined by the syllabic pattern but also by the presence of tense vowels (Belleswed & Alfadly, 2021). When tense vowels exist in the ultimate syllable in HA, stress occurs there, regardless of the syllable structure of other syllables. However, many past studies have reported that Arab EFL learners often assign stress to the initial syllable in disyllabic words when two vowels are present (Maghrabi, 2021). Investigating these issues could provide insights into the challenges Yemeni EFL learners face and the reasons behind potential errors in lexical stress placement.

In addition to the influence of L1, the current research delves into the production of phonetic cues such as duration, intensity, and fundamental frequency (F0) in English lexical stress production. Despite their potential significance in speech intelligibility and language processing, these cues remain underexplored in the context of Arab EFL learners (Zhang & Francis, 2010; Jung & Rhee, 2018; Saha & Mandal, 2018; Modesto & Barbosa, 2019; Jeong et al., 2020; Zuraiq & Sereno, 2021; Koffie, 2021).

Studies investigating the production of English lexical stress by Arab learners of English have been limited, with Zuraiq and Sereno (2021) conducting one of the few comprehensive studies examining the phonetic cues produced by Arab Jordanian

learners of English. Their findings revealed that although Arab Jordanian learners produced stressed syllables with longer vowel duration, greater vowel intensity, and higher F0, the produced ratios of phonetic cues differed from those of native speakers, potentially exacerbating difficulties in producing English lexical stress. Given the dearth of research in this area, it is essential to investigate how Arab EFL learners produce phonetic cues when attempting to master English lexical stress, particularly in words with more than two syllables.

English word length is another factor influencing the position of primary stress (Levis, 2018). Prior research by Ernestus and Neijt (2008) indicated that word length could change the location of primary stress in English words. Additionally, Levis (2018) emphasized the significant role of word length in determining the position of primary stress in English words. However, little is known about the impact of word length on the production of English lexical stress by non-native speakers, especially Arab EFL speakers. This study aims to shed light on whether word length significantly affects the placement of primary stress in English lexical stress, both in disyllabic and trisyllabic words, using both real and nonce root words. Investigating the effect of word length can provide valuable insights into the potential areas of difficulty faced by EFL learners in the production of English lexical stress.

In conclusion, although English stress patterns are pivotal for speech intelligibility and comprehensibility, research regarding the production of English lexical stress by Arab EFL learners, particularly Yemeni EFL learners, is notably limited. Previous studies have primarily focused on the influence of L1, while other factors affecting the location of primary stress and quantity sensitivity, as suggested by Levis (2018), have yet to be fully explored. Therefore, this study aims to investigate the effect of stress rules, phonetic cues, and word length on the production of English

lexical stress. Moreover, the study seeks to extend the exploration by conducting precise measurements through PRAAT software, providing in-depth insights into the genuine challenges impacting the production of English lexical stress by Yemeni EFL undergraduates. The anticipated results may have profound pedagogical implications that emphasize difficulties arising from the existence of tense vowels rather than syllable structure patterns.

1.5 Objectives of the Study

The current research aims at analysing the effects of Hadhrami Arabic stress pattern in the production of the English lexical stress by Yemeni EFL undergraduates at the phonological and phonetic levels. More specifically the study aims at;

- 1.5.1 Analysing the effect of Hadhrami Arabic stress patterns in the production of the English lexical stress by Yemeni EFL undergraduates at the phonological level.
- 1.5.2 Investigating if there is any effect of word length on assigning the stressed syllable when producing the lexical stress by Yemeni EFL undergraduates.
- 1.5.3 Identifying the differences in utilising the phonetic cues in the production of English lexical stress by Yemeni EFL undergraduates and American speakers in disyllabic words.
- 1.5.4 Identifying the differences in utilising the phonetic cues in the production of English lexical stress by Yemeni EFL undergraduates and American speakers in trisyllabic words.

1.6 Research Questions of the Study

The current study addresses five questions to achieve the objectives of the study, which are:

- 1.6.1 How do Hadhrami Arabic stress patterns affect the production of English lexical stress by Yemeni EFL undergraduates at the phonological level?
- 1.6.2 Is there any significant effect of word length in assigning the English primary stress by Yemeni EFL undergraduates?
- 1.6.3 Are there any significant differences in utilising the phonetic cues to assign the English lexical stress in disyllabic words produced by Yemeni EFL undergraduates and American native speakers?
- 1.6.4 Are there any significant differences in utilising the phonetic cues to assign the English lexical stress in trisyllabic words produced by Yemeni EFL undergraduates and American native speakers?

