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Auditory Recognition of English Problem-Causing Vowels Creating Pronunciation Fossilization for Turkish English Majors

Mehmet Demirezen¹

Abstract

English vowels cause major problems to Turkish English majors because Turkish and English vowel inventory do not match to a great extent. Turkish phonetic and phonological system has a significant impact on the perception and production of English individual vowels and vowel contrasts. In this respect, vowels, which carry the heart of syllables and words, fossilization in pronunciation and intonation get to be inescapable. The paper aims to find out the auditory difficulty of the order of the problem-causing English vowel phonemes for the Turkish-English majors and to determine to what rate can the non-native speaking participant distinguish such vowel sounds and match them with their IPA signs when heard in isolation within given oral stimuli. This research was designed to identify auditory perception rates of Turkish-English majors on English problem-causing vowel segmental phonemes by 39 heterogeneous pre-intermediate English freshmen majors whose basic background on English was different in a private university in Ankara, Turkey. A pre-test was constructed wherein English problem-causing vowel phonemes were used as auditory stimuli in isolation, and the participants were asked to match the IPA signs and phonemes articulated by the researcher. Since the participants had serious perception and phonetic coding difficulties of vowels in the pre-test, a three-hour teaching treatment was administrated to them. After waiting two weeks, the same pre-test was administrated as a post-test, the results of which were submitted to SPSS 20 to determine the difficulty rates of English problem-causing vowel phonemes for pre-intermediate Turkish-English majors. The rate of the order of difficulty signaled that the vowel phonemes of English inventory that did not exist in Turkish were problematic for Turkish English majors: [ɪ], with a perception rate of 66, 67% [ɑ]; with a perception rate of 48,72%, and [ə], with a perception rate of 48,72%. The results of the present study give supporting evidence to the SLM of Flege (1995) in relation to categorical sound perception and discrimination pattern.

Keywords: auditory recognition, categorical perception, IPA symbols, vowel phonemes, fossilization, phonetic coding ability [ɪ, ɑ, ə].

Özet

İngilizce ünlü harfler Türk İngiliz dili öğretmenliği öğrencileri için önemli sorunlar doğurur, ve bu durum Türkçe ve İngilizce ünlü dökümlerinin büyük ölçüde eşleşmemesinden kaynaklanır. Türkçe'nin fonetik ve fonolojik sistemi İngilizce'de ünlü harf ve ses uyumu algısı ve sesletimi üzerinde önemli bir etkiye sahiptir. Bu anlamda, hecelerin ve kelimelerin odağını taşıyan ünlü harflerin telaffuz ve tonlamasında kemikleşme kaçınılmaz olur. Bu çalışma, Türk İngiliz dili öğretmenliği öğrencileri için sorunlu İngilizce ünlü harflerin düzeninin işitsel zorluğunu bulmayı ve anadili İngilizce olmayan katılımcıların verilen sözlü uyucılarda bu ünlü harfleri ayrı bir şekilde duyduklarında hangi oranda ayırt edebileceklerini ve Uluslararası Fonetik Alfabe (IPA) gösterimleri ile eşleştirebileceklerini belirlemeyi amaçlamaktadır. Bu araştırma, Ankara'da özel bir üniversitede İngilizce temel altyapıları farklı olan alt orta seviye heterojen bir grup (n=39) birinci sınıf İngiliz dili öğretmenliği öğrencisinin İngilizce'de problem yaratan ünlü parça sesbirimlerin işitsel algılarını belirlemek amacıyla yapılmıştır. İngilizce'de problem yaratan ünlü sesbirimlerinin işitsel uyarıcıların ayrı olarak kullanıldığı bir ön test yapılmış ve katılımcılardan araştırmacının telaffuz ettiği bu sesbirimlerini IPA gösterimleri ile eşleştirmeleri istenmiştir. Katılımcılar ön testte ünlü harflerle ilgili ciddi algılama ve fonetik kodlama sorunu yaşadığından, öğrencilere üç saatlik bir öğretim uygulanmıştır. İki haftanın ardından, aynı ön test bu kez son test

