덧! 꽃! 멋!
(Dot! Kkot! Mot!)
Coda Neutralization in Korean

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In this paper, I propose a teaching tool that aids Korean L2 undergraduate English-speaking students in acquiring coda neutralization. In comparison to the English language, which distinguishes obstruents as either voiced or voiceless, Korean obstruents have a three-way distinction of laryngeal features. In addition, the Korean language allows more phonemes to be neutralized than in English. These phonological characteristics cause difficulties for beginner students whose first language is English. To address the issues that beginner students face, I developed a teaching tool that Korean-as-a-foreign-language instructors can use to benefit their students' understanding by combining theoretical understandings of Korean phonology (specifically obstruents in the coda position) with pedagogical theory. This tool begins with awareness-building exercises to expand students' phonological knowledge of Korean. Then, students apply their knowledge through comprehension problems. Towards the conclusion of the paper, I elaborate on the significance of the teaching tool concerning second language acquisition. I also discuss the tool's limitations and offer recommendations for adapting it to align with the students' native language and Korean language proficiency.
Keywords: Korean-as-a-foreign-language; coronal obstruents; coda neutralization; comprehensible input hypothesis; teaching tool

1   Introduction

Many researchers have examined coda neutralization ("….elimination of a phonemic distinction in the [coda position]" (Jongman, 2004, p. 1) within the Korean language, but their research does not provide methods that Korean foreign language teachers can use to teach their students (Ahn & Iverson, 2004; Kim & Duanmu, 2004; Kang, 2001; Lee, 2006). In order to make coda neutralization understandable for beginner students that are learning Korean, the proposed teaching tool aims to bring forth previous theoretical knowledge of this phonological phenomenon and apply it to pedagogical settings. As the Korean language allows for a wider range of phonemes to be neutralized than the English language, beginner students who speak English as a first language (L1) may find coda neutralization daunting (Lee, 2006). Thus, I intend to explain coda

neutralization in Korean, specifically focusing on coronal obstruents through a teaching tool that features step-by-step activities.

2   Language Background

According to Cho and Whitman (2019), the Korean language belongs to its own language family known as the *Koreanic* language family (p. 13). Within this language family, there are many dialects which have formed because of political differences (i.e., North versus Seoul dialect), as well as geographic (northwestern dialects, central dialects, and Jeju dialect) (Brown & Yeon, 2015). The Korean language is mainly spoken in South and North Korea, but also spoken in other parts of the world, such as China, Japan, United States, and Europe (Brown & Yeon, 2015).

3   Generalization and Examples

The generalization for coda neutralization of coronal obstruents is as follows:

   i. Korean does not allow released obstruents in the coda position.

The following examples from Lee (2006) show that coronal obstruents all neutralize regardless if they are a stop (1), affricate (2), or fricative (3) when in the coda position (p. 3). In the first example, the labial lax stop (1a) and aspirated stop (1b) are being neutralized to an unreleased labial stop ([p̚]). The same process is seen with the velar lax, aspirated, and tense stops (1c, 1d, 1e). All velar stops are neutralized to an unreleased velar stop in the surface representation ([k̚]). The process also occurs for coronal stops (1f) and (1g), which neutralize to an unreleased coronal stop ([t̚]). In the second example, a lax affricate (2a) and aspirated affricate (2b) are being neutralized to an unreleased coronal stop. Finally, in the third example, both a lax fricative (3a) and a tense fricative (3b) are being neutralized to an unreleased coronal stop.

(1)	a.	/pap/	[pap̚]	*'rice'*
	b.	/ipʰ/	[ip̚]	*'leaf'*
	c.	/pak/	[pak̚]	*'gourd'*
	d.	/nyekʰ/	[nyek̚]	*'around (the time)'*
	e.	/pak'/	[pak̚]	*'outside'*
	f.	/kot/	[kot̚]	*'instantly'*
	g.	/k'ɨtʰ/	[k'ɨt̚]	*'a point'*

