

An Analysis on Japanese Learners' Pronunciation of Korean Syllable Final Nasal

: Focusing on the Deletion and Insertion of Velar

Ha, Hobin

Hongik University
International Language Institute
Korean Instructor (1st author)

Lee, Hwajin

Kookmin University
School of Korean Language & Literature
Assistant Professor (Corresponding author)

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I. Introduction

One of the most characteristic representations of Japanese learners' pronunciation in Korean can be found in the syllable final position. These representations are based on the learners' native language which has syllable final consonants that barely function as a substantial part of Japanese syllable structure. Due to the status of syllable final consonants in their native language, Japanese learners struggle with various types of Korean syllable final consonants.

Generally, previous studies that analyzed Japanese learners' pronunciation of Korean syllable final consonants tend to focus on the alternation of syllable final nasal.¹ The syllable final nasal of Japanese can only correspond approximately with Korean syllable final consonants in any segmental sequences. For the acoustic similarity of syllable final nasal between Korean and Japanese, the learners are rather confused about the phonemic contrast of Korean syllable final nasal. In many cases, the learners' confusion in terms of pronouncing syllable final nasal results the phonological process of alternation.

This study starts with the question of whether Japanese learners'

1 In Song (1969), the earlier comparative researches had focused on the diacritic and typological approach.

pronunciation of Korean syllable final nasal must converge on the process of alternation. The phonological process of learners' pronunciation represents a mechanism by which learners avoid the burden. And the alternation is a burden-avoidance strategy which is chosen by the learner.

This study aims to analyze the Japanese learners' pronunciation of Korean syllable final nasal in terms other than the alternation. In this framework, another phonological process that can be chosen by the learner, such as deletion and insertion will be suggested.

II. Background

Japanese language has only one syllable final nasal which is described as 'ン'. The 'ン' is treated as an archiphoneme /N/ which has several allophones in a surface form (Kwon, 2006; Labrune, 2012). This moraic element has no oppositional pair in terms of the place of articulation. Japanese syllable final nasal doesn't have a place in the oral cavity, therefore, corresponds roughly to Korean syllable final nasal which has three members of /n, m, ŋ/ are distinguished by the criterion based on the place of articulation (Hasegawa Yukiko, 1997; Park et al., 2004). It makes Japanese learners do not distinguish syllable final nasals due to the lack of syllable final contrast in Japanese language.

Basically, Japanese syllable is formed as an open CV structure that restricts segmental elements but allows moraic elements in syllable final position (Cho, 2000). It provokes the vowel insertion and the alternation of nasal in Korean syllable final position. In the case of syllable final nasal, several different analyses have been presented. In Ko (1970), Japanese learners have a tendency to alternate [n] with [ŋ] in a syllable final position of Korean frequently. In Joung (2011), the cognitive difficulty of Korean syllable final consonant is prominent in the pronunciation of [n]. In Park (2001), on the other hand, Korean

syllable final [ŋ] causes more pronunciation errors for Japanese learners than [n].

The pronunciation error of Japanese learners in syllable final nasal entails the alternation generally. In terms of syllable final position, the nasal alternation is strongly influenced by the oral place of following syllable initial consonant (Chang, 2016; Lee, 2008). As a moraic element, Japanese syllable final nasal has no cognitive place of articulation in segmental tier. In a segmental sequence of surface form, therefore, the place feature of following syllable initial consonant spreads to preceding syllable final nasal. It eventually triggers the place assimilation as below (Han et al., 2003, p. 121).