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olarak uygulanmış ve alt orta seviye Türk İngiliz dili öğretmenliği öğrencileri için İngilizce'de problem yaratan ünlü sesbirimlerin zorluk oranlarını belirlemek için sonuçlar SPSS 20 paket programına girilmiştir. İngilizce dökümünde Türkçe'de bulunmayan ünlü sesbirimlerinin zorluk sırası oranları bu seslerin Türk İngiliz dili öğretmenliği öğrencileri için problemli olduğunu göstermiştir: Sıralamada yüzde 66,67 algılanma oranı ile [ɪ], yüzde 48,72 ile [a]; ve yüzde 48,72 algılama oranı ile [ə] ünlüsü gelmektedir. Bu çalışmanın sonuçları, kategorik ses algısı ve ayırım modeli ile ilişkili olarak, Flege'in (1995) Konuşma Öğrenme Modelini (The Speech Learning Model) destekleyici kanıtlar sunmaktadır.

Anahtar Kelimeler: İşitsel algılama, kategorik algı, IPA gösterimleri, ünlü sesbirimleri, kemikleşme, fonetik kodlama yeteneği [ɪ, a, ə]

1. INTRODUCTION

The present study investigates whether Turkish English majors have problems in their audition of North American English vowels / through given oral stimuli. It also aims to determine whether vowel inventory and vowel acoustic properties are equally good predictors of listeners' cross-language perception difficulty or lack thereof. A great majority of non-native English majors cannot hear the difference between English vowel phonemes and sounds, and therefore they cannot categorically discriminate them due to perceptual narrowing. In this research, the categorical audition of English vowels by Turkish-English majors will be investigated.

Many studies on non-native speech and second language (L2) perception relationship suggest that a second language learner hears with an L1 accent when listening to or perceiving the sounds of the L2 (Strange, 1995, 2007; Escudero, 2005). It is well-established that the learners' native or first language creates phonetic impacts on how they hear and categorize L2 sounds (e.g., Best & Tyler, 2007; Bohn & Jang, 1997; Escudero, 2005; Flege, 1995; Flege). Having the similar vowels in L2 and L1 facilitates auditory vowel discrimination.

2. LITERATURE REVIEW

2.1. A Comparison of English and Turkish vowel charts

English has 13 vowel phonemes while Turkish has only 8 vowels. In this respect, Iverson and Evans (2007) stated that learning an L2 vowel system may be fundamentally different for individuals with a larger and more complex vowel system than for those with a smaller and simple vowel system.

	Front	Central	Back
High	Tense [iɪ] beat Lax [ɪ] bit		[uɯ] boot [ʊ] put
Mid	Tense [eɪ] bait Lax [ɛ] bet	[ə] sun	[oɯ] boat
Low	[æ] bat	[ɑ] hot	[ɔ] bought

Adapted from Lane (2005: 2)

English Vowel chart

	Front		Back	
	Unrounded	Rounded	Unrounded	Rounded
Open	e	ö	a	o
Close	i	ü	ɪ	u

Turkish vowel chart

Source: Göksel, A. & Kerslake, C. (2005). *Turkish: A comprehensive Grammar*. Routledge.

English has 12 vowels and the four basic parameters for vowel description in English are front-back, high-low, lip position (rounded-unrounded), and the added dimension tense/lax. Turkish has 8 vowels that have two tongue heights, and this situation creates an audition problem for Turks.

A structural comparison of English vowels and Turkish vowels can be exhibited as follows:

English vowel phonemes	Turkish vowel phonemes	English vowel phonemes	Turkish vowel phonemes
i:	none	u:	none
ɪ	ı	ʊ	u
e:	e	o:	o
ɛ	none	ɔ	none
æ	none	none	y (ü)
ə	u	none	ø (ö)
ɑ	a	ʌ	none

With consonant sounds one can physically demonstrate the articulation of vowels by looking at a mirror how to form the mouth to make the sounds in the mouth (oral cavity) wherein most of the vowels come into being in there doesn't really look any different from each other in the languages of the world. Many studies on non-native speech and second language (L2) perception relationship suggest that a second language learner hears with an L1 accent when listening to or perceiving the sounds of the L2 (Strange, 1995, 2007; Escudero, 2005). It is well-established that the learners' native or first language creates phonetic impacts on how they hear and categorize L2 sounds (e.g., Best & Tyler, 2007; Escudero, 2005; Flege, 1995; Flege, Bohn & Jang, 1997). Having the similar vowels in L2 and L1 facilitates auditory vowel discrimination.

