Learning English Vowels by Iraqi EFL Learners: Perceived Difficulty versus Actual Performance

AMMAR ABDUL-WAHAB AL ABDELY
English Language Department
Education College for Women
University of Anbar
Republic of Iraq

YAP NGEE THAI
English Language Department
Faculty of Modern Languages and Communication
Universiti Putra Malaysia
ntyap@upm.edu.my

ABSTRACT

Acquisition of second language (L2) phonology is possibly the most challenging task for L2 learners. As a result, many tend to preserve a foreign accent in their speech even after they have attained a high level of proficiency in other aspects of L2 use. The difficulty in acquiring an L2 phonological system has been attributed to factors such as age of L2 perceptual learning, quality and quantity of L2 input and interference from the first language phonological system. This paper contributes to ongoing discussions on the acquisition of L2 phonology by examining the difficulties encountered by two groups of Iraqi EFL learners in the perception of English vowels and the accuracy of perceived difficulty by Iraqi EFL teachers and learners. The results on perceived difficulty were compared with performance in a speech perception task. The findings show that Iraqi EFL learners encounter varying degrees of difficulty in the perception of English vowels. The findings also show that there is an effect in the level of proficiency on the accuracy rate for some vowel categories but two vowel categories, /ɒ/ and /æ/, were persistently difficult for most subjects regardless of their proficiency level in English. Iraqi EFL teachers and learners reported that they encountered difficulty learning some English vowels; however, the vowels that were identified as difficult differed considerably from those identified in the perception task.

Keywords: speech perception; English vowels; Iraqi EFL learners; L2 experience; perceived difficulty

INTRODUCTION

The acquisition of second language (L2) phonology has received more attention in research in the last decade as there is renewed interest in second language pronunciation among second language researchers (Munro & Derwing 2015). As pointed out in Munro and Derwing (2015), pronunciation research may involve a variety of disciplines such as speech and hearing sciences, education, psychology, and second language acquisition, and as such the study may be conceptualised using various theoretical frameworks. The study reported here brings together two different theoretical approaches. The first involves speech perception which is guided by theories in speech and hearing sciences while the second approach, which is common in strategy and skill-based development in language teaching and learning studies, involves the assessment of teacher and learner awareness and the reliability of this awareness for developing learner autonomy in second language learners.

Previous studies on the acquisition of L2 phonology have shown that the acquisition of new sounds is possibly the most challenging task for L2 learners as many learners tend to retain a foreign accent despite being successful at achieving proficiency in other aspects of L2 production. The difficulty in acquiring the phonological system in the L2 has been attributed to factors such as age of L2 perceptual learning, quality and quantity of L2 input, and interference from the first language phonological system (see review in Jeske 2012, Best &

Tyler 2007). Piske, Mackay and Flege (2001) report that first language (L1) interference is one of the most influential predictors of the degree of foreign accent in the speech of L2 learners. According to Matsubara (2015), many studies have investigated the role of L1 in English vowel perception focusing on languages such as German, Italian, Japanese, Korean, Mandarin and Spanish. Nevertheless, many studies such as Bohn and Flege (1990) and Flege, Bohn and Jang (1997) have concluded that other factors such as age of learning, length of residence, nature and amount of L2 exposure, L2 use and proficiency level (Baker &Trofimovich 2006, Cebrian 2006, Fabra & Romero 2012) are also influential.

Most previous studies account for L2 speech perception and production within the frameworks of the Speech Learning Model (SLM) and the Perception Assimilation Model (PAM). The SLM proposed by Flege (1995) assumes that similarity between the phonological systems of L1 and L2 may result in more difficulty in attaining accuracy in L2 pronunciation. Flege argues for a cognitive mechanism called equivalence classification, which permits L1 speakers to perceive invariant phonetic categories in the presence of sensory variability, to account for effects in L2 phonological acquisition. This mechanism prevents L2 learners from discriminating weak acoustic differences between similar L1 and L2 sounds; hence accounting for non-native-like behaviour in L2 speech perception and production. Conversely, a new L2 sound that has no counterpart in the L1 may possess prominent acoustic cues to learners. However, the postulations of this model are based on ultimate attainment of L2 speech learning.

The Perception Assimilation Model (PAM) was initially proposed by Best (1995) to account for cross linguistic influences in speech perception, particularly by naive L2 learners. This model has been adopted in L2 speech perception research with the introduction of the revised model: PAM-L2 (Best & Tyler 2007). Both versions of PAM assume that L2 learners are likely to refer to the articulatory gestures used in producing L1 sounds to perceive L2 sounds. Consequently, unfamiliar sounds are perceived based on familiar phonetic features and articulatory gestures, leading to assimilation of L2 sounds with the closest L1 sounds. This process of assimilation affects the formation of new categories for L2 sounds. Best (1995) adopts the viewpoint that the degree of difficulty in the discrimination of L2 segments can be predicted based on the perceived phonetic distance between L1 and L2 phones. In PAM and PAM-L2, a variety of assimilation patterns are proposed to explain the level of difficulty faced by L2 learners in discriminating L2 sounds.

Both SLM and PAM affirmed that with increased experience in perceiving and using the L2, the possibility of approaching native-like pronunciation is increased. Best and Strange (1992) discussed the effect of L2 experience on patterns of perceptual assimilation stating that increased L2 experience may help develop sensitivity to differences between the L1 and L2 segments which may result in fewer instances of assimilation of L2 segments to L1 categories and a new category for the L2 segment may be established within the learner's perceptual system. Nonetheless, empirical studies examining the experience effect have found inconsistent results, possibly because of the way experience is conceptually operationalised in these studies. In some studies, experience is defined in terms of length of residence a learner has in the L2 speaking country (Baker & Trofimovich 2006), particularly when L2 learning occurs in a natural setting over a considerable period of time. In other studies, when the learners are taught the L2 in an institutional setting as a foreign language by non-native speakers of English, experience is either measured by the number of years of learning (Kuo 2003), or according to valid and standardised tests that can identify the proficiency level of the foreign language learners (Ho 2009). The latter approach is adopted in our study.

Most school teachers and university lecturers who teach English in Iraq would agree that the acquisition of a native-like pronunciation in general and a native-like pronunciation of English vowels in particular by Iraqi EFL learners is a difficult task. Some learners show little

improvement, even though they are exposed to more and more English. Though this issue has been previously discussed, very few formal descriptions or empirical studies have been attempted to explain the nature of these difficulties and to identify where the problem really lies. Consequently, few studies have provided results, which in turn offer insights for workable solutions to the problems that impede the acquisition of native-like pronunciation of English among Iraqi EFL learners. Such studies, according to Rasekhi (2009), are necessary to understand what aspects or L2 phones learners perceive as more challenging to them. Such insights would help teachers place more emphasis on what students consider important and help teachers guide learners better in attempts to develop learner autonomy and lifelong learning for L2 development.