- (1) a. /N/ → [m] / _____ /p, b, m/
 /eN.pi.tsu/ → [em.pi.tsu] ‘えんぴつ(pencil)’
 /toN.bo/ → [tom.bo] ‘とんぼ(dragonfly)’
 /saN.ma/ → [sam.ma] ‘さんま(billfish)’

 b. /N/ → [n] / _____ /t, d, n, ts, dz/
 /haN.tai/ → [han.tai] ‘はんたい(opposite)’
 /oN.na/ → [on.na] ‘おんな(woman)’
 /kaN.ʒi/ → [kan.ʒi] ‘かんじ(Chinese character)’

 c. /N/ → [ŋ] / _____ /k, g, ŋ/
 /niN.ki/ → [niŋ.ki] ‘にんき(popularity)’
 /maN.ga/ → [maŋ.ga] ‘まんが(cartoon)’

 d. /N/ → [N] / _____ /s, ʃ/
 /ɲi.hoN/ → [ɲi.hoN] ‘にほん(Japan)’
 /kaN.ʃi/ → [kaN.ʃi] ‘かんし(Chinese Poem)’

In Yoon and Shimbo (2012), Japanese syllable final nasal represents through the syllable boundary as a geminated consonantal sequence that shares an identical place of articulation with following syllable initial consonant. (1a, b, c) shows each nasal archiphoneme

/N/ assimilates to the following syllable initial consonants with sharing place feature. Each gemination consequently represents the labial, coronal and dorsal sequence. In (1d), however, assimilating process is blocked due to the position of /N/ in segmental sequence and the articulating manner of following syllable initial consonant. Without following syllable initial consonant, Japanese word final /N/ cannot acquire the place feature by itself. The word final /N/, therefore, is derived to the surface as an uvular sound which represents the default position of the Japanese nasal without dorsal occlusion (Min, 2002; Park et al., 2004; Vance, 2008). The /ʃ/, in addition, cannot share the oral place with preceding nasal consonant due to the absence of fricative nasal in Japanese phoneme inventory.

The assimilating pattern shows in (1) is also applied in Japanese learners' pronunciation of Korean syllable final nasal as below.

- (2) a. /n/ → [m]
 /an.ma/ → [am.ma] '안마(massage)'
 /sən.be/ → [səm.be] '선배(senior)'
- b. /ŋ/ → [m]
 /caŋ.mi/ → [cam.mi] '장미(rose)'
 /koŋ.bu/ → [kom.bu] '공부(study)'
- c. /m/ → [n]
 /nam.njə/ → [nan.njə] '남녀(man & woman)'
 /cʰim.dɛ/ → [cʰin.dɛ] '침대(bed)'
 /kam.ʃa/ → [kan.ʃa] '감자(potato)'
- d. /ŋ/ → [n]
 /toŋ.nɛ/ → [ton.nɛ] '동네(town)'
 /saŋ.dɛ/ → [san.dɛ] '상대(partner)'
 /koŋ.ʃu/ → [kon.ʃu] '공주(princess)'
- e. /m/ → [ŋ]

/kam.gi/	→ [kaŋ.gi]	‘감기(flu)’
/cim.k ^h an/	→ [ciŋ.k ^h an]	‘짐칸(stowage)’
f. /n/ → [ŋ]		
/cən.gi/	→ [cəŋ.gi]	‘전기(electricity)’
/bin.k ^h an/	→ [biŋ.k ^h an]	‘빈칸(blank)’

(2) shows each Korean syllable final nasal assimilates to the following syllable initial consonants represent the labial, coronal and dorsal sequence. It is correlated with the pattern of Japanese segmental sequence as above (1). In case of (2a, e, f), native Korean speakers also apply the same rules to spontaneous speech. These phenomena accompanied by the process of alternation, however, are not applied to every case of Japanese learners' pronunciation as a phonological principle. The identical derivation process as native Korean can be applied to Japanese learners' pronunciation in the environment such as (2). Furthermore, another derivation process that is not the same as the case of (2) also can appear in Japanese learners' pronunciation. Unlike the general case, some Japanese learners can adjust the property of Korean syllable final nasal without the process of assimilation. This tendency is more remarkable when the syllable final consonant is velar nasal /ŋ/.