2.2. Hearing the Vowel phonemes in L1 and L2

When many non-native learners hear the target language phones or phonemes that do not exist in their mother tongue, they typically perceive such sounds through fused perception in a way closer to phonemes or sounds that exist in their mother tongue. From a second language teaching (SLT) point of view, this issue can have both practical and theoretical implications. Theoretically, the teacher could look for the conditions that facilitate the development of the second language student's ability to differentiate the new phonetic categories. So, **categorical perception** is a phenomenon in which labeling limits discrimination. This allows the listeners to recognize such sounds according to the phonemic categories of their language and ignore unessential variations within a category. In practice, the teacher can foresee the difficulties the students may experience distinguishing certain phonetic contrasts in the second language.

2.3. Models of Sound Perception

There is a significant body of evidence suggesting that L1 and L2 speech sounds do emit particular impacts over each other during the sound production.

2.4. Speech Learning Model (SLM)

Mother tongue influence has often been argued as one major contributor to learner difficulties of L2 phonemes, which means that L2 sounds that are different from the L1 sounds are often difficult to perceive and produce. This fact is proven by Flege (1995) in his Speech Learning Model (SLM) by saying that L2 learners are likely to judge L2 sounds as realizations of an L1 category due to their lack of detection of the differences between L1 and L2 phonemes. If non-native L2 learners can become aware of the phonetic and phonemic differences between an L2 sound and the nearest L1 sound, then they can perceive the L2 sound more easily. If not, problems will certainly arise. SLM claims that similarities, rather than differences, between the native and target languages are thus seen as the main contributor to learner difficulties in terms of phonemes and phonetics.

The results of the present study give supporting evidence to the SLM of Flege (1995) in relation to categorical sound perception and discrimination pattern, regarding native phonological influence and learners' perception of non-native phones in terms of their L1 phonological categories are not to be falsified.

2.5. Perceptual Assimilation Model (PAM)

Another well-known model which is called Perceptual Assimilation Model (PAM), developed by Best (1994), is an example of a feature-based model for sound discrimination for non-native speech sounds. It makes predictions as to how one's native language influences the discrimination of two non-native

sounds. It involves the attributions of L2 learners' discrimination problems to the phonetic similarity between L1 and L2 sounds are the PAM. This an example of a feature-based model for sound discrimination for non-native speech sounds because it makes use of native sound and target sounds contrasts. PAM proposes that non-native sound and phonemic contrasts are perceived in terms of their phonetic similarity to the phonological categories present in a non-native learners' native language (Harnsberger, 2001). It postulates that "non-native speech perception is strongly affected by listeners' knowledge (whether implicit or explicit) of native phonological equivalence classes, and that listeners perceptually assimilate non-native phones to native phonemes whenever possible, based on detection of commonalities in the articulators, constriction locations and/or constriction degrees used" (Chan, 2013: 182; Best, 1993; cited in Best, McRoberts, & Goodell, 2001: 777). The correspondence between the native and target languages is seen as a vitally factor governing foreign language speech perception because the degree of articulatory gestural similarity controls the equalization and sound assimilation between native phoneme categories and non-native phones.

According to the PAM, only some non-native contrasts are difficult for mature listeners (phonologically sophisticated listeners) to discriminate, whereas others should be easy to discriminate even without prior training or exposure (Chen, 2013: 82). Apparently, PAM, firstly, assumes strong phonological influence from the L1, and secondly, it suggests that the perceptual variations depend on the differences in the gestural similarities and discrepancies between the non-native contrasts and the native phonemes. "According to the PAM, only some non-native contrasts are difficult for mature listeners (phonologically sophisticated listeners) to discriminate, whereas others should be easy to discriminate even without prior training or exposure". Chan, 2013: 83). For non-assimilable contrasts between L1 and L2, discrimination performance depends on how similarly the two sounds are perceived to be non-speech sounds. The pattern of performance they obtained with adult listeners across several experiments with non-native speech contrasts, as Best (1993), Best, McRoberts, & Goodell, 2001) discovered, had been consistent with this prediction.