The present study is set to answer three questions: 1) what are the English vowels that are difficult for Iraqi EFL learners to perceive; 2) to what extent does level of proficiency in English influence the performance in the perception task; and 3) to what extent are Iraqi EFL teachers and learners aware of the difficulties encountered in the perception of English vowels.

STUDIES ON THE PERCEPTION OF ARAB LEARNERS OF ENGLISH

As mentioned in Flege and Port (1981), Smith (2001), and Joseph and Odisho (2005), difficulties in pronunciation encountered by Arab learners of English are well documented in the literature of second language research. Very few studies, however, have been conducted to identify difficulties Arab learners of English encounter in the perception of English vowels. Among those that have studied Arab learners of English, different Arabic varieties were focused on and the study aims and procedures followed were also different, making it difficult for comparisons to be made. Some of these studies addressed the relationship between vowel perception and production (Almbark 2012, Nikolova 2010), while others addressed only vowel production (Ali 2013, Al-Tamimi 2007, Munro 1993). Some of these studies are reviewed below.

A recent study that investigates the interference of L1 in the acquisition of vowels is conducted by Nikolova (2010) in which she deals with the differences in the phonological systems of Arabic and English and their effect on the acquisition of vowels by EFL learners from Saudi Arabia. A considerable amount of difficulties were encountered by learners in her study especially when talking about similar speech segments in the two languages as well as the speech segments that do not exist in Arabic but are frequently used in English. However, this study is limited to the investigation of 10 vowels in American English. Her study did not support a positive effect of experience on the perception and production of English vowels by Saudi EFL learners. Both groups of beginners and advanced learners committed the most errors in the perception of the vowel /ɛ/ while the most problematic vowel for production was /ɒ/.

Another study that examined the perception and production of Standard Southern British English (SSBE) vowels by Syrian Arabic EFL learners was conducted by Almbark (2012). This study reports on an empirical investigation of L2 perceptual and production patterns of a group of foreign language learners merging insights from cross-language speech perception models such as PAM (Best 1994, 1995, 1999) and L2 learning models such as SLM (Flege 1995). Nevertheless, this study claims that although the foreign language learners are not exposed to sufficient L2 input, they still have access to the phonology, syntax, and structures of the L2 through direct teaching. The study also supports the well-known assumption that perceptual patterns of the learners are successful in predicting their production patterns implicating a very strong relation between the perception-production links for learners, in general, and for foreign language learners in particular. The discrimination

task conducted in Almbark (2012) identified more difficulties in the perception of /ɒ/ in the word *lot*, while other vowels were comparatively easily identified.

The perception of English vowels by Iraqi learners of English has not, to the best knowledge of the researchers, been investigated yet. Neither of the two main dialects of Iraqi Arabic, Baghdadi Arabic (BA) and Maslawi Arabic (MA), have been examined in terms of possible L1 interference towards perception of English vowels among Iraqi ESL learners. Thus, the present study is an attempt to fill this gap in the literature. BA, from now on referred to as Iraqi Arabic (henceforth, IA), has been selected for investigation here as it is the dialect mostly used by Iraqis, and it is now regarded, according to Al-Bazi (2006), as the lingua franca of the country. The variety of English used in this study is the standard British variety known as Received Pronunciation (henceforth, RP). This variety was chosen as it is the one targeted by learners of English at various departments of English in various Iraqi universities.

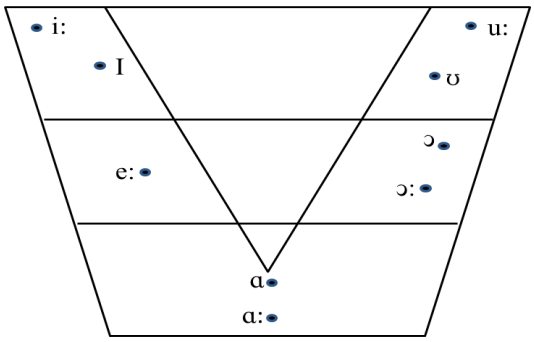
VOWELS IN IRAQI ARABIC AND RECEIVED PRONUNCIATION

Saadah (2011) remarked that English and Arabic, in general, differ in the type of contrast implemented in the vowel system. She elaborates that studies that have examined vowel systems, define English as a centripetal vowel system i.e. vowels with the tendency to move towards the center of the vowel space. Some other languages such as Spanish, Tamil, and Russian are conversely classified as centrifugal where vowels are located at the periphery of the vowel space. According to Saadah (2011), the Arabic vowel system falls in between centripetal and centrifugal patterns.

In addition to the differences mentioned above, there are some other major differences in vowel quality and quantity in English and Arabic. As discussed in Kopczynski and Meliani (1993) as well as Alotaibi and Hussain (2010), Arabic has length only as a distinctive criterion among vowels and all other criteria such as roundedness and tenseness are irrelevant. In contrast, in English, most back vowels are rounded while all front and central vowels are not. Some vowels, for example high front vowels contrast in terms of tenseness. Hence, English and Arabic are not only differentiated in terms of the size of their vowel inventory but also in the phonetic qualities of the vowels. In perceiving English vowels, different phonetic cues may play a role; however with Arab learners of English, they may only be sensitive to length and neglect other phonetic cues.

The vowel system of Received Pronunciation (RP) has twelve vowels including the schwa while the vowel system of Iraqi Arabic (IA) has nine vowels (Erwin 2004, Al-Khalesi 2006). IA has a richer vowel system compared to Classical Arabic and Modern Standard Arabic, which has only six vowels, yet it is still simpler than that of RP. Only three English vowels (/ʌ/, /ə/, /ɜ:/) are not found in IA. Based on existing models of L2 speech perception such as PAM and SLM, this could be advantageous in terms of vowel perception for Iraqi EFL learners as most L2 vowels have counterparts in the L1 vowel system. Hence, few problems in L2 vowel perception are expected as the new vowel categories could be assimilated to the existing L1 categories resulting in good discrimination (Best 1995, Best & Tyler 2007). As for the three English vowels which are not found in Iraqi Arabic, new categories can be constructed as the L1 phonological space is not occupied (Best 1995, Flege 1995). Figure 1 shows the vowel charts of both RP and IA.

