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Pronunciation of phoneme /r/ by Japanese learners of Turkish

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Introduction

In the field of second-language acquisition, only a handful of studies on the acquisition of Turkish sounds by non-Turkish natives have been conducted. In contrast, numerous studies on the acquisition of English sounds by Turkish learners have been recently carried out, particularly to analyze interdental fricatives or diphthongs, see Bayraktaroğlu (2008), Bekleyen (2011), Geylanioğlu and Dikilitaş (2012), etc. Only a few investigations have been made on Turkish phonology in Japan, for example, Fukumori (2004) on vowel harmony; Kawaguchi (2009) on *r*-dropping; and Kawaguchi, Yılmaz, and Yılmaz (2006) and Sato (2013) on prosody.

Among the phonetic realizations of Turkish phonemes, /r/ is known for its relatively large variation. It is a common phonetic trait of Turkish that it has no liquids in the word-initial position. All words with word-initial /r/ are loanwords. According to Demircan (2001), we can observe two allophones of /r/—alveolar tap in both word-initial and word-medial positions, and voiceless fricative in the word-final position[1]. However, our view rather coincides with that of Özsoy (2004), who proposed three allophones[2].

First, the phoneme /r/ is pronounced as a single alveolar flap [ɾ] where the tip of the tongue is thrown against the alveolar ridge in both word-initial and intervocalic positions. For instance, *rahat* [ɾahat] (ease) and *kara* [kaɾa] (black).

Secondly, /r/ has as the second allophone a retroflexed liquid or glide in a preconsonantal position. The word *art* (increase) and *dört* (4) will sound like [aɽt] and [dœɽt], respectively. This allophone does not always appear intact. We can find

[1] "/r/ sesbiriminin iki genel üyesi vardır. (There are two general members of the /r/ sound)," Demircan (2001: 53).

[2] "/r/ sesbiriminin sözcük içindeki yerine göre üç sesbirimciği vardır. (There are three variants of the /r/ sound according to its position in a word)," Özsoy (2004: 30).

an alveolar flap instead of a retroflex in *arkadaş* [aɾkadaʃ] (friend) and *kırk* [kɨɾk] (forty).

Finally, the third allophone of /r/ is a voiceless alveolar trill or fricative, for example, *kar* [kaɽ] (snow) and *var* [vaɽ] (have/there is) in the word-final position when /r/ is not re-syllabified with the following word-initial vowel.

1. **IPCF and IPCT projects**

Launched in 2008, the ongoing *InterPhonology of Contemporary French* (IPCF) project is considered the result of a collaboration between the international project *Phonology of Contemporary French* (PCF) and the global Center Of Excellence program *Corpus-based Linguistics and Language Education* (CbLLE)[3]. The IPCF project was founded as a PCF subproject by three phonologists: Sylvain Detey (Waseda University), Isabelle Racine (University of Geneva), and Yuji Kawaguchi (Tokyo University of Foreign Studies)[4]. The main aim of the IPCF project is to create a large corpus of speech samples collected from learners of the French language. In the case of French as a second language, most of the existing corpora have been analyzed for morphosyntactic purposes, and it was found that very few have been designed for phonetic and phonological surveys.

The *InterPhonology of Contemporary Turkish* (IPCT) project has been conceived as an application of the scientific principles of IPCF to the Turkish language[5]. The IPCT operates on seven different tasks based on the IPCF protocols: (1) to repeat a target word after listening to its pronunciation, (2) to pronounce a target word while looking at its spelling, (3) to pronounce a target word-list designed to investigate the phonetic habits of Japanese learners of Turkish, (4) to read aloud a target written text, (5) to answer several questions asked by Turkish natives in an interview context, (6) to make two Japanese learners have a free conversation in Turkish, and (7) to write a brief composition in

[3] https://www.projet-pfc.net/, http://cblle.tufs.ac.jp/ja/
[4] See Detey and Kawaguchi (2008), Kawaguchi et al. (2012).
[5] The project is supported by JSPS Kakenhi, 16H03442, "Contrastive analysis of interlanguages of French, Portuguese, Japanese, and Turkish."