III. Deletion of Velar

In some cases, Japanese learners change the property of Korean syllable final nasal regardless of following syllable initial consonant's oral place. In terms of place of articulation, Japanese learners alter the place feature of labial nasal /m/ and coronal nasal /n/ at a rate of 2% to 10%. The alternation rate, however, increases to about 17% when the syllable final consonant is velar nasal /ŋ/. The Korean velar nasal /ŋ/, unlike other syllable final nasals, causes the process of deletion

for some Japanese learners at a rate of 3% to 8% (Ha & Lee, 2019). It proves somewhat Japanese learners tend to struggle more with the pronunciation of velar nasal /ŋ/.

In Yoon (2016, p. 167), Japanese learners generally reconstruct the Korean closed syllable as an open syllable with the vowel epenthesis. The insertion of high vowel /u/ is accompanied in this process. Some Japanese learners, however, delete the Korean syllable final consonant without any compensatory lengthening. Both processes are correlated with the same phonological conspiracy that has the intention of maintaining unmarked CV syllable structure.

From this point of view, some Japanese learners tend to delete the Korean velar nasal /ŋ/ in syllable final position as below (Ha & Lee, 2019, p. 131).

- (3) a. /ŋ/ → Ø / _____ /m, b, p', p^h/
- | | | |
|-------------------------|--------------------------|-----------------|
| /koŋ.bu/ | → [ko.bu] | ‘공부(study)’ |
| /saŋ.p ^h jo/ | → [sa.p ^h jo] | ‘상표(trademark)’ |
-
- b. /ŋ/ → Ø / _____ /n, d, t', t^h/
- | | | |
|------------------------|-------------------------|-----------------|
| /taŋ.njo/ | → [ta.njo] | ‘당뇨(diabetes)’ |
| /cəŋ.do/ | → [cə.do] | ‘정도(degree)’ |
| /saŋ.t ^h ɛ/ | → [sa.t ^h ɛ] | ‘상태(condition)’ |
-
- c. /ŋ/ → Ø / _____ /j, c', c^h/
- | | | |
|------------------------|-------------------------|----------------------|
| /saŋ.ʃa/ | → [sa.ʃa] | ‘상자(box)’ |
| /jaŋ.c ^h i/ | → [ja.c ^h i] | ‘양치(brushing teeth)’ |
-
- d. /ŋ/ → Ø / _____ /g, k', k^h/
- | | | |
|-------------------------|--------------------------|-------------------|
| /cuŋ.go/ | → [cu.go] | ‘중고(second-hand)’ |
| /saŋ.k ^h wɛ/ | → [sa.k ^h wɛ] | ‘상쾌(freshness)’ |

The deleting pattern of Korean velar nasal /ŋ/ in case of (3a, b, c) does not account for a large proportion of Japanese learners' actual pronunciation. In case of (3d) which is followed by syllable initial

dorsal, however, a number of learners tend to delete the Korean velar nasal /ŋ/ in syllable final position.

According to Lee and Ha (2021), every Japanese learner deletes the Korean syllable final consonant at least once when pronouncing spontaneously. In particular, some Japanese learners tend to delete the Korean velar nasal /ŋ/ quite frequently in the cases as below.

- (4) a. /ŋ/ → ∅ / _____ #
 /ko.sɛŋ/ → [ko.sɛ] ‘고생(suffering)’
 /no.rɛ.baŋ/ → [no.rɛ.ba] ‘노래방(karaoke)’
- b. /ŋ/ → ∅ / _____ /g/
 /koŋ.gi/ → [ko.gi] ‘공기(air)’
 /caŋ.ga/ → [ca.ga] ‘장가(marriage of man)’
- c. /ŋ/ → ∅ / _____ V
 /saŋ.ə/ → [sa.ə] ‘상어(shark)’
 /koŋ.ju/ → [ko.ju] ‘공유(sharing)’

The deletion rate of Korean velar nasal /ŋ/ is increasing without following segment as (4a) or with following dorsal consonant and vowel as (4b, c). To clarify these phenomena, we conducted a research on 30 Japanese learners who currently belong to the institute of Korean language in Seoul.