(a) IA vowel chart adapted from Al-Bazi (2006)



(b) RP vowel chart adopted from Roach (2004)

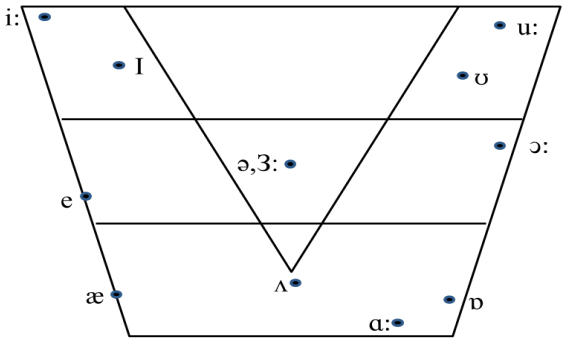


FIGURE 1. Vowel charts of IA and RP

METALINGUISTIC AND PHONOLOGICAL AWARENESS

In learning a second language, adult learners (Dörnyei 2009, Ellis 2004) and possibly even young learners (Tellier & Roehr-Brackin 2013) draw upon both explicit and implicit knowledge and learning processes. Explicit knowledge and learning processes involves knowledge that is represented declaratively which can be used consciously to solve a language learning problem. Implicit knowledge and learning processes, on the other hand, involves knowledge and learning processes that operate below the level of consciousness and thus cannot be articulated by the learner. In this study, the relation between explicit and implicit knowledge of adult ESL learners are examined by looking at the closeness of fit between the vowel phonemes that are perceived as difficult and the phonemes that are identified as difficult from the performance in a speech perception task.

Metalinguistic awareness, according to Boyer (2010) is defined as the ability to overtly reflect on and handle the internal structural features of a spoken language. This awareness enables language users to recognise language as an object detached from the meaning it delivers. Boyer elaborates that metalinguistic awareness includes sensitivity to phonological, lexical, syntactic, and pragmatic awareness. Phonological awareness (PA), can be regarded as a type of metalinguistic knowledge which is an important resource for L2 learning. The importance of PA for literacy development is well established particularly for young learners (see review in Schmitz 2011). Phonological awareness (PA) which includes a range of basic and complex skills starting from rhyming and alliteration to categorizing and use of phonemes has been found to be the most important predictor of early literacy development (Garton & Pratt 1998, Snow, Burns & Griffin 1998). Although most research on PA has focused on early or pre-school learners, Tingley, Dore, Lopez, Parsons, Cambell, Bird, and Cleave (2004) pointed out that several studies proposed that PA is significant for both early language acquisition and late linguistic development.

More recently, the connection between PA with second language acquisition has become a fertile area of research as researchers attempt to show how developing awareness of this knowledge explicitly could empower learners to take better charge of their learning. Earlier studies on language learning strategies and metalinguistic awareness for ESL and EFL learners often focused on the development of explicit knowledge for language learning in attempts to promote learner autonomy (see review in Borg & Al-Busaidi 2012). Very little research has looked at the how assessable and reliable learner and teacher feedback are on perceived needs and perceived difficulty of learning involving pronunciation of L2 vowels and this is another gap in the literature that is filled in this study.

MATERIAL AND METHODS

To achieve the objectives of this study, two questionnaires, an English proficiency test and a word perception test were administered. The first questionnaire elicited demographic information from the respondents and was used for selection of the participants for the perception test. The second questionnaire elicited teacher/self-reported assessment about the perceived difficulty in learning English vowels. The respondents English language proficiency was also measured with a standardised proficiency test. Details of these instruments are explained in detail below.

DEMOGRAPHIC QUESTIONNAIRE AND ENGLISH PROFICIENCY TEST

The demographic questionnaire elicited details about personal background information and linguistic experience. This questionnaire is utilised to filter the population of the study to include students who belong to the dialect targeted in this study. Such sample filtration is essential to exclude students who are not native speakers of Iraqi Arabic, students who had spent a considerable period of time in an English speaking country, and students who belong to different dialectal backgrounds. This questionnaire was adapted from Lai (2008) and Nikolova (2010) (see appendix A). A total of 150 Iraqi EFL learners were recruited for the initial screening using the demographic questionnaire; only 100 were selected for the subsequent screening session.

The Oxford Placement Test (2001), a valid standardised test, was used to select and group participants according to their level of proficiency in English. Participants were grouped based on the scores used to place learners as basic users (Groups A1 and A2), independent users (Groups B1 and B2) and proficient users (Groups C1 and C2) following the Common European Framework of Reference for languages (Council of Europe 2001).

TEACHER/SELF-REPORTED ASSESSMENT

To identify difficulties encountered in the perception of vowels as they are viewed by Iraqi learners and teachers of English in Iraq, a questionnaire was administered to survey teachers and students self-reported assessment of problems related to learning English vowels. Self-assessment has often been criticised for being not consistent and consequently less valid than other methods of data collection used in research. Thus, the present study tried to validate the results obtained through this questionnaire using the re-test method by asking the respondents to answer the questionnaire again to determine consistency in the assessment. The re-test conducted here showed high consistency in responses given by EFL teachers. However, there were more inconsistency with responses given by EFL learners; and thus, these inconsistent responses were discarded from the analysis.

The questionnaire consists of two parts; one for teachers of English and another for learners of English. Four questions were asked: two relating to perception difficulties and another two to production difficulties. However, only the results pertaining to vowel perception is reported in this paper. The questionnaire was also given to two experts to elicit their opinions about its structure and design. The questionnaire simply required respondents to declare whether learners encounter difficulties in the perception of English vowels. If they acknowledged any difficulties, they identified the vowels which they felt was difficult to perceive.

THE PERCEPTION TEST

In order to identify the difficulties Iraqi EFL learners encountered in the perception of English vowels, a perception test was conducted. The task consisted of 48 real words, four words for each vowel category. All the words were monosyllabic words except for the four words used to test the schwa. The schwa was included based on results of the teacher/self-reported assessment that identified the schwa as a vowel that was difficult for Iraqi EFL learners. Monosyllabic words were used for the other vowel categories to avoid confusion with other vowels in the same word and possible changes in vowel quality due to different stress assignment rules in Arabic and English. The words chosen for the perception test were words that the researchers deemed as highly familiar to the participants. All the words chosen contained consonants that were also found in IA. Words with initial consonant clusters were avoided, but words with final consonant clusters were included as they were possible in IA.