(2) a. /nat͡ɕ/ [nat̚] *'day'*

    b. /nat͡ɕʰ/ [nat̚] *'face'*

(3) a. /nas/ [nat̚] *'sickle'*

    b. /kas'/ [kat̚] *'to go (past)'*

The neutralization of /t͡ɕ/[1] and /t͡ɕʰ/ (2), as well as /s/ and /s'/ (3), to an unreleased [t̚] is an interesting phenomenon as this assimilation does not occur in English. Example (4a) shows neutralization of a coronal obstruent in the coda position which can occur in English. However, in English, the postalveolar affricate (4b) and the alveolopalatal fricative (4c) do not neutralize to an unreleased coronal obstruent in the coda position:

(4) a. /tɹɪkt/ [tɹɪkt̚] *'tricked'*

    b. /tʃɜrtʃ/ [tʃɜrtʃ] *'church'*

    c. /sʌs/ [sʌs] *'sus'*

4   Assumptions

The teaching tool is grounded in a theoretical process and assumption: neutralization, and laryngeal features, specifically glottal width, respectively. These concepts are described in the following sections. In addition, Krashen's (1982) comprehensible input hypothesis is considered as a pedagogical assumption.

4.1   Neutralization

The teaching tool will show the concept of neutralization to assist students in acquiring Korean phonology. Thus, while two forms differ in their underlying representation, they may sound similar (Jongman, 2004, p. 1). For example, in Korean, while the last consonants seen in the forms "instantly" and "to go" (past) (1a, 3b) are different phonemes (i.e., a voiceless alveolar stop (/t/) and a tense fricative (/ s'/)), they have the same unreleased coronal stop ([t̚]) in the surface representation.

4.2   Laryngeal Features

In comparison to other languages, such as English, which use voiced and voiceless features to denote obstruents, Korean uses a three-way distinction for coronal obstruents, which are lax (lenis), tense (fortis), and aspirated features (Ahn & Iverson, 2004, p. 352; Lee, 2006, p. 1; Kang, 2001, p. 136). In addition,

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[1] /t͡ɕ/ is a lax alveopalatal affricate (Shin, 2015).

Korean has a two-way distinction for the coronal fricative /s/ (lax [s] and tense [s']) (Lee, 2006, p. 1). I assume that the specifications of Korean obstruents are mainly characterized by glottal width, meaning that aspirated obstruents have the feature [spread glottis] or [SG], lax obstruents are characterized as glottis neutral, and tense obstruents have the feature [constricted glottis] or [CG] (Ahn & Iverson, 2004, pp. 352). As coronal obstruents are characterized by [spread glottis], glottis neutral, or [constricted glottis], these features are assumed to be unary because it is redundant to say that a segment has a feature and lacks another (Ahn & Iverson, 2004, p. 346).

4.3 Comprehensible Input Hypothesis

For the teaching tool, the researcher will not state the term neutralization explicitly, but will implement English and Korean examples where neutralization occurs, such as "cat" [kaet̚] and "cad" [kaed̚]. The activities are chosen based on Krashen's (1982) comprehensible input hypothesis, which is a hypothesis that describes how one acquires a second language. Lightbown & Spada (2013) describe this hypothesis as:

> …acquisition [that] occurs when one is exposed to language that is comprehensible and contains *i + 1*. The '*i'* represents the level of language already acquired, and the '*+1'* is a metaphor for language… that is just a step beyond that level. (p. 106).

The teaching tool first introduces English examples that feature coda neutralization to build a foundation of understanding for students. The comprehensible input hypothesis is incorporated when students are acquiring the Korean examples of coda neutralization. The teaching tool assumes that Korean vocabulary is already acquired and comprehensible for students (*i*). The coda neutralization process is a step beyond students' current level (*+1*).

5 Teaching Tool

5.1 Theoretical Context and Grounding

The teaching tool will showcase many phonological concepts which may be new to students. For example, students may believe that Korean obstruents have the same distinction as English obstruents (voiced or voiceless); however, this belief is incorrect. The distinction, instead, is lax (lenis), tense (fortis), and aspirated (Ahn & Iverson, 2004, p. 352). In order to describe this distinction appropriately, elements of laryngeal features are used within the tool. Specifically, lax, tense, and aspirated obstruents are highlighted in a simple phonological rule within the tool. Finally, while coda neutralization occurs in English, students may not realize that this phonological phenomenon also occurs in Korean, and is an

important concept to know as it causes coronal obstruents to become unreleased lax obstruents.