Table 1. Information of test subject

Level	Gender	Age
beginner	female	10s: 6
		20s: 19
		30s: 5

The learners in Table 1 were requested to utter the 6 words in (5) with syllable final /ŋ/ during the spontaneous speech. Each word is

constituted with the segmental sequence that can represent the process as (4).

- (5) a. /kot.caŋ/ ‘곧장(straight)’
 /po.tʰoŋ/ ‘보통(usually)’

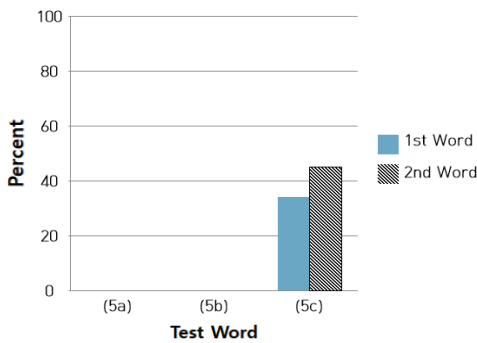
 b. /sɛŋ.gak/ ‘생각(thinking)’
 /hak.sɛŋ.gwa/ ‘학생과(with student)’

 c. /sɛŋ.il/ ‘생일(birthday)’
 /paŋ.in/ ‘방은(room)’

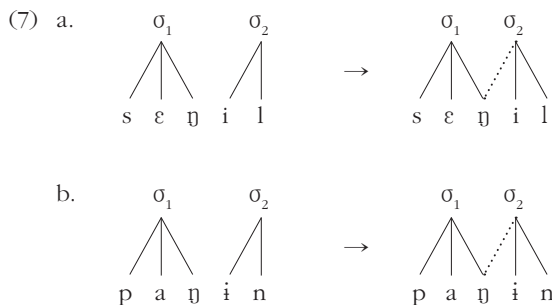
The words in (5a) with the same segmental sequence of (4a) are presented to the learners as the adverb to prevent following segment. ‘학생과’ and ‘방은’ in (5b, c) are in the form that Korean case marker ‘-과’ and ‘-은’ which indicates the grammatical function of word in a sentence is attached.

As a result of the research, there were no notable phenomena other than the alternation of /ŋ/ in (5a) and (5b), while a considerable number of learners applied the deletion of /ŋ/ that Korean native speakers do not apply in (5c). The deletion of /ŋ/ is more applied where the case marker is attached as below.

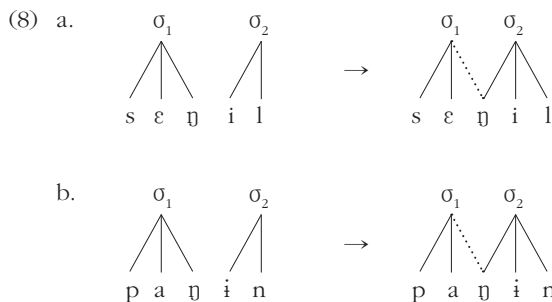
(6) Application rate of /ŋ/ deletion in test word



Korean syllable final /ŋ/ is basically not linked to the syllable initial position of followed vowel due to the Korean syllable structure constraint which restrict /ŋ/ to be represented only as a syllable final consonant. It can be described as below.



(7) shows the process of syllabification that deriving underlying words in (5c) to the surface. The Korean syllable structure constraint blocks the /ŋ/ linked to the followed /i/ and /i/. It shows a language specific aspect of Korean that violates the formation of CV structure which is treated as an unmarked syllable in terms of the language universals. If there was no constraint that restricts CV structure in (7), unmarked syllable can be derived as below.



The /ŋ/ deletion of Japanese learner also can be analyzed in terms of syllabification as in (8). Syllable final consonant with follow-

ing vowel is linked to the syllable initial position due to the language universals. From this point of view, any learners who do not have a cognition about the syllable structure constraint, like Japanese learners, will apply the process of syllabification deriving unmarked CV structure naturally. The Japanese learners' deletion of Korean /ŋ/, in brief, is not a genuine process, but a sort of recognized phenomenon from the perspective of native Korean.

