

Problematic Arabic Consonants for Native English Speakers: Learners' Perspectives

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Abstract – This paper examines the awareness and perceptions of 107 adult native English speakers residing in the US regarding the importance and difficulty of Arabic consonant phonemes in both perception and production, as well as their beliefs about the essential factors in the acquisition of Arabic consonant sounds. All subjects completed a questionnaire that included three main sections on their background information, awareness and beliefs. Findings show that learners tend to consider Arabic as an important language with a number of difficult consonant sounds. While the pharyngeal and the pharyngealized consonant phonemes are found to be difficult to perceive and produce, all learners consider the fricative pharyngeal-glottal phoneme contrast to be the most difficult Arabic consonant contrast to acquire. It is also found that learners believe individual motivation, conduct with native speakers, and listening to the radio and television are the most influential factors in the acquisition of Arabic consonants. However, the other individual abilities such as ability to mimic and musical ears are reported to be less effective factors. Insights, implications of the results, and directions for future research are provided.

Keywords: Arabic language; consonants; second language contrastive phonemes; learners' perspective; influential factors

I. INTRODUCTION

Adult second language (L2) learners commonly aim at reaching nativelike proficiency in terms of accuracy and fluency where their speech is indistinguishable from that of native speakers of the target L2 language. But it turns out that this objective can rarely be met by L2 learners whose speech is typically recognized as accented speech that is sometime incomprehensible and requires extra efforts to be comprehended (Flege, 1987; Flege, 1989). The issue of L2 accented speech is thoroughly explored in second language acquisition (SLA) research in an attempt to uncover the actual trigger of its ambiguous persistence (Major, 1987; Yang, Robb, Gilbert, & Leman, 2001). In this regard, research on accentedness in L2 speech have identified a number of factors that may influence the intelligibility of L2 speech such as first language (L1) interference (Flege, 1995; Werker & Polka, 1993; Ingram & Park, 1997; Baker & Trofimovich, 2000), learners' motivation towards the target language (Dörnyei, 1998; Gardner & MacIntyre, 1991; Skehan, 1991), the amount of exposure to an L2 (Flege, Mackay, &

Meador, 1999; Munro, Flege, & MacKay, 1996; Senel, 2006), the length of residence in an L2 setting (Flege, Bohn, & Jang, 1997; Flege & Liu, 2001) and learners' age (Baker, 2010; Mackay, Flege, & Imai, 2006; Patkowski, 1990; Wong, 1987).

Despite the evidence for the importance of segmental sounds (i.e., vowels and consonants) that constitute essential units of speech production, researchers have underlined the significance of consonants especially at early stages of word recognition (Berent & Perfetti, 1995; Lee, Rayner, & Pollatsek, 2001). That is, it is difficult for many very early L2 beginners to detect words correctly without consonants that have advantage over vowels as they are found to be more significant in the lexical encoding of novel L2 words (Bonatti, Peña, Nespors, & Mehler, 2005; Fogerty & Humes, 2010; Mehler, Peña, Nespors, & Bonatti, 2006; Nespors, Peña, & Mehler, 2003). Nevertheless, many studies have demonstrated that consonants are more difficult to produce than vowels (Caramazza, Chlhalant, Capasso, & Miceli, 2000). For instance, Kharma & Hajjaj (1989) argue that the unintelligibility of L2 speech can be caused by learners' inability to correctly produce novel L2 consonants. In addition to research on L2 learners' acquisition of individual consonants, learners' struggle to discriminate nonnative consonant contrasts is well documented. For example, the English /l-r/ contrast has been shown to pose a difficulty for Japanese learners of English who may not be able to differentiate the words 'right' and 'light' (Aoyama, Flege, Guion, Akhahane-Yamada, & Yamada, 2004). This reality resulted in a number of empirical studies evaluating the degree of difficulty with nonnative consonant phonemes. Most studies have mainly focused on exploring the acquisition of English consonants by learners from different L1 backgrounds such as Chinese (Flege, 1989; Xiaoyan, 2013), Greek (Callan, Gallois, & Forbes, 1983), Japanese (Guion, Flege, Akahane-Yamada, & Pruitt, 2000) and Spanish (Flege & Fletcher, 1992). Conversely, less attention is paid to less commonly taught languages that have been fairly examined such as Arabic, more specifically Modern Standard Arabic (MSA), which is the language of interest in this paper. While MSA is the formal language throughout the Arab world whose speakers exceed 422 millions residing in 22 countries (Nydell, 1996), there are a number of spoken colloquial varieties that widely vary from one region to another and are primarily spoken in informal daily settings, such as shopping and with friends. The significance of Arabic is not less than that of English as indicated by Dahbi (2004) who says that:

“Like English, Arabic is very much a global phenomenon today not only because it is the language of Arab countries but also, and more importantly, because it is the language of Islam, another global phenomenon that covers a much larger part of the world and that seems to be making headway in regions where it was completely absent a few decades ago”. (p. 630)

Furthermore, with the growing importance of the Middle East in international affairs, Arabic is presently seen as a strategic language that has recently witnessed a rapid increase in the number of colleges and universities offering Arabic language courses and the number of students in these programs in the United States (Allen, 2004; Edwards, 2000; Scollon, 2004). In contrast to other languages, students' enrolment in Arabic language classes has increased from 92.3%

between 1998-2002 to 126.5% between 2002-2006 (Welles, 2004; Furman, Goldberg, & Lusin, 2010). The learning of Arabic is broadly promoted in the United States by the National Strategic Language Initiative that is introduced by President George W. Bush in 2006 to develop the foreign language skills of American students, specifically in ‘critical-need’ foreign languages such as Arabic (Allen, 2004; Ryding, 2006; Welles; 2004). In spite of the prominence of the Arabic language and the long history of teaching it in the United States that goes back to the year 1654 when it was initially offered at Harvard University, the Arabic language has not received the due attention in L2 research (Ryding, 2006). Additionally, teaching Arabic as a foreign and/or second language in non-Arabic speaking settings has gained very little attention from educators and curriculum developers. That is why this paper addresses this issue by investigating the perception of Arabic consonant sounds by native English speakers who learn Arabic in a non-native setting (i.e., the United States).