2.6. The Second Language Linguistic Perception (L2LP) model

Escudero (2005) proposed that the learners' linguistic background predicts difficulty in learning new L2 sounds. The models explain that when the non-native learners of a tongue are introduced to a new speech sound, they filter and categorize it according to the sounds already present in their native language. Escudero's L2LP model states that a listener's native sound perception should closely match the same sounds that are produced in the listener's native language (Escudero, 2005; Escudero, Simon & Mitterer, 2012; Escudero & Williams, 2012). The model thus proposes an alternative way of predicting non-native perception difficulties thorough acoustic comparisons of the native and target language. In this respect, Kingston (2003) in terms of PAM, researched the ability of American English learners to categorize German non-low vowels. Kingston (2003) found that pairs of vowels contrasting minimally for the same feature in German often would not assimilate in the same way to English vowels, so some instances of the same contrast between German vowels were more easily discriminated than others. In addition, Imsri (2003) have found supporting evidence for the assertions or basic premises of the PAM, found that inexperienced learners perceived non-native sounds according to their L1 inventory. Likewise, Pilus (2002) pointed to learners' better perception abilities than production abilities in his data. But Proctor (2004) in his investigation of the production and perception of Australian English vowels by Vietnamese and Japanese ESL speakers, he stated that PAM was useful at explaining some aspects of L2 phonology, but it fell short in account for other issues such as temporal transfer (the transfer of skills in the perception of duration). Strange, Akahane-Yamada, Kubo, Trent, Nishi and Jenkins (1998) and Strange, Akahane-Yamada, Kubo, Trent and Nishi (2001) pointed out that identification and discrimination of L2 vowels diverged significantly as a function of the settings in which they were produced and presented.

Chan & Li (2000, pp. 80-81) and Stibbard (2004) indicated that, pertaining to the learning of vowel length of English vowel phonemes, while some of the Chinese learners whose mother tongue is Cantonese use a short vowel for a long one, some others produce a long vowel for a short one, and some others produce a vowel sound which is somewhere in between the long and short vowels when pronouncing either one. The audition problems of English vowels are often explained in terms of the

inventory gaps between L1 and L2. L2 sounds non-existent in the native language are more difficult than those shared by both the native and target phoneme inventories. The substitution sounds from the target language often bear some articulatory and acoustic resemblance to the closest L1 sounds.

3. THE STUDY

In Brown (1995) argued that training with minimal pairs was far less useful. Perlmutter (1989) carried out a study in which ESL learners were given language instruction with a special emphasis on pronunciation, and the findings showed that the students' intelligibility improved. Derwing, Munro, and Wiebe (1998) showed that long-term ESL individuals' pronunciation can improve significantly in a 12-week program emphasizing global production skills.

The present research addressed the following research questions:

1. Is there a meaningful difference between the pre and posttests?
2. What is the order of problematic vowel sounds for Turkish English majors after the pre-test?
3. Which vowel are sounds still problematic for Turkish English majors even after the post- test?
4. Do the participants need a further treatment?

3.1. The aim of the study

The aim of the present research was to see if there were significant results in training the first year English majors with pre-intermediate backgrounds to differentiate contrasting vowel sounds in a regular ESL classroom condition. Another goal of the study was to see to what extent it is a good practice to exercises in training First year English pre-intermediate majors to perceive such vowel contrasts. One final goal was to investigate the rate the audition and differentiation of vowels categorically and contrasting vowel sounds English in terms of categorical perception.

3.2. Participants

39 native speakers of Turkish (30 females and 9 males) at the pre-intermediate proficiency level in a full-time English Teacher Education 4-year program in a Foundation University participated in the research in Ankara, Turkey. Did they range in age from 17 to 32 with a mean age of 24? All of them are reported as normal hearing participants. They took place in this research on a purposeful voluntary basis.