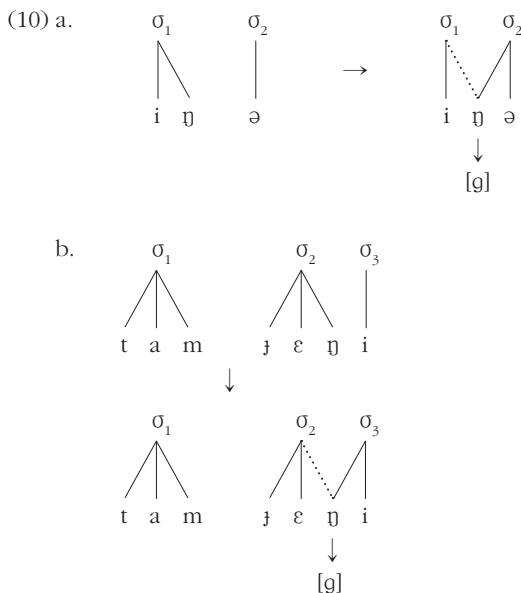
In this context, the derivation rule of Japanese /g/ can be suggested as below (Labrune, 2012, p. 79).

(9) a. /g/	→ [g] /	# _____
/go.ma/	→ [go.ma]	‘ごま(sesame)’
/ge.ta/	→ [ge.ta]	‘げた(wooden shoes)’
b. /g/	→ [ŋ] /	V _____ V
		C _____
/ka.ga.mi/	→ [ka.ŋa.mi]	‘かがみ(mirror)’
/ni.ge.ru/	→ [ni.ŋe.ru]	‘逃げろ(to escape)’
/haŋ.ga/	→ [haŋ.ŋa]	‘ハンガ(hanger)’

(9a) shows word initial /g/ is represented as velar obstruent [g]. (9b) shows the representation of the velar nasal [ŋ] in between vowels and with the same place of preceding consonant which forms a reduplicated segmental sequence. These phenomena verify that the Japanese [ŋ] is an allophone of /g/ while the Korean /ŋ/ is differentiated with /g/ as a phoneme.²

Japanese learners, meanwhile, derive the Korean /ŋ/ as below (Han et al., 2003, p. 121).

2 In terms of the syllable sequence, Japanese syllable initial consonant is represented as voiced consonant without preceding syllable final obstruent.



(10) shows the Korean /ŋ/ is derived to [g] in between vowels. It also proves that Japanese learner recognizes /ŋ/ and /g/ as the same phoneme group. Korean /ŋ/, therefore, is the element that can be linked to syllable initial position from the perspective of Japanese learner like /g/.

IV. Insertion of Velar

The CV sequence on the syllable boundary triggers resyllabification in general. In some cases of Japanese learners, the preceding /ŋ/ of CV sequence is not only linked to the followed vowel, but causes the insertion of [g] as below (Lee & Ha, 2021, p. 199).

- (11) $\emptyset \rightarrow [g] / \text{/}\hat{\eta}\text{/} ______ \text{V}$
 /sjo.phiŋ.il/ → [ʃjo.phiŋ.gil] ‘쇼핑을(shopping)’
 /su.jəŋ.il/ → [su.jəŋ.gil] ‘수영을(swimming)’

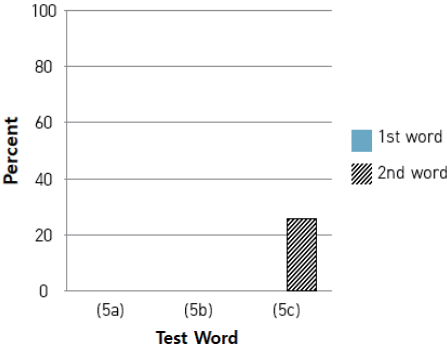
(11) shows the syllable final /ŋ/ with following case marker that has no syllable initial consonant triggers the insertion of [g] without any process of deletion. It is related with the insertion of [g] in Japanese loanword that forms a reduplication with syllable final /ŋ/.