II. LANGUAGE BACKGROUND

A. Research and Studies about Teaching and Learning Arabic

A careful review of previous linguistic research on the Arabic language shows that it has predominantly investigated a number of syntactic, sociolinguistic and morphological issues. For example, Setian (1974) compared American English with Egyptian colloquial Arabic regarding certain syntactic and morphological forms and Rammuny (1976) explored American students’ writing errors in Arabic. Yet research on Arabic phonology is still at its early stages and relatively few studies have explored Arabic phonology (Asfoor, 1982), which can be classified into two main groups. The first group has mainly focused on comparing and contrasting the phonology of both English and Arabic in order to demonstrate the similarities and differences between the two languages and consequently facilitate teaching the English language to native Arabic speakers. For instance, Malick (1956) compared the acquisition of consonants clusters in both American English and Iraqi Arabic. In a similar vein, Odisho (1979) investigated the differences between consonant clusters and abutting consonants in both English and Arabic providing a significant linguistic description and numerous pedagogical implications.

On the other hand, the second group of studies has primarily examined the acquisition of Arabic phonology by learners of Arabic. While infant studies have focused on exploring how segments are acquired (Amayreh, 1994; Amayreh, 2003; Amayreh and Dyson, 1998; Amayreh and Dyson, 2000; Dyson & Amayreh, 2000), there are very few adult cross-language studies that have explored the accuracy of perceiving and producing certain Arabic sounds including vowels and consonants by specific groups of speakers at certain proficiency levels. For instance, Kara (1976) has questioned the claim of the difficulties of learning the Arabic language by exploring the problems that English speakers encountered when learning Arabic regarding two types of problems: problems originated by Arabic teaching methods and problems created by the dissimilarities between Arabic and English. The researcher used three evaluative techniques: questionnaires given to learners and teachers, class observations, and personal interviews with

both teachers and learners. Findings displayed a number of deficits in the field of teaching Arabic. First, programs hired untrained native speakers of Arabic to teach and who consequently used traditional materials and methods of instruction that paid no attention to students' needs and interests. Therefore, students either dropped the courses early in the semester or they joined the classes but they were not able to speak the language after some years of study. Second, various problems were highlighted, such as morphological, syntactical writing, phonological and reading difficulties. However, the grammatical and phonological problems were reported to be more challenging than the others. Third, while the main focus was on teaching vocabulary and grammar, the spoken aspect was disregarded. As a result, students reported their lack of interest in learning the language. The study concluded that students' negative attitudes and the stance of being a difficult language can be changed if Arabic is taught by trained teachers who use vivid content and adapt untraditional instructional methods.

On the contrary, Asfoor (1982) examined the most difficult Arabic sounds to produce by native English speakers and whether learners' dialect could affect their acquisition of Arabic pronunciation. To this end, the researcher asked 24 instructors of Arabic at the Defense institute in Monterey to evaluate the most difficult Arabic 10 phonemes among the 29 Arabic consonant sounds in three different positions: initial, middle, and final. Then, 34 learners were recorded producing these 10 sounds before and after a six-week practice course. Learners were also asked to fill in the questionnaire about their English dialects. Findings showed Arabic stop consonants to be the most difficult sounds for native English speakers. Additionally, training was found to be effective with some sounds but not the others. That is, learners' pronunciation of certain challenging sounds in both initial and medial positions improved (i.e., /x/, /y/, /ʕ/, /ðˤ/, and /ħ/), but training did not influence their pronunciation of these perplexing sounds in the final position. Moreover, results displayed no influence of the learners' English dialect on their Arabic sound acquisition.

Along similar lines, Alish (1987) compared Arabic learners' perception of two Arabic pharyngealized consonants (/sˤ/ and /ðˤ/) and their plain counterparts (/s/ and /ð/) with native Arabic speakers' perceptual cue. The study also explored whether or not learners' proficiency level influence learners' perception of the chosen pharyngealized consonants. Two main tasks were used: perception and production. While subjects' task was to identify which of the 12 Arabic syllables printed on the answer sheet they heard in the perception task, they were recorded reading out loud the list of syllables given to them at their normal speed in the production task. Results showed no significant differences between learners' and native speakers' perceptual cue of pharyngealization but learners' proficiency level significantly influenced their accurate perceptual scores.

