



## **PERCEPTION OF THE TURKISH CONSONANTS BY KOREAN SPEAKERS\***

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### **ABSTRACT**

Turkish and Korean, both belong to Altaic language family, share many common features, i.e. word order, agglutinative structure, etc. When both languages are compared phonologically it will be seen that there are significant differences between them. Unlike the Turkish stops, Korean stops are typologically unusual in that they have a three-way contrast, but they are all voiceless in word final position. They are all voiceless in word-initial position. Korean has also the lax-tense fricative pairs: /s/ and /s'/. Moreover, the lateral consonant /l/ in Korean is pronounced in two different ways, depending on where it appears within the words.

The aim of this paper is to investigate how Korean speakers who don't know any Turkish knowledge perceive Turkish consonants. The present study demonstrates that the perception of Turkish consonants by Korean learners is influenced by the phonological properties of Korean. The perception of the Turkish stops by Korean speakers must be related with the different VOT values in both languages. The Turkish consonants which Korean doesn't have were replaced by the nearest convenient sounds. Since the consonants /r/ and /l/ are not independent phonemes in Korean, especially the perception of Turkish word initial and word final /r/ is realized as /l/. Because two languages have nasal consonants, the perception of these sounds are perfectly clear in word initial, word medial and word final positions. The nasal consonants /m/ and /n/ in Turkish and Korean are common.

**Key Words:** Turkish, Korean, Consonant Perception

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## KORECE KONUŞURLARIN TÜRKÇE ÜNSÜZLERİ ALGILAMALARI

### ÖZET

Altay Dil Ailesi içinde yer alan Türkçe ve Korece öge sırası, çekimli yapı vb. birçok ortak özelliğe sahiptir. Her iki dil sesbilgi açısından karşılaştırıldığında bazı önemli farklılıkların olduğu görülür. Türkçenin aksine, Korece patlamalı ünsüzler üçlü bir zıtlama sağladıkları için tipolojik olarak sıra dışı bir özellik sergiler. Fakat bütün bu ünsüzler kelime sonunda ve kelime başında ötümsüz olarak oluşur. Korecede aynı zamanda gevşek-gergin (lax-tense) ayırımına sahip sızmalı /s/, /s'/ çiftleri de yer alır. Yani, /s/ ve /s'/ anlam farklılaşması oluşturur. Dahası Korece yan ünsüz /l/, kelimedeki bulunduğu yere göre iki farklı biçimde telaffuz edilir.

Bu makalenin amacı Türkçe bilgisi olmayan ana dili Korece olanların Türkçe ünsüzleri nasıl algıladıklarını araştırmaktır. Böyle bir çalışma, Korece konuşurların Türkçe ünsüzleri algılamalarının Korecenin sesbilgisel özelliklerle yakından ilgili olduğunu göstermektedir. Türkçe patlamalı ünsüzlerin Korece konuşurlar tarafından farklı algılanmasının temelinde her iki dildeki VOT (Voice Onset Time) değerlerinin farklı olmasında aranmalıdır. Korecede bulunmayan Türkçe ünsüzler Korecede bu ünsüzlere en yakın ünsüzle ifade edilir. /r/ ve /l/ ünsüzlerinin Korecede ayrı birer sesbirim olmamaları nedeniyle bu ünsüzlerin algılanmasında zaman zaman sorunlar yaşandığı gözlemlenmiştir. Özellikle kelime başında ve sonundaki /r/ ünsüzü, /l/ ünsüzü biçiminde gerçekleşmiştir. Her iki dil geniz ünsüzlerine sahip olduğu için Türkçe geniz ünsüzlerinin algılanmasında herhangi bir sorun yaşanmaz.