The participants had a heterogeneous group because they had state school backgrounds, coming from a variety of 3- year high schools, such as Anatolian High Schools, Anatolian Teachers' High Schools of Industry and Tourism, and State High Schools. None of them had a residency in an English speaking country before.

Before the pre-test, as an educational training, they had a course titled ELT 108 Listening and Articulation in which the perception, pronunciation, and transcription of English consonants, vowels, and diphthongs from the present researcher who was also their pronunciation coach in that course. During the exercises, cell phones, tape recorders, electronic dictionaries, dialogues in audio were utilized.

3.3. Stimuli

According to Hyde et al. (2010), sound or phoneme presentation with oral stimuli cues facilitates auditory processing both in infants and adults. The stimuli used in the pre and posttests were oral, made by the pronunciation coach. In the oral presentation process, each question item was articulated one by one by the researcher three times within five-second intervals. The test items were clearly and distinctly articulated in forms of oral stimuli by the researcher one by one by three times within three-second intermissions. The participants were asked to match the each oral vowel production with its correct IPA symbol written on paper in five alternative multiple choice tests. Since the researcher was the pronunciation coach of the participants that speakers' voice matters in discriminating and identifying speech as well (Pisoni, 1992) and thus Psychoacoustic differences can be controlled.

3.4.Procedure

A pretest-posttest design was administrated to the participants to assess the categorical perception of English vowel phonemes. In other words, a categorical discrimination audition test used in this paper is different from Best at al. (2001) was conducted to investigate the participants' discrimination of phonemes in isolation in the target language. In the classroom environment with no noise, the pretest was administrated to the participants, who were asked to identify and then match the IPA symbol of each vowel phoneme uttered by the researcher who was also their pronunciation coach.

After the assessment of the pretest, a three-hour intense training period took place; the students attended audition, perception, and pronunciation sessions given by an instructor at a Foundation University in Ankara, Turkey. The exercises varied among sessions, but in all cases, the students were presented with tasks, recognition and production drills, which were very similar to the ones included in the pre-test. Some more of the types of the practices which were utilized for auditory-perceptual training of Turkish-English majors for three hours can be summarized as follows:

Vowel chart comparisons were made to perceive and hear the phonemic differences between L1 and L2.

The minimal pair test aimed at mature the participants' ability to differentiate English minimal pairs in L2 vowel inventory.

Listen and repeat – practice: Listening and repeating was a repetitive and mechanical exercise that was targeted to train the learners to make the right English sounds in the right sequence.

Isolation of phonemes in words as a practice: This was supposed to be a purely auditory activity, not a spelling activity because the participants were training their brains to hear the sounds not focusing on the letters involved in making those sounds.

Copying the speech of native speakers seemed to the best way to improve one's audition ability and pronunciation pertaining to connected speech so as to **copy the speech of native speakers**.

Listening to and repeating are nonsense words: It is often more useful if the sentences they were listening to and repeating were nonsense. They just need to **pay attention to the sound, not to the meaning** of what they're saying.

4. RESULTS AND DISCUSSIONS

Data accumulated from the pre-test and post-tests were submitted to SPSS 20 statistical analysis. General findings, based on the data analysis, can be presented in accordance with the research questions as follows:

4.1. Is there a meaningful difference between the pre and post-tests?

In order to find out whether there is a statistically significant difference between pre- and post-test scores of the students, the Paired Samples T-Test is conducted assuming that the case for this sample group requires parametric tests in use. Accordingly, the Paired Samples T-Test indicates that the post-test scores (M= 9.46/12) are statistically significantly higher than pre-test scores (M= 7.44/12); $t(38) = -4.380$, $p < .05$ as given in the table below:

Table 1: Paired Samples Test Scores for Pre- and Post-tests

Pair	Qtot - Ptot	Mean	Std. Deviation	Paired Differences		t	df	Sig. (2-tailed)	
				Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper				
1		2.0256	2.88815	.46247	-2.96187 -1.08941	-4.380	38	.000	
		4							

4.2. What is the order of problematic vowel sounds for Turkish English majors after the pre-test?

In order to find out the most problematic vowels, descriptive statistics is implemented regarding the scores of the pre-test. Accordingly, taking 70 as the passing grade, the most problematic vowels are noted as [ʌ], [ʊ], [ə], [ʌ] and [ɪ] respectively.