Recently, Al Mahmoud (2013) explored learners' perception of Arabic contrasts in light of the perceptual assimilation model (PAM). To this end, 22 English speakers participated in a forced choice AXB discrimination task in which they were asked whether the second sound they heard (X) was similar to either the first sound (A) or the third one (B). Results indicated that

learners were able to discriminate contrastive sounds that have English equivalents such as (/t-/ /d/ and /θ/-/ð/), but learners found novel contrasts such as (/x/-/χ/, /ħ/-/h/, /x/-/ħ/) to be more difficult to detect. Similarly, Alwabari (2013) explored the influence of learners' proficiency in Arabic on their ability to produce Arabic pharyngeal (i.e., /ħ, ʕ/) and pharyngealized consonants (i.e., /tˤ, sˤ, dˤ, ðˤ/). The study used the posttest-only control group design where both learners of Arabic and non-learners were tested. Besides a language background questionnaire, two other tasks were used. The first task was a perception-production task in which participants in both the experimental and control groups were instructed to first produce the sounds they heard and then to rate the resemblance of their sounds to the given audio stimuli on a five-point numerical scale. In the second task, a perceptual judgment task, only two native Arabic speakers were asked to identify the shadowed sounds they heard and then to rate the similarity between these sounds the corresponding stimuli. Findings demonstrated that learners' Arabic proficiency did influence their production of both the pharyngeal and pharyngealized Arabic consonant sounds. The more proficient the learners were, the more authentic their production of the Arabic consonants was.

B. Consonantal Systems of Arabic and English

World languages differ with reference to consonant systems where the number of consonants vary between six as in the Rotokas language, an East Papuan language spoken in Bougainville, to 122 as in Taa, a Khoisan language spoken in Botswana. By and large, consonants are speech sounds produced by a partial or a complete closure of the vocal tract and are described with respect to three principal features: the place of articulation, including bilabial, labiodental, dental, alveolar, post-alveolar, retroflex, palatal, velar, uvular, pharyngeal and glottal; manner of articulation, encompassing plosive, nasal, trill, tap, fricative, affricate, lateral, approximant, and lateral approximant; and voicing comprising voiced or voiceless (Ladefoged, 2005).

Modern Standard Arabic (MSA) as a Semitic language of the Afro-Asiatic language family has a different sound system from the commonly spoken Germanic languages such as English. Comparing the consonantal systems of English and MSA shows a numbers of differences between the two languages. For example, English consists of 24 consonantal phonemes: six stops (/p/, /b/, /t/, /d/, /k/ and /g/), nine fricatives (/f/, /v/, /θ/, /ð/, /s/, /z/, /ʃ/, /ʒ/, and /h/), two affricates (/tʃ/ and /dʒ/), three nasals (/m/, /n/, and /ŋ/), two liquids (/l/ and /r/) and two semi vowels (/w/ and /j/). On the other hand, Arabic has 28 consonants that include eight stops (/b/, /t/, /d/, /tˤ/, /dˤ/, /k/, /q/, and /ʔ/), 13 fricatives (/f/, /θ/, /ð/, /ðˤ/, /s/, /sˤ/, /z/, /ʃ/, /x/, /χ/, /ħ/, /ʕ/, and /h/), one affricate /dʒ/, two nasals (/m/ and /n/), one lateral (/l/), one trill (/r/), and two semi-vowels (/w/ and /j/) (cf. Watson, 2002). Furthermore, there are 9 consonants that exist in Arabic but have no equivalents in English (i.e., /tˤ/, /dˤ/, /ðˤ/, /sˤ/, /χ/, /χ/ /q/, /ħ/, and /ʕ/). Due to the phonotactic differences between the two languages, Arabic consonants tend to present considerable difficulties for English learners (Al Mahmoud, 2013; Alish, 1987; Alwabari , 2013; Asfoor, 1982; Kara, 1976; Rammuny, 1976).

C. The Present Study

In light of the studies discussed that far, it can be concluded that few studies have explored Arabic phonology and among those very little research has studied the difficulties that adult L2 learners encounter when learning Arabic consonants. Nevertheless, the limited empirical research in this area lacks knowledge of learners' voice on this issue that has not been heard. Previous studies, which have explored Arabic learners' beliefs, have mainly investigated learners' views about their language learning significance of the language skills, such as listening, reading, speaking and writing, (Belnap, 1987), and Arabic instruction in the US (Eddy, 1980); however, none of these studies has checked learners' perspectives on Arabic language sounds in general and consonants in particular. Therefore, the current study seeks to fill in this gap in prior research via investigating the beliefs of adult learners of Arabic at different American universities about the problematic Arabic consonant sounds in order to detect possible incongruities in learners' views on language learning. Although the examination of learners' views about the challenging Arabic consonants is an essential matter, another issue of direct concern is exploring the factors that influence the acquisition of Arabic as a second and/or foreign language by adult learners. To my knowledge, no previous research has yet investigated L2 learners' beliefs about the factors that influence their acquisition of Arabic consonants in an attempt to better comprehend their perspectives regarding the efficiency of the used activities. Therefore, these two primary objectives are the primary focus of the present study.

Conducting this type of research is very important because it draws teachers' and researchers' attention to learners' common beliefs about challenging consonants that would inform their teaching of Arabic sounds. Addressing the phonological challenges as perceived by students is needed to help teachers in diagnosing the phonological problems and consequently designing the courses and developing appropriate materials that can improve their learners' acquisition of Arabic (Belnap, 1987). Toward this end, this research addresses the following four questions:

1. Are English (L1) learners aware of the importance and difficulty of Arabic consonant segmentals?
2. Which Arabic consonant phonemes and consonant contrasts do learners find difficult for learners to perceive and produce? Which single consonants and consonant contrasts do learners find easy for learners to perceive and produce?
3. What are learners' beliefs about the factors that influence the acquisition of Arabic consonant phonemes?
4. Is there a relationship between importance and difficulty of consonant phonemes/ consonant contrasts and the beliefs about the factors that can influence consonant acquisition?