Turkish.

2. Method

The inquiry described herein was carried out on July 10, 2018, and involved eight Japanese students of the Turkish department in a Japanese national university. In this pilot study, to examine the acquisition and the phonetic variations of /r/, only three tasks were examined: (1) repetition of target words while listening to them, (2) reading of the same words, and (3) reading of a list of words that would be difficult to pronounce for Japanese learners (see Appendix showing only target words with the phoneme /r/ for the three tasks).

2.1. Informants

The profiles of the subjects of our study—two male students and six female students—are given in Table 1. Group 1 consisted of experienced learners (L1, L6, L7, L8, and L2) who had learned Turkish for four years including one-year stay in Turkey. Two advanced students of this group had already attained CEFR[6] C1 level. On the contrary, Group 2 (L4, L5, and L3) could be considered to consist of elementary- or intermediate-level students who only had a short stay in Turkey.

Table 1 Profiles of our learners

		Sex	Learning history (in months)	Proficiency level	Stay in Turkey (in months)
Group 1	L1	F	48	CEFR C1	12
	L6	F	48		12
	L7	F	42	CEFR C1	12
	L8	F	48		10
	L2	F	48		5
Group 2	L4	M	27		1
	L5	F	27		1
	L3	M	15		1

[6] Common European Framework of Reference for Languages.

2.2. Positions of /r/

The phoneme /r/ appears at various positions in the aforementioned three tasks. The word *bir* in Table 2 has a special status. Most of the manuals on Turkish phonetics and phonology explain the *r*-dropping phenomenon. According to Özsoy, "The /r/ sound in the word-final position of the word *bir* 'one, certain' and in the morpheme {Iyor} is generally dropped in a rapid conversation. bir → bi, geliyor → geliyo" (2004: 109); also see Demir and Yılmaz (2011: 90, 149). Previous researchers seem to maintain that the word-final /r/ is dropped under the influence of a faster speech style. Using a corpus of spoken Turkish, we investigated whether some sociolinguistic factors such as sex, age, or birthplace were relevant to *r*-dropping but found them to be statistically insignificant. Other stylistic factors such as the topic of conversation and speed were also examined. Only speed was found to be statistically significant in the case of *bir*, whereas the topic of conversation never led to this phenomenon. A corpus-driven analysis demonstrates that *r*-dropping is not sensitive to sociolinguistic factors but is individually motivated[7]. As reported, *r*-dropping is limited to spoken Turkish, which is far from the context of reading and repetition tasks. Consequently, in this pilot study, *bir* was excluded from consideration.

Table 2 Positions of /r/

	Position		Word form (Type)	Token
1	Word-final	Vr$	beraber, kâr, o görüyor[8], vapur, etc. (17)	27
2	Intervocalic	VrV	arasında, gözleriyle, sürat, etc. (13)	18
3	Preconsonantal	VrC	görmeden, kırmızı, etc. (5)	6
4	Word-final and preconsonantal	VrC$	art, dört, kırk (3)	6
5	Word-final and intervocalic	VrV$	atlara, kara, soru (3)	4
6	Word-initial and post-consonantal	$CrV	projektör, tren (2)	4
7	*bir*	bir$C	bir şey, bir dakika (2)	4
8	Word-initial	$rV	rahat, rıza (2)	3
9	Pre-vocalic	CrV	ömrümde (1)	1

($ represents a word boundary.)

[7] For more detail, see Kawaguchi (2009).

[8] Since no *r*-dropping was observed among our learners, we included the *-iyor* form in our analysis.

The frequency of the occurrence of /r/ was fairly variable according to the position of /r/. Two frequent positions were word-final and intervocalic. In the following text, we will therefore examine the first four positions of /r/ in the three tasks: (1) word-final Vr$, (2) intervocalic VrV, (3) preconsonantal VrC, and (4) word-final and preconsonantal VrC$.