**Anahtar Kelimeler:** Türkçe, Korece, Ünsüz Algılanması

### Introduction

Turkish and Korean, both belong to Altaic family<sup>1</sup>, share many common features, i.e. word order, agglutinative structure, etc. When both languages are compared phonologically it will be seen that there are significant differences between them. The aim of this paper which was carried out at Pusan University of Foreign Studies in South Korea is to assess the perceptual relationship between consonants in Korean and Turkish, and their degree of perceived similarity. To do this, nonsense syllables (VC, CV, VCV, CVC) were created and 15 Korean speakers were asked to listen to the words in question and to write what they heard in Hankul (Korean alphabet) and Latin alphabet. The present study demonstrates that the perception of Turkish consonants by Korean learners is influenced by the

<sup>1</sup> Although this view is not wholly accepted by the linguistic community, the majority of Korean linguists and some western scholars seem inclined towards believing this view (Kim 2009:766). For detailed discussion of Altaic theory, Korean and Turkish see Ramstedt (1928, 1997), Poppe (1965), Chio (2010).

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phonological properties of Korean. The Turkish consonants which Korean doesn't have were replaced by the nearest convenient sounds. The voiced and voiceless plosives in Turkish are perceived differently, especially in word final position in some cases. Since /r/ and /l/ are not independent phonemes in Korean, particularly the perception of Turkish word final /r/ is realized with /l/.

### Basic Features of Korean and Turkish Phonology

#### Korean

Korean is a nontonal, polysyllabic language. The Korean alphabet consists of 24 graphemes. It has nineteen consonant, ten vowel and two semivowel phonemes (Sohn, 1999: 153). The Korean alphabet itself is highly phonetic. The consonants of the Korean language are unusual for the triple distinction (Grayson 2006:236). On the other hand, excluding the four vowel graphemes representing diphthongs, there are only 20 graphemes, which thus gives rise to a situation in which there are nine more phonemes than there are graphemes. The sounds of /j/ and /w/ are semi-vowels (Lee, 1989: 4-5).

Korean stops are typologically unusual in that they have a three-way contrast, but they are all voiceless in word final position. They are all voiceless in word-initial position. The three different categories are often called lenis, fortis and aspirated, and each of these occur at three places of articulation: bilabial, denti-alveolar, and velar (Cho et al. 2002:193). The lenis/lax plosives (/p/, /t/, /k/) are basically voiceless, with only a minor degree of aspiration and no tenseness. They are pronounced very lightly and softly. In final position of a syllable, they are pronounced without plosion (Lee 1989:16). They become lightly voiced between voiced sounds, as in *papo* [pa.bo] 'fool'. The aspirated stops /p<sup>h</sup>/, /t<sup>h</sup>/, /c<sup>h</sup>/, /k<sup>h</sup>/ are never voiced and are pronounced with a strong puff of air. They occur only syllable-initially and never syllable-finally and these are pronounced with strong aspiration (Lee 1989:17, Sohn 1999:154). The fortis/tensed stops /p'/, /t'/, /c'/, /k'/ are not voiced but produced with the glottis constricted and by building up air pressure behind the closed place of articulation and instantaneously releasing the closure while pushing the air forward without any aspiration (Sohn 1999:154). The tensed stops occur only syllable-initially and never syllable-finally (Lee 1989:17) with the exception of /k'/ which is realized as [k] in pronunciation (Song 2005:28). The three-way distinction in the Korean stops can be illustrated by triples such as: *tal* /tal/ 'moon', *ttal* /t'al/ 'daughter', *thal* /t<sup>h</sup>al/ 'mask' (Song 2005:28).

The fricative series consist of the lax-tense pair /s/ and /s'/ and the glottal /h/. Lenis /s/ has a certain degree of aspiration whereas /s'/ does not contain any aspiration. The tensed fricative /s'/ is produced with a much stronger force or with a constriction of airstream near the upper front teeth and also at the vocal folds (Sohn 1999:154, Song 2005:28). The difference between the lax /s/ and /s'/ is contrastive as exemplified by the meaning difference between *sal* /sal/ 'flesh', and *ssal* /s'al/ 'rice'. Unlike the lax stops, neither /s/ or /s'/ becomes voiced sounds (Song 2005:28).