The words used in the experiment conducted in this study were produced by a native female speaker who is an ESL tutor from the English Language Centre, of a University in the United Kingdom. She spoke the RP variety. The recording was done in one of the labs of the University using PRAAT (Boersma & Weenick 2009). The perception test was piloted with two English native speakers who verified the validity of the items. One of the native speakers misperceived two items, while the second speaker correctly identified all items. They also confirmed that the recordings were representative of RP.

The perception test is a phoneme discrimination task that measures learners' perception of English vowels. The experiment was designed using Psychopy (Pierce 2007). The test was conducted in a quiet room. Participants were taught how to start the task on the computer through instructions given at the beginning of the test and through five practice trials using words from outside the wordlist of the actual test. In the perception test, participants listened to a word presented aurally through the headphone and were required to select the word they heard from four choices provided visually on the computer monitor. Participants registered their responses on the computer and the next word was presented with a 2-second interval between trials. Participants could pace themselves on the task as the next item was not presented until they have made a decision for the previous trial. The 2-second interval between trials also gave the participants sufficient time to be ready for the next item. Repetition of the test was not allowed, and none of the participants requested to redo the task.

PARTICIPANTS

Two different groups of subjects were recruited for the study. The first group was 20 Iraqi EFL learners and 20 Iraqi teachers of English from Iraq who completed the teacher/self-reported assessment questionnaire. The second group of subjects included learners who were recruited for the perception test. Only the second group of subjects who were Iraqi EFL learners took the English proficiency test to determine their proficiency level.

The twenty teachers of English who were recruited to participate in the teacher/self-assessment survey were English teachers recruited from three different departments in the University of Anbar: the Education College for Women, the College of Education for Human Sciences and the College of Arts. The mean number of years of service as English teachers was ten years. The teachers taught a variety of English language subjects including English phonetics and phonology. The twenty learners of English who participated in the self-reported assessment were students in the English language department from the Education College for Women in the University of Anbar. The total number of learners who participated in the questionnaire was 50, but only results from 20 were included in the analysis. The re-test conducted in this study revealed that 30 of the learners were not consistent in their responses to the questionnaire; therefore their responses were excluded from the analysis. All of the

students were females with a mean age of 20 years. They started learning English at the age of 11 years and they specialised in English language and were teacher trainees for English at primary and secondary schools. All the respondents who took part in the teacher/self-reported assessment volunteered to participate in the study and had signed an informed consent form to certify this.

It should be noted that it would have been more appropriate to use the same group of learners for both the self-reported questionnaire and the perception test. This is a limitation of the current study as the learners who participated in the self-reported questionnaire were no longer available because the university was closed due to military operations taking place in the province of Anbar in Iraq. Therefore, the participants recruited for the perception task were Iraqi EFL learners studying in various universities in Malaysia. They were also volunteers who agreed to participate in this study and had signed the required consent form. The participants were chosen according to purposive sampling method making use of the demographic questionnaire described earlier. The selected participants were divided into two groups based on their results in the Oxford Placement Test (OPT). The first group is the elementary group (low, henceforth) with a score range of 19 through 29, and the second group is the upper intermediate group (advanced, henceforth) with a score range of 40 through 48; the maximum score for the test is 60. Table 1 summarises the mean of participants' age and years of L2 learning in addition to percentage of L2 use outside the class for the two groups of learners recruited for the perception test.

TABLE 1. Demographic information of learners in the perception test

Groups	OPT scores		Age		Years of English Instruction		Percent of English Use outside Class
Low (N= 25)	Range	19-29	Range	25-35	Range	9-11 years	10%
	Mean	24.88	Mean	31.4	Mean	9.6	
Advanced (N=24)	Range	40-48	Range	31-40	Range	14-15 years	20%
	Mean	41.04	Mean	35.4	Mean	14.5	

RESULTS

DIFFICULT ENGLISH VOWELS

Table 2 presents the rank order of vowels in terms of their level of difficulty and the percentage of errors identified for both groups of learners in the perception task. The number of participants and the number of trials for each group are stated on top of the table. Generally, the performance of the two groups in the perception test is not very different in terms of the nature of difficulties faced by subjects as they committed the greatest number of perception errors in /ɒ/ with error means of 73% and 68.75% for low and advanced groups respectively. Apart from **/ɒ/,** low and advanced groups have slightly varying degrees of difficulties in the perception of /I/, /ʌ/ and /ɔ:/ which ranked 2nd, 3rd and 5th for the low proficiency group; 4th, 3rd and 2nd for the advanced proficiency group. Moreover, the two groups' patterns of errors were very similar in terms of the easiest vowels to perceive. The two vowels, /ə/ and /i:/, were always at the bottom of the rank order list for the two groups.

TABLE 2. Rank order and error percentages of the perception test for the two groups

Vowel	Low Proficiency Group (N= 25; Trials = 100)		Advanced Proficiency Group (N= 24, Trials = 96)	
	Rank Order	Error Percentage	Rank Order	Error Percentage
/ɒ/	1	73	1	68.75
/ʌ/	2	63	4	27.08
/ɪ/	3	57	3	29.16
/ɜː/	4	53	8	14.58
/ɔː/	5	49	2	31.25
/uː/	6	49	9	12.5
/ɛ/	7	49	7	16.66
/ʊ/	8	39	6	20.83
/ɑː/	9	36	10	10.41
/æ/	10	34	5	23.95
/iː/	11	30	11	7.29
/ə/	12	12	12	0

PROFICIENCY LEVEL EFFECTS

One of the main objectives of this study is to identify the effect of experience measured through attained proficiency in English on the performance of Iraqi EFL learners. Thus, the study seeks to verify the null hypothesis that there is no significant difference in the mean scores of the low and advanced groups in the vowel perception test based on their level of proficiency in English. The low group had a lower mean score [M = 26.24, SD = 5.37] compared to the advanced group [M = 37, SD = 4.96]. To test the hypothesis that the low group and the high group are associated with a statistically significant different mean score, an independent samples t-test was performed. The independent variable in this analysis is the level of proficiency and the dependent variable is the mean scores of the subjects for the perception test in each of the two groups. As can be seen in TABLE 3 below, the distribution of data is sufficiently normal for the purposes of conducting a t-test [skew > 2.0 and kurtosis > 9.0] (Schmider, Ziegler, Danag, Beyer, & Buhner 2010). Additionally, the assumption of homogeneity of variance was tested and satisfied via Levene's F test, F (47) = .31, P =.578. The independent samples t-test was associated with a significant effect, t(47) = -7.60, P = .000. There was a statistically significant difference in the perception scores of the two group of participants. Hence, the null hypothesis that there is no statistically significant difference in perception means based on English language proficiency level is rejected. TABLE 4 presents the results of the Levene's test of homogeneity of variance and the results of the independent samples t-test.