To assess the pronunciation of /r/ by Japanese learners, we took help from three Turkish linguists[9]. We asked them to evaluate the /r/ sound and score the pronunciation on a three-point scale—[3] Good, [2] Not bad, and [1] Bad—without considering the other phonemes in the word. The evaluation was thus focused on the accuracy of /r/. To make the scores of the three assessors, which could be inconsistent and variable, meaningful for our purpose, we evaluated the internal consistency among the three evaluators (E1, E2, and E3). For its convenience, Cronbach's alpha was selected to measure the internal consistency and scale reliability among the three Turkish evaluators. For all the four positions in the three tasks, Cronbach's alpha was relatively high—more than 0.7—demonstrating that the scores of the three assessors were fairly consistent, see Figure 1.

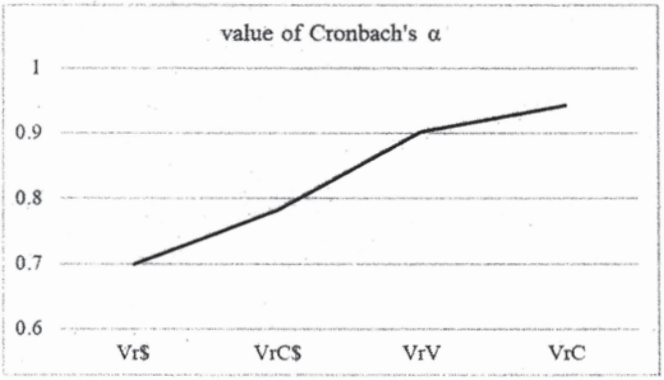

Figure 1

[9] I express my sincere gratitude to our three assessors: Sibel Bozdemir (INALCO, France), Hande Sevgi (Bosphorus University, Turkey), and Furkan Atmaca (Bosphorus University, Turkey), and also to our collaborator Aslı Göksel (Bosphorus University, Turkey).

3. Results

3.1. Evaluation scores and learners' profiles

The overall evaluation scores for pronouncing /r/ in the four positions are presented in Figure 2. The scores given by all three of our evaluators exceed 2.0, indicating that /r/ sounds by our Japanese learners were generally better than "not bad." Figure 2 depicts, however, a rather ambiguous picture of the subjects of our study. Group 1 (L1, L2, L6, L7 and L8) with a long stay in Turkey can be divided into two subgroups: Group 1a (L1, L6, and L7) that scored high and Group 1b (L2, L8) that scored less. We can also observe a discordance among evaluators, particularly for L2. Group 2, without a long stay in Turkey, also consisted of two high-scoring participants (L3 and L4) and one low-scoring subject (L5). In conclusion, our learners' pronunciations of /r/ in the four different positions were generally regarded as "not so bad." Notably, a good pronunciation was not limited to the learners with a long stay in Turkey. The acquisition of /r/ appears to be independent of the experience of studying abroad and the duration of learning Turkish.