The nasals in Korean are /m/, /n/ and /ŋ/. The lateral /l/ in Korean is pronounced in two different ways, depending on where it appears within the words (Song 2005:29).

Each Korean phoneme above has different allophonic variants depending on their position in a word. Additionally, Korean does not have the consonants /f/, /v/ and /z/.

In Korean, there are three phonologically conditioned sound rules. These are as follows:

a) Voicing: The voicing occurs when the lax obstruents /p, t, c, k/ are voiced in intervocalic position as in *kipan* → *kiban* 'base', *kito* → *kido* 'prayer', *cici* → *ciji* 'support', *koki* → *kogi* 'meat'.

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b) l → r alternation: The lateral liquid /l/ becomes [r] in intervocalic position as in *palam* → *param* ‘wind’, *solı* → *sori* ‘sound’.

c) Neutralization: In neutralization, the obstruents are neutralized unreleased stops in word-final position (Chang 1996: 15-16). First, the bilabial stops *p* and *ph* are neutralized to [p] as in *ip* ‘mouth’, *iph* ‘leaf’ → [ip]. Second, alveo-dental and palatal stops and fricatives *t*, *th*, *s*, *s’*, *c*, *ch* and *h* are all neutralized to [t] as in *nat* ‘cereal grains’, *nath* ‘piece, unit’, *nas* ‘sickle’, *nac* ‘daytime’... → [nat]. Third, velar stops *k*, *kh* and *k’* are neutralized to [k] as in *pakh* ‘outside’ → [pak] (Sohn 1999: 165-166).

### Turkish

Turkish has a very symmetrical vocalic system, consisting of the eight vowels: /a/, /ɛ/ (‘e’), /u/ (‘ı’), /i/, /ɔ/ (‘o’), /ɒ/ (‘ö’), /u/, /y/ (‘ü’). They have values of the features, front/back, high/low, and rounded/unrounded (Özsoy 2004; Göksel, Kerslake 2005). Each vowel can occur long especially with Arabic and Persian loanwords: *kira*: ‘rent’, *ma:vi* ‘blue’si:ne’ ‘bosom’ (Göksel, Kerslake 2005:12). Turkish uses 21 letters for consonants: b, c, ç, d, f, g, ğ, h, j, k, l, m, n, p, r, s, ş, t, v, y, z. “The letter ğ, or *yumuşak ge* ‘soft g’, has no consonantal sound. It normally represents a historical or underlying /g/ that has been deleted; in some Anatolian dialects, it survives as a voiced fricative [ɣ]. Most commonly, ğ lengthens the preceding vowel in syllable-final (coda) position, and represents nothing between vowels, as in *dağ* ‘mountain’ [da:] and *dağa* ‘mountain.dat’ (Underhill 2006: 165). Therefore the letter ğ (/ɣ/) was not used in nonsense syllables. Standard Turkish has five pairs of voiced and voiceless stops (/p, b/, /t, d/, /c, ɟ/, /k, g/), affricates (/tʃ, dʒ/), fricatives (/f, v/, /s, z/, /ʃ, ʒ/, /h/), two nasals (/m/, /n/), three liquids (/l/, /ʎ/, /r/) and two approximants (/j/, /ɣ/) (Csató and Johanson 1998:204; Zimmer and Orgun 1999:154). It is important to note in this paper that Turkish has a phonological rule that devoices syllable final plosives and affricates (Kornfilt 1997:491)<sup>2</sup>. The letter y (/j/) was also not used because of the high possibility that y might be perceived as a vowel by the Korean speakers.