Table 2: Descriptives for the most problematic vowels (pre-test results)

	N	Minimum	Maximum	Mean	Std. Deviation	Percentage
[ʌ]	39	.00	1.00	.5641	.40907	56.41%
[ʊ]	39	.00	1.00	.8974	.30735	30.75%
[æ]	39	1.00	1.00	.9744	.16013	97.44%
[oʊ]	39	.00	1.00	.9744	.16013	97.44%
[ɔ]	39	.00	1.00	.8205	.38878	82.05%
[ɜ:]	39	.00	1.00	.7692	.42683	76.92%
[u:]	39	.00	1.00	.9487	.22346	94.87%
[ə]	39	.00	1.00	.4359	.50236	43.59%
[ɪ]	39	.00	1.00	.6923	.46757	69.23%
[ɑ]	39	.00	1.00	.2564	.44236	25.64%
[e:]	39	.00	1.00	.7692	.42683	76.92%
[i:]	39	.00	1.00	.8718	.33869	87.18%
Valid N (listwise)	39					

4.3. Which vowel are sounds still problematic for Turkish English majors even after the post-test?

In order to find out the most problematic vowels which stand still even after the post-test, descriptive statistics is implemented embracing the scores of the post-test. Accordingly, taking 70 as the passing grade, the most problematic vowels are noted as [ə], [ɑ], and [ɪ] respectively. However, it is to be noted that the cases for [ʌ] and [ʊ] seem to be cured, as they have the percentages above the average by the post-test results given.

Table 3: Descriptives for the most problematic vowels (post-test results)

	N	Minimum	Maximum	Mean	Std. Deviation	Percentage
[ʌ]	39	.00	1.00	.7949	.40907	79.49%
[ʊ]	39	.00	1.00	.7949	.40907	79.49%
[æ]	39	.00	1.00	1.0000	.00000	100.00%
[oʊ]	39	.00	1.00	.9744	.16013	97.44%
[ɔ]	39	.00	1.00	.8718	.33869	87.18%
[ɜ:]	39	.00	1.00	.8205	.38878	82.05%
[u:]	39	.00	1.00	.9487	.22346	94.87%
[ə]	39	.00	1.00	.4615	.50504	46.15%
[ɪ]	39	.00	1.00	.6667	.47757	66.67%
[ɑ]	39	.00	1.00	.4872	.50637	48.72%
[e:]	39	.00	1.00	.8205	.38878	82.05%
[i:]	39	.00	1.00	.9487	.22346	94.87%
Valid N (listwise)	39					

4.4. Do the participants need a remedial treatment?

As seen in the table above given, it is confirmed that the participants still need a further treatment because the cut-off point is 70 points out of 100.

	N	Minimum	Maximum	Mean	Std. Deviation	Percentage
[ɪ]	39	.00	1.00	.6667	.47757	66.67%
[ɑ]	39	.00	1.00	.4872	.50637	48.72%
[ə]	39	.00	1.00	.4615	.50504	46.15%

There is a problematic issue concerning the English language vowels [ɪ], [ɑ], and [ə], even after the posttest. Therefore, as a recommendation, the participants should undergo a further treatment of three hours or more, which deserves to be another research of this type.