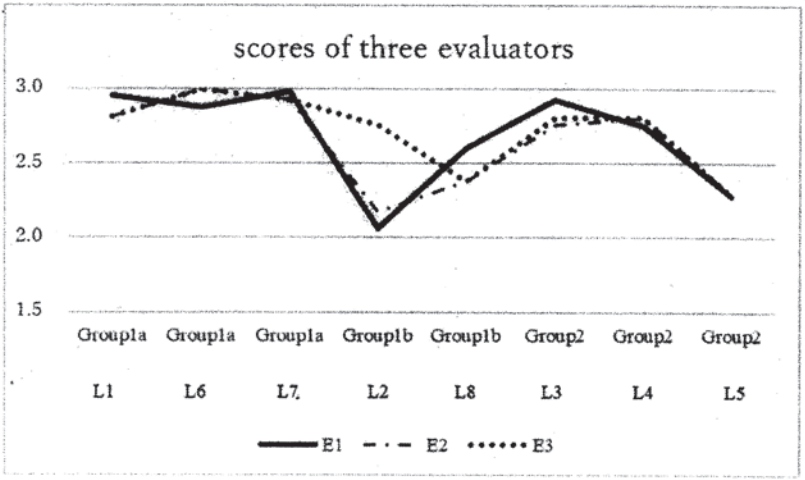

Figure 2

3.2. Evaluation scores and positions of /r/

The relationship between the evaluation scores and the positions of /r/ is presented in Figure 3. The scores were relatively variable for the word-final position Vr$, whereas they were quite stable for the word-final and preconsonantal position VrC$. Moreover, the degree of variation was relatively low for both intervocalic VrV and preconsonantal VrC positions. Scores for the latter position were undoubtedly better than those for the former position. Lastly, from the relationship between the evaluation scores and /r/ position, the following implicational hierarchy was obtained: preconsonantal VrC($), intervocalic VrV, and word-final Vr$ (in descending order).

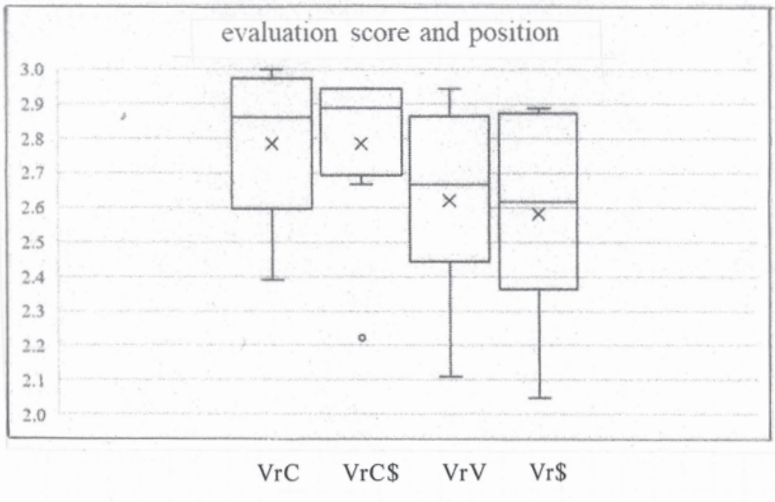

Figure 3

3.3. Evaluation scores and task

Figure 4 shows the relationship between the evaluation scores and the task type. Interestingly, the scores for the reading task were almost always higher than those for the repetition task, with L1 being the only exception. Group 1a (L1, L6, and L7) obtained higher scores in both tasks.

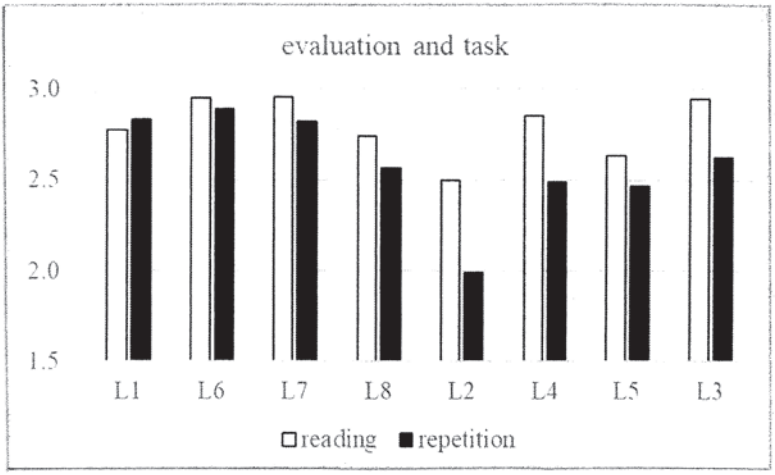

Figure 4

3.4. Some typical pronunciations of /r/ by Japanese learners

We can distinguish three major variants of /r/, which are particularly salient in the word-final position.

The first variant is a voiceless post-alveolar fricative [ʃ]. For instance, in the repetition task, L2 repeated *kar* (snow) as [tʃawʃ]. L4 pronounced *dar* (narrow) and *kar* (snow) as [daʃ] and [kaʃ], respectively. From the articulatory as well as perceptive viewpoints, the voiceless alveolar trill or fricative is very close to the voiceless post-alveolar fricative. In fact, this variant was exclusively observed in the repetition task. The presence of the phoneme /ʃ/ spelled as the letter *ş* in Turkish could further exacerbate the confusion between /ʃ/ and /r/. This phenomenon is already indicated in a manual on elementary Turkish: "At the end of a word, it resembles a sound like **sh**", Öztopçu (2006: 7).