### Sampling

This study is carried out at Pusan University of Foreign Studies in South Korea to investigate how Korean speakers who don’t know any Turkish knowledge perceive Turkish consonants. To do this, nonsense syllables (VC, CV, CVC, VCV) were uttered and recorded by the first author and then 15 Korean speakers heard the nonsense syllables twice at a time. Listeners were told to listen to these syllables/meaningless words and write what they heard in Latin (Turkish) and Korean alphabet. It should be noted that all the Korean speakers had started to study English about age 14 in Korean middle school with native Korean instructors. All were able to read and write English. The English knowledge might have affected the identification of the Turkish consonants by Korean speakers.

### Findings and Discussions

This section deals with the explanation of the strings which were asked to Korean speakers and is divided into sub-sections in terms of the manner of the articulation of consonants. Let’s start with the plosives.

<sup>2</sup> For other phonological rules in Turkish see Kornfilt (1997), Göksel, Kerslake (2005), Lewis (2000).

### Plosives

There is no difficulty in the perception of voiceless plosives in the words *pa/pi*, *ka/ki*, *ta/ti*. The important thing to note here is that the word initial voiceless plosives /p/, /t/ and /k/ in Turkish correspond with the Korean /p<sup>h</sup>/, /t<sup>h</sup>/ and /k<sup>h</sup>/. The identification of the consonants *ba / bi*, *ha / hi*, *ga/ gi* and *da/di* in Turkish are labeled correctly. The Korean consonants used for the word initial voiced Turkish plosives are the lax stops.

Normally, Turkish does not have voiced plosives (/b/, /d/, /g/) and affricate (/dʒ/) word finally except a few words. But, in our samples some words end voiced plosives. In Korean the voiced plosives ([b], [d], [g]) occur in intervocalic position (Chang 1996:15). Moreover, it should be pointed out that the Korean /p/, /p<sup>h</sup>/, /t<sup>h</sup>/, /k/, /k<sup>h</sup>/ phonemes are realized word finally as without plosion (Lee 1999: 122). On the other hand /b/, /dʒ/, /d/, /g/ occurring word finally in Turkish are realized as with plosion. Producing these Turkish sounds with plosion causes some perception issues for Korean learners. Let's examine the voiced/voiceless pairs:

In *ap/ip* examples, normally we do not expect any difficulty in the perception of *ap/ip* for Korean speakers because of having /p/ consonant in Turkish and Korean. While strong aspiration occurs in the pronunciation of *ap/ip* in Turkish, this type of words in Korean occurs without aspiration. Because of strong aspiration in Turkish a high vowel is added word finally like *ipi*, *api*. The perception of *ak/ik* looks like *ap/ip* and all the forms are labeled correctly. Because of the strong aspiration in Turkish, the examples with added vowel are seen like *aki/ iki*. In Korean writing, /k<sup>h</sup>/ is used for Turkish /k/. Perceptionally, there is no difference between *at/it*, *ad/id* for Korean speakers. Because Turkish has an aspiration and Korean does not have it word finally and this neutralizes the difference between *at/ad*, *at/it*.

The occurrence of the voiced plosives in word final position exhibits important implications. In *ab/ib* forms, the expected forms occur occasionally by Korean speakers. Instead of *ab/ib*, we can find *ap/ip*, *av/iv* and *af/if* forms. The preferred Korean plosives for word final for *ab/ib* are generally written with /p<sup>h</sup>/. Rarely, /p/ was used for given examples. The reason of incorrect perception of Turkish word final bilabial /b/ could be that bilabial /b/ in Turkish has a strong plosion. The situation of *ag/ig* is like *ab/ib*. Because of the plosion of the word final /g/ in Turkish, it is perceived as aspirated /k<sup>h</sup>/. The word final /d/ in *ad/id* is generally written with /t/. Word final /d/'s are written with the aspirated /t<sup>h</sup>/ in Korean writing.

Intervocalic position of the voiced and voiceless plosives in Turkish is perceived correctly. The voicing rule of Korean allows the correct perception of /b/, /d/, /g/ in Turkish without any problem. Voiceless plosives of /p/, /t/, /k/ between vowels stand for Korean /p<sup>h</sup>/, /t<sup>h</sup>/, /k<sup>h</sup>/.