III. METHODOLOGY

A. Participants

107 subjects participated in this study. All of them were American English speakers who were university undergrad and graduate students with different majors: political science, history, psychology, sociology, international studies, religion, and English literature. They ranged in age from 18 to 30, with average of 22.75. Forty-nine subjects (46.6%) had travelled to an Arabic-speaking country, including 25 who lived there for one year or more. Participants in this study belonged to five different academic levels: (15 freshmen (14%), 23 sophomores (21.5%), 29 juniors (27.1%), 20 seniors (18.7%), and 20 graduates (18.7%)). They also varied in the number of years they spent learning Arabic: 29 learners (27.6%) studied Arabic for three years or more, 44 learners (41.9%) studied Arabic for two years, and 32 learners (30.5%) attended at least one Arabic course.

B. Materials

In this study, only a questionnaire was used that consisted of three main sections. The first section contained questions about participants' background information such as age, gender, native language, education, and country of origin and two main questions on learners' beliefs about the importance of the Arabic language and the difficulty level of its consonant sounds. The second section asked subjects to self-rate the level of difficulty and easiness of all Arabic consonants and contrastive consonant phonemes in both perception and production on a five-point Likert scale featuring the following choices: (1) easy, (2) somewhat easy, (3) slightly difficult, (4) moderately difficult, and (5) extremely difficult. In the third section, subjects were asked to rate the factors that could improve learners' pronunciation on a five-point Likert scale featuring the following choices: 1) not at all influential, (2) somewhat uninfluential, (3) slightly influential, (4) moderately influential, and (5) extremely influential. The questionnaire was piloted in two Arabic programs, and its final draft was formulated in light of the pilot respondents' comments and suggestions. A copy of the given questionnaire is provided in the appendix.

C. Procedure

The questionnaire was activated online and circulated among various US universities and colleges offering Arabic language courses. Three hundred students completed the questionnaire online but data from 193 participants were eliminated because they were either heritage students (N=154) or their native language was not English that was the focus of this paper (Cantonese: N=5; Farsi: N=6; Korean: N=8; Mandarin: N=10; Urdu: N=10). Prior to the questionnaire administration, each participant signed a consent form explaining the purpose of the study and showing his/her consent to voluntarily participate in the study. Participants also received the

researcher contact information and research confidentiality agreement.

D. Data analysis

Participants' responses to the given questionnaire were codified and submitted to SPSS software. To calculate participants' awareness of the difficulty of the Arabic consonant sounds, each learner's rating of the difficulty level of each sound was equated to numbers: easy=1, somewhat easy=2, slightly difficult=3, moderately difficult=4, and extremely difficult=5. Then responses were grouped into two main categories: easy (included easy and somewhat easy responses), and difficult (included slightly difficult, moderately difficult and most difficult responses). Descriptive statistics, including means, standard deviations, frequencies and percentages were computed. A number of variables were considered: learners' awareness of the importance of the Arabic language, their awareness of the difficulty of Arabic consonants (stops, fricatives, affricates, nasals, a lateral, and a trill) and consonant contrasts (/t-tʰ/, /d-dʰ/, /θ-ð/, /ð-ðʰ/, /s-sʰ/, /h-hʰ/, /k-q/, /ʔ-ʕ/, /χ-ʁ/), and learners' beliefs about factors affect their acquisition of consonant pronunciation (ability to mimic, musical ear, proficiency in Arabic, knowledge of other languages, individual motivation, contacting with native speakers, listening to the radio and television, pronunciation training, and written transcription).

IV. RESULTS

With respect to the first question, participants' responses reported a consensus for Arabic learners' awareness of the importance and difficulty of the Arabic consonant segmentals. In terms of language importance, 90 subjects (84 %) indicated the significance of the Arabic language. Likewise, the mean responses to the difficulty of Arabic consonant sounds for native English speakers showed 97 learners (90.6%) denoted the difficulty of the Arabic consonants as shown in Table 1.

Table 1. Descriptive statistics associated with language importance and language difficulty

	Learners' Responses	
	Mean	Std. Deviation
Language Importance	0.84	0.367
Language Difficulty	4.09	0.687

In order to determine which consonants subjects found most difficult to learn and which consonant sounds they found easy, percentages of subjects' responses were calculated. Data

analysis indicates that learners who participated in this study report five consonants (i.e., /ħ, d^ʕ, t^ʕ, s^ʕ, ð^ʕ/) as the most difficult consonant sounds to perceive and produce. Given that these sound categories (i.e., pharyngeal and pharyngealized) do not exist in English and therefore they are unfamiliar sounds for native English speakers. Additionally, three consonants are found to be semi difficult (i.e., /χ, ʕ, q/). On the other hand, the ranking of /k, j, s, b, f/ as the easiest sounds is not surprising, given that they are familiar sounds that appear in both English and Arabic. This may explain why /d, m, n, l, dʒ, ʃ/ were also ranked as relatively easy. (See Figure 1)