5. CONCLUSIONS

This research happens to be a pioneering study of its kind, which was carried out taking into consideration the findings of other studies, and at the same time giving a little bit of more reality to what Turkish English majors would face in hearing the categorical perception of vowels. One of the main objectives of the study was to see if there was a significant improvement as a result of training Turkish English majors in the perception of English vowel sounds classrooms. The fact that all the trained students showed a significant improvement in the percentage of correct responses, with the inadequate perception rates of [ɪ] (66, 67 %), [ɑ] (48,72%), and [ə] (46, 15%) phonemes in English, between the pretest and the posttest demonstrated that although recovery of sensitivity is very difficult in Turkish-English majors, there are practical and economical ways to try to remedy this situation. The findings showed that a perceptual training procedure was effective in training Turkish English majors to perceive novel vowel sounds in English. Findings signal to categorical perception where sounds close to a native-language vowel types facilitate perception and discrimination. Some studies have shown that when adults are trained to discriminate novel phonetic and phonemic contrasts that are not distinctive in their native language, their performance identifying the correct sounds in the target language can improve (Bradlow & Pisoni, 1997; Rochet, 1995). So, this research goes in line with the previously discovered results.

REFERENCES

- Best, C. T. (1993). Emergence of language-specific constraints in perception of non-native speech: A window on early phonological development. In B. de Boysson-Bardies, S. de Schonen, P. Jusczyk, P. MacNeilage, & J. Morton (Eds.), *Developmental neurocognition: Speech and face processing in the first year* (pp. 289-304). Dordrecht: Kluwer Academic.
- Best, C. T., McRoberts, G. W., & Goodell, E. (2001). Discrimination of non-native consonant contrasts varying in perceptual assimilation to the listener's native phonological system. *Journal of the Acoustical Society of America*, 109, 775-794. doi:10.1121/1.1332378
- Best, C. T., & Tyler, M. D. (2007). Nonnative and second-language speech perception: Commonalities and complementarities. In M. J. Munro & O.-S. Bohn (Eds.), *Secondlanguage speech learning: The role of language experience in speech perception and production*, (pp. 13-34). Amsterdam: John Benjamins.
- Bradlow, A. R., Pisoni, D. B., Akahane-Yamada, R., & Tohkura, Y. (1997). Training Japanese listeners to identify English /r/ and /l/: Some effects of perceptual learning on speech production. *Journal of the Acoustical Society of America*, 101, 2299-2310.
- Brown, J. D. (1995). *The elements of language curriculum*. Boston, Massachusetts: Newbury House.
- Chan, A. Y. W. (2013). The Discrimination of English Vowels by Cantonese ESL Learners in Hong Kong: A Test of the Perceptual Assimilation Model. *Open Journal of Modern Linguistics* 2013. Vol.3, No.3, 182-189.
- Derwin, T., Munro, M. and Wiebe, G. (1998). Evidence in Favor of a Broad Framework for Pronunciation Instruction. *Language Learning*, 48, 1998.