The findings of CVC are in the following way: In *pap/pip*, *tat/tit*, *kak/kik* examples, the initial and the final consonant are the same. In *pap/pip*, it can be said that the initial and the final /p/ in Turkish are realized without difficulty. Both initial and final /p/ are labeled as /p<sup>h</sup>/. As in the case of *ap/ip*, because of the strong aspiration, a vowel is inserted at the end of the word. The realization of the Turkish voiceless plosives /p, t, k/ in word initial and word final resembles each other. All the positions they occur are written with the aspirated one, namely /p<sup>h</sup>/, /t<sup>h</sup>/, /k<sup>h</sup>/. In all the examples, we find the samples added with extra vowels like *papi*, *tati*, *kaki*.

In the case of *bab*, *dad*, *gag* items, nearly all the occurrences resemble each other. In the acquisition of the *bab*, the first and the second /b/ are realized as /b/. However, in the case of the item with high vowel (*bib*) the final consonant is sometimes understood as /p/ and its Korean writing is /p<sup>h</sup>/.

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But, in the case of *dad* / *did* forms, the final /d/ before /a/ is realized as /t/ and its Korean writing is /t<sup>h</sup>/. The aspirated forms are not seen in the forms of *did*. In both *gag* and *gig* items, the final consonant /g/ in most of the examples is sometimes written as /k/ which is written as /k<sup>h</sup>/ in Korean writing. Again, an extra vowel is added at the end of words such as *babı, bipi, datı, giki*.

### Fricatives

About fricatives there are some important points. While in *şası* ([ʃa], [ʃi]) writings, the Korean symbol [ʃ] was used for /ʃ/, /s<sup>ʰ</sup>/ was preferred for *sa/si*.

Because Korean lacks /v/ consonant, the labiodental voiced consonant /v/ in Turkish is sometimes perceived as /p/. In Korean writing, all the forms are written as /p/. Moreover, voiceless labiodental /f/ in Turkish which is absent in Korean is perceived differently in some cases. The nearest sound to /f/ is its voiced counterpart, /v/. But, as pointed out above, Korean doesn't have /v/. In Korean writing all the *fa* / *fi* forms are written with the Korean /p<sup>h</sup>/. Generally the Turkish /ʃ/ is perceived correctly; sometimes *sa/si* forms are attested.

Mostly the forms of *ja/ji* ([ʒa], [ʒi]) are predicted correctly. In a few cases, these forms are established as *za/zi*. In Korean writing, /ʒ/ is represented with the [ʒ].

Labiodental fricative /f/ in Turkish which is not found in Korean is perceived correctly most of the time. Sometimes it is written with the bilabial consonant /p/. But, in each case, /f/ and /p/ are written with /p<sup>h</sup>/ in Korean writing. Voiced labiodental consonant /v/ in Turkish is recognized as /v/ and /b/. As in the case of /f/, the Korean writing of /v/ is /b/.

In aCa/ iCi templates, *afa* and *ifi* written with the Korean phoneme /p<sup>h</sup>/ are occasionally recorded with *apa* and *ipi*. The items of *ava/ivi* written with Korean /p/ are labeled with *aba/ibi*. Intervocalic /z/ which doesn't exist in Korean is realized as /z/ and /ʒ/. Although the perception of the /s/ is perfectly clear, the choice of the character in Korean writing is interesting. The character selected for word medial fricative consonant /s/ is generally /s<sup>ʰ</sup>/, the letter /s/ [ʃ] is rarely used because the Korean /s/ is pronounced with slight aspiration. The tensed fricative /s<sup>ʰ</sup>/ is produced with a much stronger force or with a constriction of airstream near the upper front teeth and also at the vocal cords (Song 2005:28). Although word medial /ʃ/ is realized perfectly, we can't say the same thing for /ʒ/. The /ʒ/ is rarely performed with /z/. In Korean writing both /ʒ/ and /z/ are characterized with /j/c [ʒ]. The Turkish /h/ in word medial is produced perfectly.