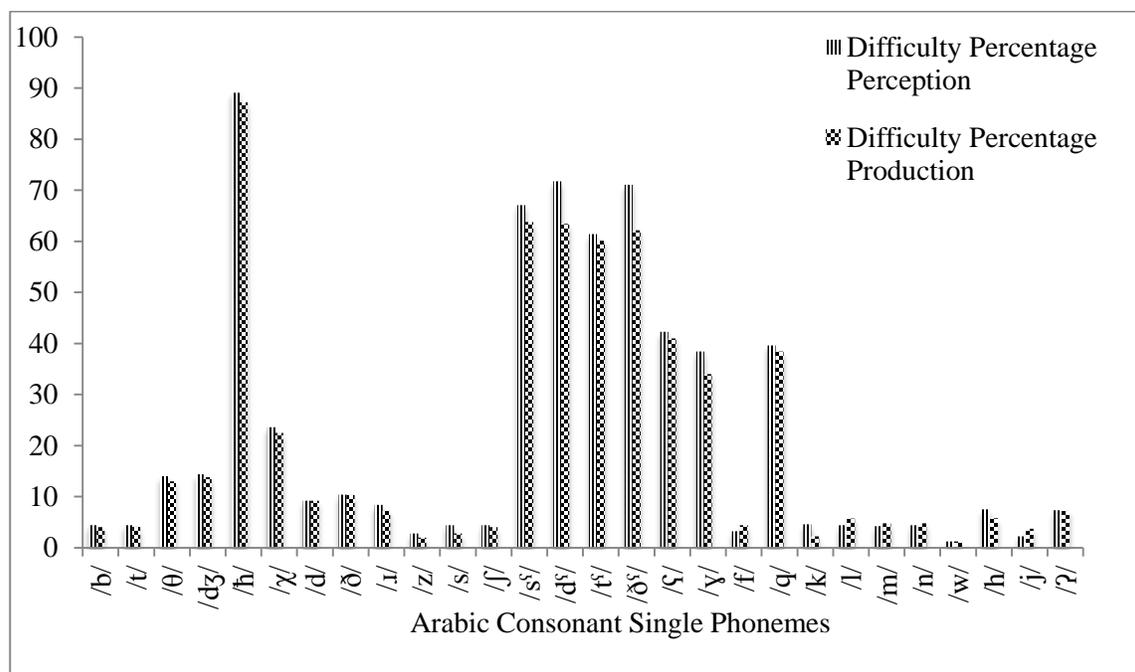


Figure 1. Percentage of difficulty of Arabic single consonant phonemes

As Figure 2 below demonstrates, out of the nine Arabic contrastive consonants, subjects rated /d-d^ʕ, ð-ð^ʕ, t-t^ʕ, k-q, s-s^ʕ/ as difficult contrasts. Equally important, /ħ-ħ̣/ was ranked as the most difficult Arabic consonant contrast to perceive and produce by native English speakers. Subjects also found /ʔ-ʕ/ to be of a reasonable difficulty. On the contrary, both /θ-ð/ and /χ-χ̣/ were rated as the easiest consonant contrasts. While /θ-ð/ is expected to be an easy contrast to learn due to its existence in subjects' native language, the ranking of /χ-χ̣/ as the easiest contrast is perhaps surprising and difficult to interpret, as it appears in Arabic but it is found in English.

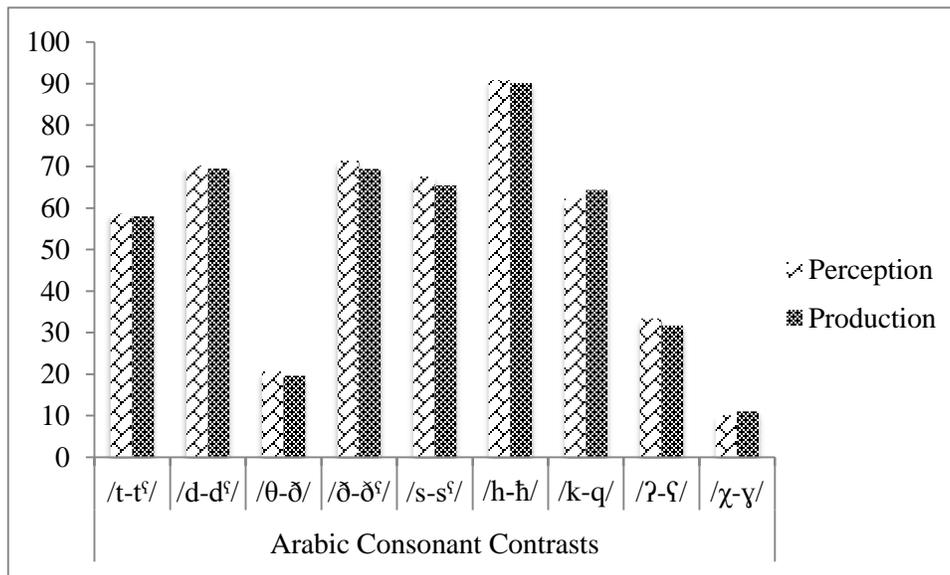


Figure 2. Percentage of difficulty of Arabic consonant phoneme contrasts

To answer the third question, each subject's rating of the importance of each of the factors that influence Arabic acquisition was equated to numbers: not at all influential=1, somewhat unimportant =2, slightly influential =3, moderately influential =4, and extremely influential =5. Then responses were grouped into two main categories: not influential (included not at all influential and somewhat unimportant), and influential (included relatively influential, moderately influential and extremely influential responses). Means and standard deviations were computed. Results showed that individual motivation, contact with native speakers, and listening to the radio and TV are the factors that learners perceive as the most influential. Conversely, written transcription, pronunciation training, proficiency in Arabic and musical ear are considered the less influential factors. More interestingly, learners' ability to mimic and knowledge of other languages are perceived as the factors of moderate significance in the acquisition of Arabic consonants (See Table 2).