TABLE 3. Descriptive statistics associated with perception scores of the two groups

Proficiency Group	N	M	SD	Skew	Kurtosis
Low	25	26.24	5.37	-.097-	-.716-
Advanced	24	37.50	4.96	-1.25-	1.92

TABLE 4. Levene's test and Independent Samples t-test

Levene's Test		t-test for equality of means		
F	sig	t	df	Sig (2-tailed)
.313	.578	-7.60	47	.000

A series of 12 independent samples t-tests were performed to identify if there were significant differences among the performance of EFL Iraqi learners in the perception of the 12 English simple vowels based on their level of proficiency. The results show no significant differences based on group factor in the perception of /æ/ [p = .455], and /ɒ/ [p = .216]. As explained

earlier, the vowel /ɒ/ was very difficult for both groups of subjects, while the vowel /æ/ was of medium difficulty for both groups. However, statistically significant differences were found between the two groups in the mean scores of the perception of the other 10 vowels: /I/, /ʌ/, /ʊ/, /ɑː/, /e/, /iː/, /ɜː/, /ɔː/ and /uː/ [$p < .05$]. The results from the paired-sample analysis provided further support that EFL learners with more exposure and gain in English proficiency outperform those who are still starting out or those who are less successful in the learning process. However, exposure or gain in proficiency alone cannot account for the difficulty with two vowels: /æ/ and /ɒ/. The relatively poor performance for /ɒ/ is most probably evidence of strong L1 interference as experience does not seem to have any positive effect.

PERCEIVED DIFFICULTY: TEACHER'S AND LEARNER'S ASSESSMENT

TABLE 5 shows the vowels teachers and learners identified as difficult to perceive. The vowels are listed in terms of the percentages of instances the vowel is identified as being difficult to perceive.

TABLE 5. Rank order of perceived difficulty based on teachers' and learners' assessment

	Teachers		Learners	
Vowel	Rank Order	Identification percentage	Rank Order	Identification percentage
/e/	1	55	3	50
/ə/	2	50	1	65
/ʌ/	3	45	2	55
/æ/	4	45	4	45
/ɜː/	5	45	5	45
/□/	6	35	6	30
/I/	7	35	9	25
/ɑː/	8	25	12	10
/ʊ/	9	20	7	40
/iː/	10	20	10	25
/ɔː/	11	15	8	30
/uː/	12	10	11	15

The results of the teachers/self-assessment task showed that the most difficult vowels to perceive are the /e/, /ə/, /ʌ/ and /æ/. These vowels have been identified as difficult by both teachers and learners. The identification patterns provided by teachers and learners are highly similar to each other not just in terms of vowels that were perceived to be difficult, but also with vowels that were perceived to be easy. Long vowels were identified by both teachers and learners as being comparatively easier to perceive than short vowels.

TEACHER/SELF-REPORTED DATA VERSUS PERFORMANCE DATA

Perceived difficulty as reflected in the teacher/self-reported assessment and the actual performance measured in the perception test was compared. The rank order obtained from the performance data for the two groups examined in this study is considerably different from the one provided by teachers and learners in the questionnaire. Teachers and learners have identified the vowels /e/ and /ə/ as the most difficult to perceive, yet they were among the easier vowels to perceive by learners from both groups of proficiency level in the perception test; they rank 7 and 12 in terms of difficulty with 1 being the most difficult and 12 the least in the rank order.

The vowel /ɒ/ which was found to be the most difficult vowel in the perception test was identified as a relatively easy vowel in the teacher/self-reported assessment task; it

occupied the 5th rank in both groups. However, for some vowels such as /ʌ/, /uː/, /ɑː/, /iː/ and /ʊ/, the reported perception matched the actual rank in the performance data. Table 6 shows the rank order of the actual perception test for both the low and advanced proficiency groups, and the rank as reported in the questionnaire for both ESL teachers and learners.

TABLE 6. Rank order of perception test data and teacher/self-reported data

Vowel	Perception Test Data		Teacher/Self-reported Data	
	Low	High	Teachers	Learners
/ɒ/	1	1	6	6
/ʌ/	2	4	3	2
/I/	3	3	7	9
/ɜː/	4	8	5	5
/ɔː/	5	2	11	8
/uː/	6	9	12	11
/e/	7	7	1	3
/ʊ/	8	6	9	7
/ɑː/	9	10	8	12
/æ/	10	5	4	4
/iː/	11	11	10	10
/ə/	12	12	2	1

DISCUSSION

English vowels were perceived with varying levels of success as indicated by error percentages in the perception test. This finding is in line with the ones arrived at in many works in the literature. For example, as reported in Jeske (2012), and Best and Tyler (2007), not all nonnative segments are equally difficult to discriminate. Some are discriminated moderately well and others are at near native-like levels.

PROFICIENCY EFFECTS ON VOWEL PERCEPTION

By and large, the perception test results indicated significant differences between the two groups of Iraqi EFL learners. The performance was significantly different for all vowels except two. These results suggest significant effects of proficiency on the perception abilities of these EFL participants. This finding goes in line with Flege's (1995) idea that perceptual ability remains adaptive over a lifetime. Best (1995) also notes that, within the framework of the Direct Realist Theory, more exposure to the L2 even as the learners approach adulthood makes category modification and reallocation possible.

However, positive effects of proficiency were not found for the two vowels: /ɒ/ and /æ/. The independent samples t-tests performed in this study together with the error analysis and vowels ranking conducted showed that the vowel /ɒ/ was very difficult and the vowel /æ/ was perceived with medium difficulty by the two groups. The reason behind the difficulty with the vowel /ɒ/ is not very clear. This vowel is also difficult for Syrian Arabic ESL learners as reported in Almbark (2012). Nevertheless, the discussion in the following section offers some suggestions.

VOWEL RANKING

Based on the data analysed in this study, some English vowels were found to be more difficult to perceive compared to others. This section tries to account for these difficulties based on PAM (Best 1995), PAM-L2 (Best & Tyler 2007) and SLM (Flege 1995). In these models of speech perception, difficulty associated with listening to L2 sounds lies in the phonetic-articulatory similarities as well as differences between the two L2 sounds as well as phonetic

realization of these vowels in the L1 and L2 systems. The discussion presented here takes into account the relation between vowels within the vowel space of the target L2 (RP) and the relation or contrast between the the two vowel systems: RP and IA.