1.7 Significance of the Study

The significance of understanding the production of English lexical stress by Yemeni EFL undergraduates lies in its potential to contribute to various areas of linguistics, language education, and cross-cultural communication. This research seeks to explore the challenges Yemeni EFL learners face when acquiring English lexical stress patterns, focusing on the utilisation of phonetic cues in disyllabic words and comparing their performance to American native speakers. This in-depth investigation touches upon several aspects that make it significant and relevant.

One of the primary contributions of this study is its potential to enhance language education for Yemeni EFL learners. By identifying the specific challenges faced by Arab EFL learners, especially Yemeni learners who speak the HA, in acquiring English lexical stress. Teachers can develop more effective teaching methods and materials tailored to their needs. This approach acknowledges the unique linguistic background and learning hurdles of Yemeni EFL learners, ultimately leading to improved language proficiency.

This research adds to the body of knowledge in phonetics and phonology in several ways. The study delves into the cross-linguistic differences between Arabic and English stress patterns. Yemeni EFL learners often come from a background where Arabic has predictable stress patterns, while English exhibits variable stress. Investigating how learners from stress-predictable languages adapt to the variable stress patterns of English expands our understanding of cross-linguistic phonological acquisition. Understanding the use of phonetic cues in assigning English lexical stress is not only important for language education but also for phonological research. This research offers a perspective on how native speakers and non-native speakers employ these cues. It contributes to the broader discussion on phonological acquisition and the role of phonetic cues.

Studying the effect of word length on lexical stress placement adds depth to the study of phonology. Investigating how word length influences stress patterns in both disyllabic and trisyllabic words contributes valuable insights to phonological research, shedding light on a previously underexplored area. The study also has implications for improving intercultural communication. Understanding the challenges Yemeni EFL learners face in producing English lexical stress can lead to enhanced intelligibility in cross-cultural communication. When Yemeni EFL learners

can better navigate English stress patterns, interactions between English and Arabic speakers, particularly those from the Hadhrami Arabic dialect, can become smoother and more effective. Teachers can benefit significantly from the findings of this research. By identifying stress-related difficulties specific to learners' L1, teachers can adapt their teaching strategies. This tailored approach addresses the unique needs of Yemeni learners, ultimately improving their overall English language proficiency.

The investigation into phonetic cues utilization by Yemeni EFL undergraduates and American native speakers provides a deeper understanding of stress perception and production variations. These insights can extend beyond the current study, applying to other linguistic contexts and languages. The research can pave the way for future studies that explore phonetic cues across diverse linguistic backgrounds. The analysis of extrametrical syllables in Hadhrami Arabic and their impact on stress placement holds potential implications for Metrical theory. It may provide support for or challenge existing theoretical premises, contributing to advancements in metrical phonology. This adds a theoretical dimension to the research's significance.

In summary, this research on English lexical stress production by Yemeni EFL undergraduates is highly significant. It transcends language acquisition and education, offering insights into phonological and cross-cultural communication aspects. It provides a foundation for more effective language instruction, fosters a deeper understanding of how linguistic backgrounds influence stress perception and production.

1.8 Scope and Limitation

With regard to scope of the study, the current study focuses on Yemeni EFL undergraduates who speak Hadhrami Arabic (HA). These participants are enrolled in English language programs at a Yemeni university and have varying proficiency levels in English. The primary scope of this research is the phonological analysis of English lexical stress production. It explores how Yemeni EFL learners assign stress in disyllabic words, examining their use of phonetic cues (duration, intensity, and fundamental frequency) and the influence of word length.

The study compares the performance of Yemeni EFL undergraduates to American native speakers. This comparative analysis helps identify differences in stress production. The investigation includes disyllabic and trisyllabic words with different syllable structures to assess stress patterns. This allows for a more comprehensive analysis of stress placement. Furthermore, Phonetic cues are measured using PRAAT software to provide precise measurements. The study includes acoustic analysis to assess vowel duration, intensity, and fundamental frequency.

However, the study also holds some limitation due to practical constraints, the sample size of Yemeni EFL undergraduates may be limited. While efforts will be made to ensure representative sampling, the results may not generalize to all Yemeni EFL learners. The study includes participants at both intermediate and advanced English proficiency levels. However, it does not cover beginners or learners at other proficiency stages, which could yield different results.

In addition, the research focuses on Hadhrami Arabic speakers. While this dialect is representative of Yemeni Arabic, other Arabic dialects may exhibit different patterns of English stress production. While acoustic analysis using PRAAT software