Table 2. Learners' beliefs about influences on acquisition of Arabic consonant phonemes

Factor	Mean	Standard Deviation
Ability to mimic	2.93	1.178
Musical ear	1.64	0.994
Proficiency in Arabic	1.87	1.074
Knowledge of other languages	2.81	1.192
Individual motivation	4.31	0.706
Contact with native speakers	4.34	0.745
Listening to the radio and television	4.24	0.738
Pronunciation training	1.56	0.767
Written Transcription	1.57	0.674

Finally, a correlation coefficient was conducted to evaluate whether there was a relationship between the importance and difficulty of consonant phonemes and learners' beliefs about the factors that can influence their acquisition. Results showed a positive correlation between language difficulty and three factors, i.e., language proficiency, individual motivation, and contact with native speakers. In other words, learners who perceive Arabic consonants as relatively difficult sounds to acquire, find these three factors to be the most influential ones. Conversely, two significant negative correlations were found between the language importance and two factors: musical and knowledge of other languages. That is, the more important the language is for learners, the less influential music ear and knowledge of other languages are. See Table 3

Table 3. Correlations between awareness and beliefs for English L1 learners

	Ability to mimic	Musical ear	Proficiency in Arabic	Knowledge of other languages	Individual motivation	Contact with native speakers	Listening to the radio & television	Pronunciation training	Written transcription
Language importance	.061	-.198*	-.099	-.277**	-.017	.049	.091	.088	.138
Language difficulty	-.054	.028	.191*	-.047	.694**	.674**	-.010	.072	-.100

**p<.01 & *p<.05

V. DISCUSSION

This study displays an introductory set of data that display how adult native English speakers see the level of difficulty of perceiving and producing Arabic consonant phonemes. Data provide tentative support for the notion that L1 English speakers are aware of the importance of learning the Arabic language for a number of reasons they provide in the given questionnaire, such as future career, cultural richness, doing linguistic analysis and understanding Islam. The results also indicate that learners are aware of the difficulty of the Arabic consonants that they report to be challenging to native English speakers. This difficulty may partially result from the major differences between the phonetic systems of the two languages (i.e., Arabic and English) at the segmental level. Based on learners' responses to the given questionnaire, moreover, Arabic consonants can be classified into three main groups in terms of the degree of learning difficulty: most difficult, moderately difficulty and easy to learn consonants. Most of the American university students in this study seem to agree that both the voiceless pharyngeal /ħ/ and the four pharyngealized consonants (/d^ħ, t^ħ, s^ħ, and ð^ħ/) belong to the

first group and are the most challenging consonants whose degree of difficulty is rated 60% and above. These five consonant sounds are classified as the most perplexing ones that are not only causing troubles for L2 Arabic learners to perceive but to produce as well. This finding is consistent with other acoustic studies such as Al Wabari's (2013) study that has emphasized the significant role of language proficiency in the acquisition of both pharyngeal and pharyngealized consonants. According to Alwabari's findings, "improved proficiency corresponds to high production accuracy" (2013, p. 128).

Notwithstanding that learners in this study vary regarding the number of years they have studied Arabic, they all agree that the voiceless pharyngeal fricative /ħ/ poses a serious challenge to 90% of them. It is interesting to observe that unlike Asfoor's (1982) study that has reported the voiced pharyngeal fricative /ʕ/ to be the most difficult consonant sound for native American English speakers to produce, learners in the current study consider the voiceless pharyngeal /ħ/ as the most challenging phoneme to distinguish not only at the perception level but also at the production level. However, this finding is consistent with other studies (Kara, 1976; Alwabari, 2013) that have showed the difficulty of acquiring the /ħ/ sound in comparison with its voiced counterpart /ʕ/ which is found to be easier to acquire after a sufficient period of training. More importantly, learners also face difficulty in distinguishing the pharyngeal fricative /ħ/ from its plain counterpart (i.e., the voiceless glottal fricative /h/) that is found in both English and Arabic.

The second group of consonants includes those consonants of medium difficulty whose overall difficulty score ranges from 34% to 60%. Three consonants are included in this group: the voiced pharyngeal fricative /ʕ/, the voiceless uvular plosive /q/, and the voiced uvular /ɣ/. Learners' responses indicate that these three Arabic consonant phonemes are a little bit easier to acquire than those in the first group. Finally, the third group includes the other 20 consonant phonemes, 19 familiar sounds (/b/, /t/, /d/, /k/, /f/, /θ/, /ð/, /s/, /z/, /ʃ/, /ɬ/, /w/, /j/, /m/, /n/, /l/, /dʒ/, /ʔ/, and /h/), and one unfamiliar sound (/x/), that are reported to be easier to learn and whose difficulty level is less than 24%. While this can be interpreted with reference to learners' familiarity with the 18 familiar phonemes that have equivalents in their native language, it is perplexing for both /χ/ and /ʁ/, which are novel sounds to native English speakers.