Learners tested in this study encountered most difficulty in the perception of /ɒ/, /ʌ/, /I/ and /ɔ:/. Difficulty in the perception of these vowels persists despite the increase in proficiency level. The understanding of the nature of difficulty in the perception of these vowels can be achieved by looking at the vowel space of the L2 and the differences and similarities between the L1 and L2 vowel charts. Starting with /ɒ/, we notice that this vowel is found in IA, but with different features. The vowel /ɒ/ in IA is half close, while the English counterpart is open i.e. the two vowels are neither totally different nor identical, but similar. The difficulty here is accounted for through SLM which assumes the greatest degree of difficulty with similar sounds.

According to SLM, the sounds of L1 and L2 coexist within a single phonological space and L1 sounds work as filters of L2 sounds. A mechanism called equivalence classification assigns a new L2 sound a new category, but it cannot be done for a similar sound which is usually perceived as some L1 category (Flege 1987, Flege 1995). Similar L1 and L2 sounds can be realised as L1 sounds due to the congruence of phonetic systems across L1 and L2. L2 learners may equate the L2 phonology with their L1 and produce the L1 phonetic realization (Shahidi, Aman & Kechot 2012, Shahidi & Aman 2011). The same thing is applicable to the vowel sound /ɔ:/ which is found in the two languages, but its position in the vowel space of the two languages is different. The vowel /ɔ:/ is open in RP, but almost half close in IA, which makes these vowels similar. Thus, difficulty is predicted and understood within SLM as well.

The vowel sound /ʌ/ was found to be difficult to perceive, even though it is not found in IA. According to SLM, sounds which are new for learners are supposed to be easy to perceive and assigned a distinct position in the vowel space. The vowel sound /I/ seems to be the most confusing one, as the difficulty in perceiving it cannot be accounted for by SLM either. This vowel is found in both languages and it occupies the same position in the vowel space, yet difficulty was detected. This could be phonetically explained, as English vowels are closer to each other in terms of phonetic distance which poses a perceptual and articulatory challenge for EFL/ESL learners. On the contrary, some vowels were easily identified by participants in this study such as /ə/, /i:/ and /ɑ:/. These vowels occupied the ranks 12, 11, and 9, and 12, 11, and 10 for the low and advanced groups respectively. The schwa /ə/ is new for Iraqi learners, so it is easy for them to perceive based on SLM. The vowel /i:/ and /ɑ:/ are almost identical in the two languages, thus they are easy to perceive based on both SLM and PAM.

PERCEIVED DIFFICULTY VERSUS ACTUAL PERFORMANCE

The discussion presented in the section above accounted for the issue of which vowels are more difficult or easy for Iraqi EFL learners to perceive based on the results of the perception test. Two other lists of difficulty rank were obtained based on the self-reported assessment questionnaire which was administered to a group of Iraqi English language teachers and another group of Iraqi EFL learners. The reflections provided by teachers and learners in the self-reported assessment showed that teachers and learners are aware of the difficulties they or their learners encounter in the perception of vowels in general, as they all acknowledged such difficulties. However, their identification of the specific English vowels which were difficult to perceive seems to be motivated by the assumption that vowels which have no counterparts in their L1 pose more difficulties than those which have. This could have been guided by

explicit knowledge or beliefs held by the teachers and EFL learners which may or may not be in fact accurate.

Iraqi teachers and EFL learners identified the vowels /e/, /ə/, and /ʌ/ as the most difficult to perceive. They identified vowels which are approximately matched in the two languages as being of medium difficulty such as the /æ/, /ɜ:/, /ɔ/, /ʊ/ and /I/. Another factor which might have influenced the respondents' responses is the awareness of the durational cues which enable learners to distinguish short vowels from long vowels in Arabic, which may be transferred to identification of long vowels in RP, making these English vowels somewhat easier. Therefore, they identified long vowels as easy to identify and this expectation was matched in the perception test where participants did in fact perform better with most long vowels except for /ɔ:/ which was difficult to perceive even for the advanced learners.

However, they were not accurate with the other vowels. For example, the vowels /ɛ/ and /ə/, which was identified as very difficult, were comparatively easy for learners to perceive in the perception test. This can be explained by SLM, which postulates learners' ability to assign new sounds a separate category making use of the equivalence classification mechanism (Flege 1987 & Flege 1995). There were also mismatches between the two sets of data for /ɒ/ and /I/. The vowels /ɒ/ was considered of medium difficulty while /I/ was considered easy. However, the perception test found /ɒ/ to be extremely difficult. These two vowels are found in IA but they are realised differently phonetically in IA and in RP. Respondents of the self-assessment questionnaire probably rated them as easy as these two vowels are found in their L1 but they were probably not aware of the spectral characteristics of these vowels which make them different from the corresponding vowel in IA and this may be the reason for the difficulty posed in the perception task.

CONCLUSION AND RECOMMENDATIONS FOR FUTURE STUDIES

The present study showed that Iraqi EFL learners encounter varying degrees of difficulty in the perception of English vowels. They often make use of durational cues in their perception of these vowels; hence they have less difficulty in the perception of long vowels. However, the degree of difficulty shown by learners tends to decrease with the increase in L2 experience. Generally, advanced learners did better than learners in the low proficiency group in the perception of most vowels. This conclusion is well supported by both SLM and PAM which claim that increase in experience in perceiving and using L2 increases the likelihood of acquiring L2 sounds in a native-like way (Ho 2010). Yet, this positive effect of experience was not effective for two vowels: /æ/ and /ɒ/. The results obtained in this study go in line with some studies in the literature which have obtained mixed effects of experience among different groups such as Ho (2010); Munro and Derwing (2008); Baker and Trofimovich (2006); Tsukada, Birdsong, Bialystok, Mack, Sung and Flege (2005) and Flege et al. (1997).

The study also concluded that Iraqi teachers and learners of English are aware that the acquisition of English vowels is not an easy task. Yet, their beliefs about the specific vowels that are difficulty differ considerably from actual data obtained from the perception test. This is not too surprising as awareness about phonetic details is often not raised to the conscious level. Since there is also a lack of empirical studies involving Iraqi Arabic ESL learners, teachers and pre-service teachers may not be informed of the intricate nature of phonological mapping of L2 segments. Such a study can raise and monitor teachers' and learners' awareness of the difficulties learners encounter in this respect. Learners and more specifically teachers can be guided by the results of this study to where they need to exert more or less efforts in learning and teaching English vowels. Gilakjani and Ahmadi (2011) state that second

language pronunciation is a cognitive skill, hence, the way learners perceive their pronunciations is really important. Guiding and modifying learners' and teachers' awareness can be beneficial to learners. Nevertheless, more studies, which may include larger samples of teachers and learners, are necessary to first validate the results provided in this study before any concrete suggestions can be offered to teachers and learners of English.