In the second variant, /r/ is not pronounced but lengthens the preceding vowel. The pronunciation comes from a weakened or inaudible voiceless alveolar trill or fricative. L2 and L4 pronounced *kuaför* (hairdresser) like [kwafɔə] and [kwafɔ:], respectively, and *nar* (pomegranate) like [na:]. In addition, L2 pronounced *ağır* (heavy) as [aɨ:], and L4 pronounced *vapur* (ferryboat) as [ʊapu:]. L8 frequently used a long vowel: *kar* [ka:], *kâr* (profit) [kʲa:], and *projektör* [prɔʒɛkto:]

(projector).

The third variant is a voiceless velar fricative [x][10]. In this case, Japanese learners made a velar articulation for an alveolar one. This misunderstanding regarding the position of articulation seems difficult to interpret. Supposedly, a voiceless trill or fricative at the word-final position could give a misleading impression to Japanese learners that the friction was generated not at the alveolar ridge but in the vocal tract, thus leading them to produce a velar fricative. For instance, L2 used this variant in *kar* [kax] (snow) and *zor* (difficult) [zox]. The pronunciation of *kömür* (coal) by L5 sounded like [kœmyx].

Discussion

In this pilot study, the pronunciation of the Turkish phoneme /r/ by Japanese learners was found to be "not so bad" by three Turkish assessors. The scores for the preconsonantal and intervocalic positions of /r/ were apparently higher than those for its word-final position. This observation could be attributed to the fact that both Turkish and Japanese have the phoneme /r/ as a single flap. The articulatory and perceptive similarity of /r/ in Turkish and Japanese contributed to the good performance of Japanese learners for both preconsonantal and intervocalic positions of /r/. Further, this observation indicated that the acquisition of Turkish /r/ does not depend on the experience of studying in Turkey or to the duration of learning Turkish.

On the contrary, the pronunciation of /r/ in the word-final position led to incoherent scores by the three assessors, on the basis of which we deduced the following implicational hierarchy for the acquisition of /r/: preconsonantal VrC($), intervocalic VrV, and word-final Vr$. A previous study based on the data obtained from a group of normally developing and phonologically disordered children came to the same conclusion. "The hierarchical ordering most conductive for Turkish liquids—word-initial, intervocalic, post-consonantal, and post-vocalic (= word-final), in descending order," Yavaş and Topbaş (2004:121). They added that

[10] We can also hear a uvular fricative [χ] by some learners.

this phenomenon "is in accord with other research that has identified the initial position as the most unmarked and the post-vocalic (= word-final) as the most marked," Yavaş and Topbaş (ibid.). On the basis of a survey involving 1359 children aged 2–12 years, Ege claimed that the liquids /l, r/ are late-acquired phonemes. The mastery usage (90%) for /r/ is not seen until 8;06 years, Ege (2010: 31). Moreover, in a longitudinal and cross-sectional study of 665 monolingual Turkish-speaking children aged 1;06 to 8;00, the phoneme /r/ was acquired last among the consonants, around the age of 3;00 to 4;00, Topbaş (2007: 570). Moreover, he stated that flap + stop /ɾt, ɾk/ clusters were acquired last, around the age of 4;06 to 5;00, Topbaş (ibid.).

Interestingly enough, in this survey, the scores observed in the reading task were always higher than those observed in the repetition task. After studying orthographic interference in Turkish learners of English, Bayraktaroğlu claimed, "Although Turkish uses essentially the same alphabet as English, its orthographic system, which employs to a large extent one-to-one letter-sound correspondence, causes interference with English pronunciation" Bayraktaroğlu (2008: 108). We can assume that the one-to-one letter–sound correspondence simplifies the reading task for Japanese learners who have learned such letter–sound parallelism in their classroom, leading them to pronounce /r/ correctly.