On the other hand, the pharyngealized consonants /d^ħ, t^ħ, s^ħ, and ð^ħ/ are not only causing troubles for Arabic learners to perceive independently but also as members of phoneme contrasts. For example, learners' responses show that they have difficulty distinguishing a number of Arabic consonant phoneme contrasts that do not exist in their mother tongue, such as /d-d^ħ, t-t^ħ, s-s^ħ, and ð-ð^ħ/ in contrast to the familiar ones such as /θ-ð/. This is interpretable in light of previous research findings suggesting that lacking these unfamiliar contrastive sounds in English led to learners' tendency to map them onto the closer familiar English sounds and that in turn results in their inability to accurately discriminate them (Best, 1995; Flege, 1995). For example, English learners of Arabic tend to perceive and produce the Arabic voiceless plosive uvular sound /q/ as the closest English sound (i.e., the voiceless plosive velar /k/). Their inability to realize the difference between the two contrastive Arabic sounds /k/ and /q/ and instead of

saying, for instance, the Arabic word *qalb* that means heart, English speakers say *kalb*, which means dog. This subsequently results in a miscommunication of the L2 speech. On the other hand, despite that fact that the /χ-γ/ consonant contrast does not exist in English, learners in the present study classify it as an easy contrast that can be effortlessly acquired.

Consistent with previous findings, subjects believe that contacting with native speakers and listening to the radio and television in the target second language are fundamental elements in the acquisition of novel L2 sounds. In addition to the importance of the natural L2 acquisition, the results of this study demonstrate the positive effect of individual motivation and language proficiency in the acquisition of Arabic novel sounds. This is consistent with previous SLA studies that have underscored the significance of personal abilities in acquiring phonetic competence (Dörnyei, 1998). On the contrary, learners believe that the ability to mimic, written transcription and knowledge of other languages are the least important factors in the pronunciation acquisition of Arabic consonant sounds, which contradicts earlier findings (Alwabari, 2013; Thompson, 1991).

Noticeably, learners in the present study seem to agree on the association between the difficulty of Arabic consonants and only three factors (i.e., proficiency in Arabic, contact with native speakers and individual motivation). This finding supports the notion that it is possible to overcome the difficulty of the Arabic language pronunciation provided that these three essential factors are considered. Nevertheless, no positive correlation is found between any of the factors and the importance of the language but instead a negative correlation is found between two factors: musical ears and knowledge of other languages. In other words, the more important learners perceive the Arabic language, the less essential they believe these two factors are for the Arabic language acquisition and vice versa.

From a pedagogical standpoint, inasmuch as teaching Arabic to the native speakers of English is concerned, results of the study help us further understand the pronunciation difficulties encountered by L2 learners of Arabic. Prior research has considered areas of difficulties based on the differences between Arabic and English; however, the present study provides supportive evidence about phonological challenges with respect to learners' views that have not been considered before. Results also shed light on the most central factors that appear to influence English speakers' acquisition of the Arabic language. In light of these findings, a number of principal implications for Arabic language teaching and research can be highlighted that could be of interest to teachers, researchers and textbook and course designers. For teachers, the study raises teachers' awareness of challenging consonant sounds that should be given extra attention in teaching, practicing and testing; the area that has been relatively studied in previous L2 research. Additionally, teachers and researchers of the Arabic language can compile a list of difficult consonant sounds and are encouraged to develop appropriate teaching material and activities to teach these problematic phonemes that will steadily decrease or terminate future problems with respect to Arabic consonants pronunciation by English speakers. For textbook and course designers, this study is significant in determining the appropriate type of instruction that

accommodates different learners' needs and sequences the presented materials in terms of the degree of easiness and difficulty of Arabic consonant sounds reported in the present study. The results are crucial for training too by establishing set of principles for auditory training that is desperately needed in teaching Arabic that is one of the less commonly taught languages in North American and is classified as a critical language by the US State Department (Ryding, 2006).

In terms of future research, the current study recommends empirical research that addresses the difficulties L2 Arabic learners encounter, with focus on exploring what they can already perceive and produce. Simultaneously, there is an urgent need for future studies to devote more attention to Arabic pronunciation including both segments (i.e., vowels and consonants), and suprasegmentals (i.e., stress, rhythm and intonation). While the current study did not use a sophisticated measure of proficiency level, further research can examine in more depth how proficiency is related to learners' perception of sound difficulty. Furthermore, it is beneficial for the field of teaching Arabic as a foreign or second language that future research investigates how learners handle their perceived problematic sounds and the learning strategies that they employ.

VI. CONCLUSION

This study is one of the initial studies of Arabic as a second language (ASL) that explores views of students about learners' pronunciation problems with Arabic consonant phonemes. Results show learners' awareness of the importance of learning the Arabic language that they see a beneficial language for their future career. Native English speakers also acknowledge the difficulty of learning novel Arabic consonants that have no English equivalents and they agree that individual motivation, living Arabic speaking countries, ability to mimic, and speaking to native speakers are the most prominent factors affect learners' acquisition of those unfamiliar Arabic consonant sounds. The general conclusion of the study confirms the need for further research that helps in developing the field of L2 Arabic teaching that is still growing and taking its first tentative steps. Finally, further studies are underway with L2 Arabic learners to examine the nature of differences between learners' perception and their production of Arabic consonants.

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APPENDIX
Questionnaire

Part A. Background information

1. Age: 2. Educational level:
2. Sex: 4. Race/ethnicity:
5. Home country: 6. Native language:
7. What other language(s) do you know?