Utilising this study as a foundation, further studies can investigate the acquisition of English vowels longitudinally by following the same learner as they progressed, both in terms of actual perceptual ability and phonological awareness as a metalinguistic resource for autonomous learning. This can be beneficial in tracing development in perception skills and drawing up more accurate pedagogical recommendations. Furthermore, this study can be used for comparison with other similar studies to authenticate data obtained through self-reporting questionnaires. The examination of the production of English vowels by Iraqi learners is also required, because these two skills, perception and production, are often correlated. More attention to L1 interference in the perception of English vowels is also necessary to find out the specific perceptual assimilation patterns and explain them based on PAM and PAM-L2.

REFERENCES

Al-Bazi, M. P. (2006). *Iraqi Dialect versus Standard Arabic*. United States: Medius Corporation.

Almbark, R. (2012). The perception and production of SSBE vowels by Syrian Arabic learners: The Foreign Language Model. Unpublished PhD Thesis, University of York, UK.

Ali, E. M. T. (2013). Pronunciation problems: Acoustic analysis of the English vowels produced by Sudanese learners of English. *International Journal of English and Literature*, *4*(10), 495-507.

Al-Khalesi, Y. M. (2006). *Modern Iraqi Arabic with MP3 files: A Textbook*. United States: Georgetown University Press.

Al-Tamimi, J. (2007). Static and dynamic cues in vowel production: A cross dialectal study in Jordanian and Moroccan Arabic. Paper presented at the 16th International Congress of Phonetic Sciences (ICPhS), Saarbrücken, Germany, August.

Alotaibi, Y. A., & Hussain, A. (2010). Comparative analysis of Arabic vowels using formants and an automatic speech recognition system. *International Journal of Signal Processing, Image Processing and Pattern Recognition*, *2*(2), 11-22.

Baker, W., & Trofimovich, P. (2006). Perceptual paths to accurate production of L2 vowels: The role of individual differences. *IRAL–International Review of Applied Linguistics in Language Teaching*, *44*(3), 231-250.

Best, C. (1995). A direct realist view of cross-language speech perception. In Winifred Strange (Ed.). *Speech Perception and Linguistic Experience: Issues in Cross-Language Research* (pp. 171-206). Baltimore: York Press, 171-206.

Best, C. T. (1995). Learning to perceive the sound pattern of English. *Advances in Infancy Research, 9*, 217-217

Best, C. T. (1999). Development of language-specific influences on speech perception and production in pre-verbal infancy. Paper presented at the 14th International Congress of Phonetic Sciences. USA, San Francisco, August.

Best, C. T., & Strange, W. (1992). Effects of phonological and phonetic features on cross language perception of approximants. *Journal of Phonetics, 20*, 305-330.

Best, C. T., & Tyler, M. D. (2007). Nonnative and second-language speech perception: Commonalities and complementarities. In M. J. Munro & O. S. Bohn (Eds.). *The Role of Language Experience in Speech Learning* (pp. 13-34). Amsterdam: John Benjamins.

Boersma, P. and Weenink, D. (2009). *Praat: Doing phonetics by computer (Version 5.1.19)* [Computer program]. Retrieved on October 21, 2009 from http://www.praat.org/

Bohn, O. S., & Flege, J. E. (1990). Interlingual identification and the role of foreign language experience in L2 vowel perception. *Applied psycholinguistics, 11*(03), 303-328.

Borg, S., & Al-Busaidi, S. (2012). *Learner Autonomy: English Language Teachers' Beliefs and Practices*. London: British Council.

Boyer, N. E. (2010). *Phonemic Awareness Instruction: Effects of Letter Manipulation and Articulation Training on Learning to Read and Spell.* New York: City University of New York.

Cebrian, J. (2006). Experience and the use of non-native duration in L2 vowel categorization. *Journal of Phonetics*, *34*(3), 372-387.

Dörnyei, Z. (2009). *The Psychology of second Language Acquisition*. Oxford: Oxford University Press.