- Escudero, P. (2005). *Linguistic perception and second language acquisition: Explaining the attainment of optimal phonological categorization*. PhD dissertation, Utrecht University: LOT Dissertation Series 113.
- Escudero, P., Simon, E., & Mitterer, H. (2012). The perception of English front vowels by North Holland and Flemish listeners: Acoustic similarity predicts and explains crosslinguistic and L2 perception. *Journal of Phonetics*, 40(2), 280-288.
- Escudero, P., & Williams, D. (2012). Native dialect influences second-language vowel perception: Peruvian versus Iberian Spanish learners of Dutch. *The Journal of the Acoustical Society of America*, 131(5), EL406-EL412.
- Flege, J. E. (1995). Second language speech learning theory, findings, and problems. In W. Strange (Ed.), *Speech perception and linguistic experience: issues in cross-language research* (pp. 229-273). 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, 437-470
- Göksel, A. & Kerslake, C. (2005). *Turkish: A comprehensive Grammar*. Routledge.
- Harnsberger, J. D. (2001). On the relationship between identification and discrimination of non native nasal consonants. *Journal of the Acoustical Society of America*, 110(1), 489-503. doi:10.1121/1.1371758
- Hyde, D. C., Jones, B. L., Porter, C.L., and Flom, R. (2010). Visual stimulation enhances auditory processing 3-month-old infants and adults. *Developmental Psychobiology*. 52(2), 181-189. doi:10.1002/dev.20417
- Imsri, P. (2003). The perception of English stop consonants by Thai children and adults. Doctoral Thesis, Newark, DE: University of Delaware.
- Kingston, J. (2003). Learning foreign vowels. *Language and Speech*, 46.2-3, 295-349. doi:10.1177/00238309030460020201
- Iverson, P., & Evans, B. G. (2007). Learning English vowels with different first-language vowel systems: Perception of formant targets, formant movement, and duration. *The Journal of the Acoustical Society of America*, 122(5), 2842- 2854.
- Lane, L. (2005). *Focus on Pronunciation 3*. London: Longman Pearson.
- Perlmutter, M. (1989). Intelligibility rating of L2 speech pre- and post intervention. *Perceptual and Motor Skills*, 68, 515-521.
- Pilus, Z. (2002). Second language speech: Production and perception of voicing contrasts in word-final obstruents by Malay speakers of English. Doctoral Thesis, Madison, WI: University of Wisconsin-Madison.
- Pisoni, D. B. (1992). Some comments on talker normalization in speech perception; In Tohkura, Vatikiotis-Bateson, Sagisaka, *Speech perception, production and linguistic structure*, (Ohmsha, Tokyo 1992), 143-151.
- Proctor, M. (2004). Production and perception of AusE vowels by Vietnamese and Japanese ESL learners. *2004 Australian Linguistic Society Annual Conference*. Sydney: University of Sydney.
- Rochet, B. L. (1995). Perception and production of L2 speech sounds by adults. In TRANGE, W. *Speech perception and linguistic experience: Issues in cross language research*. Timonium, MD: York Press,
- Strange, W., Akahane-Yamada, R., Kubo, R., Trent, S. A., & Nishi, K. (2001). Effects of consonantal context on perceptual assimilation of American English vowels by Japanese listeners. *Journal of the Acoustical Society of America*, 109.4, 1691-1704. doi:10.1121/1.1353594
- Strange, W., Akahane-Yamada, R., Kubo, R., Trent, S. A., Nishi, K., & Jenkins, J. J. (1998). Perceptual assimilation of American English vowels by Japanese listener. *Journal of Phonetics*, 26, 311-344. doi:10.1006/jpho.1998.0078
- Strange, W. (1995). Cross-language study of speech perception: a historical review. In W. Strange (Ed.), *Speech Perception and Linguistic Experience: Issues in Cross-Language Research* (pp. 3-45). Timonium, MD: York Press.

Strange, W. (2007). Cross-language phonetic similarity of vowels: Theoretical and methodological issues. In O.-S. Bohn & M. Munro (Eds.), *Language experience in second language speech learning: In honor of James Emil Flege* (pp. 35-55). Amsterdam: John Benjamins.

APPENDIX

PRETEST AND POSTTEST

DEPARTMENT OF ENGLISH LANGUAGE EDUCATION

ELT 107 Listening and Articulation I

Prof. Dr. Mehmet DEMİREZEN

Identify the IPA sign of the articulated English speech sound by your pronunciation coach:

- 1.....
a) [a] b) [ə] c) [ʌ] d) [ɑ] e) [æ]
- 2.....
a) [oo] b) [u:] c) [ɔ] d) [o] e) [w]
- 3.....
a) [ɜ:] b) [ə] c) [ʌ] d) [ɑ] e) [æ]
- 4.....
a) [oo] b) [a] c) [ɑ] d) [ə] e) [ɔ]
- 5.....
a) [oo] b) [ɔ] c) [u:] d) [ɔ] e) [a]
- 6.....
a) [o:] b) [w] c) [ɔ] d) [oo] e) [ɜ:]
- 7.....
a) [i:] b) [æ] c) [ɛ] d) [u:] e) [a]
- 8.....
a) [ʌ] b) [ə] c) [ɔ] d) [ɔ] e) [ɪ]
- 9.....
a) [ɪ] b) [h] c) [j] d) [i:] e) [eɪ]
- 10.....
a) [ʌ] b) [æ] c) [ɑ] d) [a] e) [ə]
- 11.....
a) [e:] b) [æ] c) [ɑ] d) [ɛ] e) [ɜ:]
12.
 b) [h] c) [j] d) [i:] e) [eɪ] a) [ɪ]