(12)a. ∅	→ [g] / /ŋ/ _____ #
‘ring’	→ ‘リング’ [riŋ.gw]
‘strong’	→ ‘ストロング’ [su.to.roŋ.gw]
b. ∅	→ [g] / /ŋ/ _____ V
‘singer’	→ ‘シンガ’ [siŋ.ga]
‘hangout’	→ ‘ハングアウト’ [haŋ.gw.a.u.to]

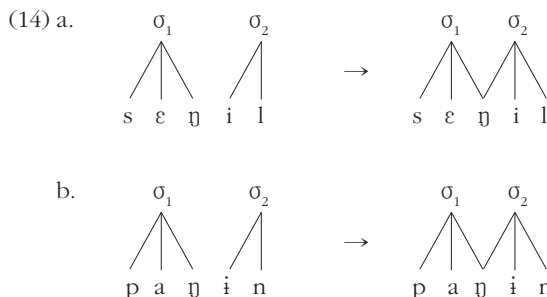
(12a) shows the word final /ŋ/ reduplicates the same place of following [g] accompanying with the vowel epenthesis. (12b) shows the preceding /ŋ/ of CV sequence on syllable boundary is not linked to the followed vowel, but causes the insertion of [g].

Despite the low percentage of the research, some Japanese learners represented the insertion of [g] in (5c). The [g] insertion is only applied with following case marker that has no syllable initial consonant. It implies that the [g] insertion of Japanese learners requires the condition of application that is related to the morphological information.

(13) Application rate of [g] insertion in test word



Considering the fact that the insertion of [g] is a sort of deriving process of resyllabification, The pronunciation of Japanese learners in (5c) accompanying [g] insertion also can be analyzed as below.



From the perspective of Japanese learners, the syllable final /ɳ/ can be treated as [g] in the process of resyllabification due to the derivation rule of (9). The /ɳ/ in (5c), therefore, represents an ambisyllabicity as the deriving process that links the /ɳ/ to the followed vowel. It can be recognized as the insertion of [g].

V. Conclusion

Pronunciation error of foreign learners tends to entail a mechanism for avoiding the burden. Korean syllable final nasal is accepted as a sort of burden on Japanese learners. To prevent the burden, some phonological processes can be applied in terms of derivation such as alternation, deletion and insertion.

In certain environments, the confusion of Japanese learners that comes from the pronunciation of Korean /ɳ/ results in the deletion of /ɳ/ or the insertion of [g] as a surface form. It is related to the universal process of syllabification that links the syllable final consonant to followed vowel without the syllable initial consonant. A language specific aspect of Japanese /g/ which derives [ɳ] and [g] to a surface,

therefore, can cause the deletion of /ŋ/ or the insertion of [g] in terms of recognition.

*	Submitted	2022.11.24.
	First revision recieved	2022.12.6.
	Accepted	2022.12.22.

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ABSTRACT

An Analysis on Japanese Learners' Pronunciation of Korean Syllable Final Nasal

: Focusing on the Deletion and Insertion of Velar

Ha, Hobin · Lee, Hwajin

The main purpose of this study is to analyze the Japanese learners' pronunciation of Korean syllable final nasal based on the phonological process of alternation, deletion and insertion. The characteristic aspect of Japanese learners' pronunciation generally occurs in the confusion between the group of Korean syllable final nasals. It can be represented as a phonological process of alternation which is caused by the place assimilation. In some cases, on the other hand, the deletion and insertion that are closely related occur pronunciation of Korean syllable final nasals. Some Japanese learners tend to delete the Korean velar nasal in syllable final position due to the non-applying syllable structure constraint of Korean prohibits the distribution of syllable initial /ŋ/. In similar cases, Japanese learners tend to insert the Korean velar obstruent in syllable final position due to the place assimilation and the reduplication with following syllable initial consonant. These phenomena show the character of Japanese syllable final /N/ which is called archiphoneme.

KEYWORDS Nasal, Velar, Alternation, Assimilation, Deletion, Insertion, Reduplication