One of the variants of /r/ represents the lengthening of the preceding vowel. A previous study reported the same phenomenon in the acquisition of word-final /r/ by Turkish children: "The renditions of some of the post-vocalic (= word-final) targets did not seem to be simple deletions; rather they were produced as a vowel length variation or were indeterminate between a single short vowel and a longer one", Yavaş and Topbaş (2004: 120).

Conclusion

This preliminary report on the pronunciation of the phoneme /r/ by eight Japanese learners of Turkish reveals that /r/ does not cause pronunciation difficulties for Japanese learners in both preconsonantal and intervocalic positions. Nevertheless, word-final /r/ is an exception and constitutes a weak point at least in

the early stages of learning Turkish. Moreover, the performance of Japanese learners does not seem related to the history of learning Turkish and the experience of a long stay in Turkey.

Deviant pronunciations were mostly observed in the repetition task. The repetition task consisted of two separate processes of hearing and production, implying a more complex mechanism than the reading task. This was probably the reason why the evaluation scores in the reading task were higher than those in the repetition task. In addition, in a language like Turkish where there is almost one-to-one letter–sound correspondence, the reading task seems much easier than the repetition task. In future studies, it would be necessary to examine whether we can identify the same tendency toward /r/ in the free conversation and text-reading tasks.

Some concrete results obtained in the present study are corroborated by other empirical data on first-language acquisition by Turkish children. Nevertheless, our conclusions are based solely on a small dataset of eight Japanese learners. To generalize our results, we will need to further support various second language acquisition data.

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References

AKSAN Doğan (1978) (ed), *Türkiye Türkçesi Gelişmeli Sesbilimi*. Ankara: Türk Dil Kurumu Yayınları.

BAYRAKTAROĞLU Sinan. (2008) "Orthographic Interference and The Teaching of British Pronunciation to Turkish Learners", *The Journal of Language and Linguistic Studies* 4(2), 107-143.

BEKLEYEN N. (2011) "Pronunciation Problems of Turkish EFL Learners", *Electronic Journal of Social Sciences* 10(36), 94-107.

DEMİR Nurettin and Emine YILMAZ (2011) *Türkçe Ses Bilgisi*, Anadolu Üniversitesi.

DEMİRCAN Ömer (1978) *Türkçenin Ses Düzeni, Türkiye Türkçesinde Sesler*, TDK Yayınları.

DEMİRCAN Ömer (2001) *Türkçenin ses dizimi*. İstanbul: Der Yayınları.

DETEY Sylvain and Yuji KAWAGUCHI (2008) "Interphonologie du Français Contemporain (IPFC): récolte automatisée des données et apprenants japonais", *Journées PFC: Phonologie du français contemporain: variation, interfaces, cognition*, Paris, Dec. 11-13, 2008.

EGE Pınar (2010) "Türkçe'deki Ünsüzlerin Edinimi: Bir Norm Çalışması", *Türk Psikoloji Dergisi* 25(65), 16-34.

EREN Ömer (2015) "Children's acquisition of the phoneme /r/ in Gaziantep province", *Journal of Child Language Acquisition and Development* 3.4, 177-183.

ERSEN-RASCH Margarete I (2004) *Türkische Grammatik für Anfänger und Fortgeschrittene*, Max Hueber Verlag.

FUKUMORI Takahiro (2004) *Studies of experimental phonetics of Turkish vowel harmony* (in Japanese), Benkyo Publishing.

GEYLANIOĞLU Savaş and Kenan DİKİLİTAŞ (2012) "Pronunciation Errors of Turkish Learners of English: Conceptualization Theory as a Teaching Method", *The Journal of Language Teaching and Learning* 2012-2(1), 38-50.

GÖKSEL Aslı and Celia KERSLAKE (2005) *Turkish A Comprehensive Grammar*, Routledge, London, and New York.

KAWAGUCHI Yuji (2005) "Phonological system of contemporary Turkish –Critical review on segmental phonemes–" (in Japanese), *Journal of Institute of Language Research* 10, Tokyo University of Foreign Studies, 35-62.