In the forms of CaC/CiC, fricatives look like each other in some respects. Because of the plosion, a vowel is inserted and the examples of *fafi, fifi, vavi, vivi* are tested. In some instances, the Turkish phoneme /f/ and /v/ are replaced with bilabials /p/ and /b/ respectively as in the case of *fa/va, af/ av* occurrences. The phoneme /s/ in Turkish is pronounced stronger than Korean /s/. So Turkish /s/ in initial position is generally perceived as /s<sup>ʰ</sup>/. Other voiced fricative /z/ which is not found in Korean is replaced with /dʒ/, /ʒ/ adding a vowel at the end of the word as in *cacı, jazı*. Voiceless fricative /ʃ/ is perceived without trouble. However, as seen in other occurrences, extra vowel occurs in word final as in *şası, şışı*. The consonant /ʒ/ is written as *z, c*.

The /h/ in word initial and word medial position occurs perfectly. But, we can't say the same thing for the word final /h/. Because of not occurring in word final position in Korean (Chang 1996:15)

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some of the occurrences of the word final /h/ are not predicted correctly. In the *hah/hih* template, the occurrence of word final /h/ looks like *ah/ih* position. That is, we can't see the /h/ word finally.

### Affricate

The perception of the pattern of *ca/ci* ([dʒa], [dʒi]) in Turkish resembles one another. The perception of the phoneme /dʒ/ is made correctly. Rarely we can see the *za/zi* writings instead of *ca/ci*. On the other hand there are some difficulties in acquiring *ac/ic* ([adʒ], [idʒ]) items for Korean learners. The sounds of /c/, /c<sup>h</sup>/ and /c<sup>ʔ</sup>/ in Korean do not occur word finally. Therefore, the *ac/ic* items which have plosion are perceived as /tʃ/. The Korean writing supports this claim. Majority of the examples are written with the character /c<sup>h</sup>/.

The items of *aç/iç* ([aʧ], [iʧ]) are predicted correctly except a few cases. Their Korean writing for *aç/iç* is made with the consonant /c<sup>h</sup>/ . The attested forms of *ac/ic* are like *ab/ib*. Word final /dʒ/ with aspiration in Turkish are realized as *aç/iç* and Korean writing is generally /c<sup>h</sup>/ instead of /dʒ/.

In the case of *aca/ici* ([adʒa], [idʒi]), the perception of /dʒ/ in Turkish is perfectly clear. While word medial /tʃ/ in Turkish (*aça/içi* ([aʧa], [iʧi]) forms) is normal occurrence within the string given, its voiceless counterpart is sometimes realized as /z/.

As in the case of plosives and fricatives, the examples of *çaç/çiç* ([ʧaʧ], [ʧiʧ]), *cac/cic* ([dʒadʒ], [dʒidʒ]) occur with a vowel such as *çaçi, çiçi, caçi, ciçi*. Although the affricate /tʃ/ is predicted correctly in word initially and finally, we can't observe this kind of occurrences in word final /dʒ/. The strong plosion of the sound causes the wrong perception of the consonant, namely /tʃ/. All the final consonants of *cac/cic* examples are written with Korean /c<sup>h</sup>/.

### Nasals

The nasal consonants /m/ and /n/ in Turkish and Korean are common. Because two languages have nasal consonants the perception of these sounds are perfectly clear in word initial, word medial and word final positions.

### Liquids

Although /r/ and /l/ are separate phonemes in Turkish, [l] and [r] are the allophones of same phoneme in Korean. The lateral /l/ appears in the syllable final position (Sohn 1999:155) and the sound of /l/ becomes a strongly flapped *r* when placed in an intervowel context (Grayson 2006:236). Turkish *li/ri* forms are perceived without difficulty except a few cases. In some examples *ri* and *li* are written in place of *li/ri* respectively.