Ellis, R. (2004). The definition and measurement of L2 explicit knowledge. *Language Learning*, *54*(2), 227-275.
Erwin, W. M. (2004). *A Short Reference Grammar of Iraqi Arabic*. United States: Georgetown University Press.
Fabra, L. R., & Romero, J. (2012). Native Catalan learners' perception and production of English vowels. *Journal of Phonetics*, *40*(3), 491-508.
Flege, J. E. (1987). The production of "new" and "similar" phones in a foreign language: Evidence for the effect of equivalence classification. *Journal of Phonetics, 15*(1), 47-65.
Flege, J. E. (1995). Second language speech learning: Theory, findings, and problems. In Winifred Strange (Ed.). *Speech Perception and Linguistic Experience: Issues in Cross-language Research* (pp 233-277). Timonium, MD: York Press.
Flege, J. E., Bohn, O. S., & Jang, S. (1997). Effects of experience on non-native speakers' production and perception of English vowels. *Journal of Phonetics*, *25*(4), 437-470.
Flege, J. E., & Port, R. (1981). Cross-language phonetic interference: Arabic to English. *Language and Speech*, *24*(2), 125-146.
Garton, A. & Pratt, C. (1998). *Learning to be Literate: The Development of Spoken and Written Language*. Malden, Massachusetts: Blackwell Publishers.
Gilakjani, A., Ahmadi, S., & Ahmadi, M. (2011). Why is pronunciation so difficult to learn? *English Language Teaching*, *4*(3), p74.
Ho, Y. K. (2010). The perception and production of American English front vowels by EFL learners in Taiwan: the influence of first language and proficiency levels. Unpublished PhD Thesis, University of Kansas, USA.
Jeske, A. R. (2012). The perception of English vowels by native Spanish speakers. Unpublished M.A. Thesis, University of Pittsburgh, USA.
Joseph, M. and E. Odisho. (2005). *Techniques of Teaching Comparative Pronunciation in Arabic and English*. Gorgias Press LLC.
Kopczynski, A., & Meliani, R. (1993). The vowels of Arabic and English. *Papers and Studies in Contrastive Linguistics*, *27*, 183-192.
Kuo, Y. (2003). The effects of age on Taiwanese EFL learners' long-term English proficiency. Unpublished PhD Thesis, University of Kansas,USA.
Lai, Y. (2008). Acoustic realization and perception of English lexical stress by Mandarin learners. Unpublished PhD Thesis, University of Kansas, USA.
Matsubara, J. (2015). An emerging area in second language phonology: the perception of English vowels by adult second language learners. *Teachers College, Columbia University Working Papers in TESOL & Applied Linguistics*, *6*(2), Retrieved November 3, 2015 from http://www.tc.columbia.edu/tesolalwebjournal.
Munro, M. J. (1993). Productions of English vowels by native speakers of Arabic: Acoustic measurements and accentedness ratings. *Language and Speech*, *36*, 39-66.
Munro, M. J., & Derwing, T. M. (2008). Segmental acquisition in adult ESL learners: A longitudinal study of vowel production. *Language Learning*, 58, 479-502.
Munro, M. J., & Derwing, T. M. (2015). A prospectus for pronunciation research in the 21st century: A point of view. *Journal of Second Language Pronunciation*, *1*(1), 11-42.
Munro, M. J., Flege, J. E., & MacKay, I. R. A. (1996). The effects of age of second language learning on the production of English vowels. *Applied Psycholinguistics, 17*, 313- 334.
Nikolova, A. (2012) L1 interference in the perception and production of English vowels by Arabic speakers. Unpublished PhD Thesis, Alliant International University, San Diego, USA.
UCLES (2001). *Quick Placement Test: Version 2.* Oxford University Press and University of Cambridge Local Examinations Syndicate.
Peirce, J.W. (2007). PsychoPy - Psychophysics software in Python. *Journal of Neuroscience Methods*, 162, 8-13.
Piske, T., MacKay, I. R., & Flege, J. E. (2001). Factors affecting degree of foreign accent in an L2: A review. *Journal of Phonetics*, *29*(2), 191-215.
Rasekhi, V., (2009). *ESL/EFL Learners' Perception of their Pronunciation Needs and Strategies.* Unpublished PhD Thesis, California State University, Fresno, USA.
Roach, P. (2004). British English: Received Pronunciation. *Journal of the International Phonetic Association*, *34*, 239-245.
Saadah, E. (2011). The production of Arabic vowels by English L2 learners and heritage speakers of Arabic. Unpublished PhD Thesis, University of Illinois at Urbana-Champaign, USA.
Schmider, E., Ziegler, M., Danag, E., Beyer, L., & Buhner, M. (2010). Is Really Robust? Re-investigating the Robustness of ANOVA against Violations of the Normal Distribution Assumption. Methodology: *European Journal of Research Methods for the Behavioral and Social Sciences, 6*, 147-151.

Schmitz, S. (2011). The development of phonological awareness in young children: Examining the effectiveness of a phonological awareness program. *Open Access Theses and Dissertations from the College of Education and Human Sciences.* Paper 112. Retrieved from http://digitalcommons.unl.edu/cehsdiss/112

Shahidi, A. H., Aman, R., & Kechot, A. S. (2012). Production and Perception of English Word Final Stops by Malay Speakers. *GEMA Online® Journal of Language Studies*, *12*(4), 1109-1125.

Shadiri, A. H., & Aman, R. (2011). An acoustical study of English plosives in word initial position by Malays. *3L: The Southeast Asian Journal of English Language Studies, 17(*2), 23-33.

Smith, B. (2001). *Learner English: A Teacher's Guide to Interference and Other Problems*. Cambridge: Cambridge University Press.

Snow, C. E., Burns, M. S., & Griffin, P. (1998). *Preventing Reading Difficulties in Young Children.* Washington, DC: National Academy Press.

Tingley, P. A., Dore, K. A., Lopez, A., Parsons, H., Campbell, E., Bird, E. K. R., & Cleave, P. (2004). A comparison of phonological awareness skills in early French immersion and English children. *Journal of Psycholinguistic Research, 33*(3), 263-287.

Tsukada, K., Birdsong, D., Bialystok, E., Mack, M., Sung, H., & Flege, J. E. (2005). A developmental study of English vowel production and perception by native Korean adults and children. *Journal of Phonetics, 33*, 263-290.

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

Please, fill in the blanks with the information required:

Age: ----------
1. Which part of Iraq are you from? ----------
2. What is your birthplace (city and country)? ----------
3. Have you stayed in other countries?
Where ---------- at what age ---------- for how long ----------
Where ---------- at what age ---------- for how long ----------
Where ---------- at what age ---------- for how long ----------
4. Have you learned English from a native speaker before? ----------
If yes, at what age? ---------- For how long? ----------
Where was the teacher from? ----------
5. What is your first language? ----------
6. What is your parent's first language? Mother---------- Father --------
7. What are the languages your parents speak? Mother ---------- Father --------
8. How old are you when you started learning English? ----------
9. Do you use English outside the class? ----------How often? ----------
10. What kind of activities have you tried to learn English? Tick from the following choices:
    - Reading
    - Singing English songs
    - Watching English TV programs or movies
    - Listening to English teaching programs
    - Others
11. How many languages can you speak? ----------
What are they? ----------
12. Is your hearing normal? ----------

APPENDIX B

PERCEIVED DIFFICULTY OF ENGLISH VOWELS

Form (A) for teachers
Please, provide the information required below:
1. Qualification:
2. Academic Rank:
3. Subjects you teach:
4. Years of experience:

Please, answer the following questions
1. Do you think that your students encounter difficulties in the perception of English vowels?
   Yes/No:
2. What are these vowels? (Select your choices from the list below)

3. Do you think that your students encounter difficulties in the production of English vowels?
   Yes/No:
4. What are these vowels? (Select your choices from the list below)

Form (B) for students
Please, respond to the following questions:
1. Do you think you encounter any difficulties in the perception of English vowels?
   Yes/No:
2. What are these vowels? (Select your choices from the list below)

3. Do you think that you encounter any difficulties in the production of English vowels?
   Yes/No:
4. What are these vowels? (Select your choices from the list below)

1	/I/	as in *dish*	7	/A/	as in *hot*
2	/i:/	as in *machine*	8	/ɔ:/	as in *fall*
3	/e/	as in *said*	9	/Y/	as in *should*
4	/ɜ:/	as in *chair*	10	/u:/	as in *who*
5	/Θ/	as in *fat*	11	/ ℘ /	as in *tough*
6	/ɑ:/	as in *car*	12	/ə/	as in *sofa*