8. How & where did you learn them? Explain.

9. How well do you know them?

For questions 10–14, please give details (where and for how long) for any ‘yes’ answers. For any question you answer ‘no’ to, please indicate whether you would like to have these experiences.

10. Where and for how long you learned Arabic? Please describe your experience.

11. How do you see your proficiency levels? Choose one of the following

1) Novice

a- novice low

b- novice mid

c- novice high

2) Intermediate

a- intermediate low

b- intermediate mid

c- intermediate high

3) Advanced

a- advanced low b- advanced mid c- advanced high

4) Superior/ Native

12. Have you ever visited an Arabic speaking country? Explain.

13. Is learning Arabic an important issue in your local community? Is it important to you? Why? Explain.

14. I find the Arabic consonants easy/ difficult (1= easy & 5= extremely difficult)

1 2 3 4 5

Part B. Evaluation of the level of difficulty/ easiness of Arabic consonants.

1. How do you see the level of difficulty/easiness of perceiving the following Arabic sounds by English learners of Arabic? (1=easy & 5 =extremely difficult) Circle the number that expresses your answer

Sounds	Scale					Comments
ب	1	2	3	4	5	
ت	1	2	3	4	5	
ث	1	2	3	4	5	
ج	1	2	3	4	5	
ح	1	2	3	4	5	
خ	1	2	3	4	5	
د	1	2	3	4	5	
ذ	1	2	3	4	5	
ر	1	2	3	4	5	
ز	1	2	3	4	5	

Shehata

س	1	2	3	4	5	
ش	1	2	3	4	5	
ص	1	2	3	4	5	
ض	1	2	3	4	5	
ط	1	2	3	4	5	
ظ	1	2	3	4	5	
ع	1	2	3	4	5	
غ	1	2	3	4	5	
ف	1	2	3	4	5	
ق	1	2	3	4	5	
ك	1	2	3	4	5	
ل	1	2	3	4	5	
م	1	2	3	4	5	
ن	1	2	3	4	5	
ه	1	2	3	4	5	
و	1	2	3	4	5	
ي	1	2	3	4	5	
ء	1	2	3	4	5	

2. How do you see the level of difficulty/easiness of producing the following Arabic sounds by English learners of Arabic? (1 =easy; 5 =extremely difficult) Circle the number that expresses your answer

Sounds	Scale	Comments
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Shehata

بـ	1	2	3	4	5	
تـ	1	2	3	4	5	
ثـ	1	2	3	4	5	
جـ	1	2	3	4	5	
حـ	1	2	3	4	5	
خـ	1	2	3	4	5	
دـ	1	2	3	4	5	
ذـ	1	2	3	4	5	
رـ	1	2	3	4	5	
زـ	1	2	3	4	5	
سـ	1	2	3	4	5	
شـ	1	2	3	4	5	
صـ	1	2	3	4	5	
ضـ	1	2	3	4	5	
طـ	1	2	3	4	5	
ظـ	1	2	3	4	5	
عـ	1	2	3	4	5	
غـ	1	2	3	4	5	
فـ	1	2	3	4	5	
قـ	1	2	3	4	5	
كـ	1	2	3	4	5	
لـ	1	2	3	4	5	

Shehata

م	1	2	3	4	5	
ن	1	2	3	4	5	
هـ	1	2	3	4	5	
و	1	2	3	4	5	
ي	1	2	3	4	5	
ء	1	2	3	4	5	

3. Using the same scale, how do you evaluate the difficulty/ easiness of perceiving the following Arabic contrastive sounds by English learners of Arabic? (1=easy & 5=extremely difficult)

Sounds	Scale					Comments
ط vs. ت	1	2	3	4	5	
ث vs. ذ	1	2	3	4	5	
ص vs. س	1	2	3	4	5	
ض vs. د	1	2	3	4	5	
ح vs. هـ	1	2	3	4	5	
ظ vs. ز	1	2	3	4	5	
ق vs. ك	1	2	3	4	5	
ع vs. ء	1	2	3	4	5	
خ vs. غ	1	2	3	4	5	

4. Using the same scale, how do you evaluate the difficulty/ easiness of producing the following Arabic contrastive sounds English learners of Arabic? (1=easy & 5=extremely difficult)

Sounds	Scale					Comments
ط vs. ت	1	2	3	4	5	

ث vs. ذ	1	2	3	4	5	
ص vs. س	1	2	3	4	5	
ض vs. د	1	2	3	4	5	
ح vs. هـ	1	2	3	4	5	
ظ vs. ز	1	2	3	4	5	
ق vs. ك	1	2	3	4	5	
ع vs. ء	1	2	3	4	5	
خ vs. غ	1	2	3	4	5	

Part C. Factors influence learners' pronunciation of Arabic consonants

Evaluate the role of the following factors in the improvement of learners' pronunciation of Arabic consonants (1 = not at all influential; 5 = extremely influential)

Factor	Scale					Comments
Ability to mimic	1	2	3	4	5	
Musical ear	1	2	3	4	5	
Proficiency in Arabic	1	2	3	4	5	
Knowledge of other languages	1	2	3	4	5	
Individual motivation	1	2	3	4	5	
Contact with native speakers	1	2	3	4	5	
Listening to the radio and television	1	2	3	4	5	
Pronunciation training	1	2	3	4	5	
Written transcription	1	2	3	4	5	