Most of the time the sound /l/ in word final position is detected correctly, especially in *il* forms. This is because [l] in Korean appears in the syllable final position. The allophone [r] in Korean occurs between vowels. Occurring between vowels in Korean affects the perception of Turkish /l/ as in *ala/ili*. Especially in the examples of *ala* form, sometimes *ara* forms are attested because of requirement of the Korean allophonic rule. Among the *ara* forms, *ala/ili* occurrences are so limited if we compare with the *ala* forms.

The examples of *lal/lil* are rarely correctly predicted. Most of the time the initial consonant of *lal/lil* is predicted as /r/. Moreover, the second consonants of the examples are given as /r/, as in *ral, ril*. The examples of *rar* are predicted correctly if it is compared with *lal/lil* examples.

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### Conclusion and Recommendations

The present study demonstrates that the perception of Turkish consonants by Korean speakers is influenced by the phonological properties of Korean. The result of this study shows a complex perceptual relationship between the consonants of Korean and Turkish. Knowing the similarities and differences in sounds between Korean and Turkish will help language learners.

The findings especially related to Korean and Turkish stops need further experimental studies. Experimental studies show that VOT (Voice Onset Time) values in Turkish and Korean are different. For example the average VOT values of Turkish /p/, /t/, /k/ are 41, 50, 69 ms respectively (Öğüt et al. 2006). On the other hand, VOT values of Korean /p/, /p<sup>h</sup>/, /pʰ/ are 35, 75, 12 ms; VOT values of Korean /t/, /t<sup>h</sup>/, /tʰ/ are 39, 75, 16 ms and VOT values of Korean /k/, /k<sup>h</sup>/, /kʰ/ are 53, 95, 24 ms respectively (Yang 1993:54). We believe that the perception of the Turkish stops by Korean speakers must be related with the different VOT values in both languages.

The findings can be summarized as in the following way:

- a) The voiceless plosives in initial position occur regularly. These are labeled with the Korean consonants /p<sup>h</sup>/, /t<sup>h</sup>/, /k<sup>h</sup>/. This type of initial identification occurs also in CVC type.
- b) The voiceless plosives in final position are labeled correctly except /p/ which is sometimes predicted as /f/. Since Korean stops in final position are unreleased, the tokens that especially end with voiceless stops are perceived with an extra vowel.
- c) The voiced plosives in final in Turkish are sometimes perceived as their voiceless counterpart. /p/ and /v/ are used in place of final /b/. Word final voiced plosives are occasionally written as /p<sup>h</sup>/, /t<sup>h</sup>/, /k<sup>h</sup>/. Korean speakers added a vowel because of the strong aspiration of Turkish plosives. The labiodental /v/ in initial, final and between vowels is represented as the lax /p/.
- d) There is no difficulty in the perception of the fricative /s/, but its representation in Korean writing is generally fortis /sʰ/.
- e) The fricative /z/ in initial, final and between vowels is sometimes marked with /z/.
- f) The fricative /h/ normally occurs in word initial and between vowels. It can't appear in word final position.
- g) The occurrence of the plosives between vowels is so predictable due to Korean voicing rule. The Korean writings support this claim.
- h) The sound of /v/ in Turkish is labeled for the most part as Korean lax /p/.
- i) The majority of the Turkish /f/ were labeled as Korean labial stops.
- j) There are no sounds of /f/, /v/ and /z/ in Korean. Therefore, the /f/, /v/ and /z/ fricative consonants in Turkish are replaced with different consonants. The fricative /f/ in word initial, word final and between vowels are labeled with /p/ and its Korean writing is always written with the /p<sup>h</sup>/.
- k) Since /r/ and /l/ are not independent phonemes in Korean, there are some problems in the place they occur. In word final position the /r/ may not occur. Between vowels /l/ is rarely used in place of /r/. Similarly, /r/ is used instead of /r/.

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