KAWAGUCHI Yuji, Selim YILMAZ and Arsun Uras YILMAZ (2006) "Intonation Patterns of Turkish Interrogatives", *Prosody and Syntax Cross-linguistic Perspectives*, John Benjamins, 349-368.

KAWAGUCHI Yuji (2009) "A corpus-driven analysis of *r*-dropping in spoken Turkish", *Corpus Analysis and Variation in Linguistics*, John Benjamins, 281-297.

KAWAGUCHI Yuji, Mito MATSUZAWA, Kaori SUGIYAMA, Nori KONDO and Sylvain DETEY (2012) "Interphonology of contemporary French -IPCF-Japanese project-" (in Japanese), In Makoto MINEGISHI et al. (eds.), *Working Papers in Corpus-based Linguistics and Language Education 9*, Tokyo, Tokyo University of Foreign Studies, 35-69.

KORNFILT Jaklin (1997) *Turkish*, Routledge, London/New York.

LEES Robert B. (1961) *The phonology of Modern Standard Turkish*, Uralic and Altaic Series 6, Bloomington: Indiana University.

ÖZSOY A. Sumuru (2002) *Türkçe'nin Yapısı – I Sesbilim*, Boğaziçi Üniversitesi Yayınevi, İstanbul.

ÖZTOPÇU Kurtuluş (2006) *Elementary Turkish A Complete Course For Biginners*, Santa Monica, California, Istanbul.

RACINE Isabelle, Sylvain DETEY, Françoise ZAY and Yuji KAWAGUCHI (2012) "Des atouts d'un corpus multitâches pour l'étude de la phonologie en L2: l'exemple du projet « Interphonologie du français contemporain » (IPFC)", In: Kamber, A., Skupiens, C. (éds). *Recherches récentes en FLE*. Berne: Peter Lang, 1-19.

SATO Kumiko (2013) *Kobayashi dialect and Turkish prosody* (in Japanese), University of Kyushu Press.

SELEN N. (1979) *Söyleyiş sesbilimi akustik sesbilim ve Türkiye Türkçesi*. Ankara: Türk Dil Kurumu Yayınları.

SWIFT Lloyd B. (1963) *A Reference Grammar of Modern Turkish,* The Hague, Mouton.

TOPBAŞ Seyhun (2007) "Chapter 54 Turkish Speech Acquisition", Sharynne McLeod (ed.), Thomson Delmar Learning, 566-579.

UNDERHILL Robert (1976) *Turkish Grammar*, Cambridge, Mass: MIT Press.

YAVAŞ Mehmet and Seyhun TOPBAŞ (2004) "Liquid development in Turkish: Salience vs. Frequency", *Journal of Multilingual Communication Disorders* 2.2, 110-123.

Appendix

Repetition Task and Reading Task

5	art "increase"	41	görünmüyor "not to be seen"
10	kâr "profit"	46	ağır "heavy"
11	dar "narrow"	49	projektör "projector"
12	dört "4"	51	orada "there"
14	bir şey "something"	52	kırk "40"
19	beraber "together"	57	bir dakika "a minute"
27	arkadaş "friend"	58	tren "train"
29	o görüyor "(s)he sees"	63	var "have/there is"
34	rahat "easily"	67	tören "ceremony"
36	vapur "ferryboat"	68	kar "snow"
38	kara "black"		

Reading Task, List for Japanese Natives

2	gözleriyle "with eyes"	25	kömür "coal"
4	görmeden "without seeing"	28	ödevler "homework"
5	soru "question"	33	rıza "agreement"
6	otlar "grass"	37	nar "pomegranate"
11	kırmızı "red"	39	atlara "to horses"
15	kuaför "hairdresser"	40	tırnak "nail"
16	sürat "speed"	41	ömrümde "in a lifetime"
17	arasında "between"	44	burnu "nose"
19	severim "I love"	45	verirler "they give"
21	karanlık "darkness"	46	tıraş "razor"
23	suare "soiree"	50	zor difficult"