The teaching tool (see Appendix A), created for undergraduate students who are complete beginners (1-4 months of learning), will break down the phenomenon of coda neutralization through step-by-step activities.

First, the teaching tool will list three English words that feature unreleased obstruents in the coda position. For example, "bat" ([baet̚]) or "tricked" ([tɹɪkt̚]). Students will be prompted to say these words out loud and listen to the coronal obstruents, determining whether they are unreleased or released. The teaching tool also uses "subtle" and "clearly audible" to guide students who do not know linguistic terms. The instructor will explain that the last consonant is unreleased and repeat the words using both released and unreleased obstruents to demonstrate the differences clearly. For example, the instructor may say the coronal obstruents released versus unreleased so that students can hear the difference. Showing students words in a language they understand will allow them to build a foundation of understanding.

They can use this knowledge to assist them as they acquire coda neutralization in Korean, which is a step beyond their current level (i.e. *+1*). In this activity, students will be asked to read out loud six Korean words which they are familiar with (*i*). These words have unreleased coronal obstruents and also released coronal obstruents (coronal obstruents with a vowel preceding). Rather than using unreleased and released, the teaching tool differentiates the two forms by consonant vowel consonant (CVC) and consonant vowel consonant vowel (CVCV), and divides the words into columns, which allows students to understand the differences with ease. Below these words, a simple phonological rule of how coronal obstruents in the coda position sound is shown, as well as in written English. In addition, an example of when coronal obstruents become neutralized and when they do not is written.

Finally, the teaching tool will have two perception quizzes at the end that students can use to apply what they have learned. The first section is a comprehension quiz. Three audio recordings, which comprise   Korean words that have unreleased coronal obstruents and released coronal obstruents, (i.e. words that feature the coronal obstruent with a preceding vowel), will be given to students. After hearing the audio clip, students will choose between two answers: (a) unreleased and (b) released.

The second section will be a correct/incorrect quiz. Five audio clips that have Korean words with coronal obstruents in the coda position will play. Some of these words will be said with an unreleased coronal obstruent in the coda position (correct) or with a released coronal obstruent in the coda position (incorrect). Students will choose between (a) correct and (b) incorrect, and if the word is said incorrectly, the students are prompted to write the correct form using English romanization.

5.2 Learning Objectives

Once finished with the teaching tool, students will be able to: (1) identify Korean words that have coronal obstruents in the coda position, and (2) apply their knowledge of coda neutralization to pronounce coronal obstruents correctly.

5.3 Assessment Criteria

For assessment, activity one and activity two are not worth marks, as they do not assess students' ability, but rather aid in their understanding of coda neutralization of coronal obstruents. In contrast, activity three, which features the perception quizzes, will be assessed so that the instructor can gauge students' understanding. The first quiz is worth three marks as students only have to determine if the word has a vowel or not. The second quiz is slightly more difficult because students have to determine if the coronal obstruent within each word is said correctly or not. In addition, if the words are said improperly, the students have to write the correct form in English romanization. Thus, the second activity is weighted more heavily. Instructors are told to give a mark if students select the correct option and a mark if they write the English form with an unreleased lax obstruent (i.e. [t̚]). As there are three incorrect answers and five questions in total, a student can receive up to eight marks.

 As Korean is not a voiced/voiceless language like English, the tool advises instructors not to dock marks if students write an interchanging consonant or vowel, such as "b/p" or "ae/e." Instead, the teaching tool assumes both answers to be correct as long as the last segment is an unreleased lax obstruent. Instructors are recommended to write the most correct English romanization beside students' answers, and to discuss how to correctly spell consonants after the activity for clarification.

6 Discussion

6.1 Value for Second Language Acquisition

The teaching tool utilizes theoretical and pedagogical concepts to aid students' understanding of coda neutralization, specifically with coronal obstruents. First, the tool will build students' understanding of coda neutralization as the activities are designed using Krashen's (1982) comprehensible input hypothesis. In addition, the tool will benefit students' phonological awareness as they are prompted to perceive released and unreleased stops that exist in the Korean language.

6.2 Limitations of the Teaching Tool

It is important to note the teaching tool is limited in that it only explains the process of coda neutralization of coronal obstruents, rather than labial or dorsal

obstruents. While the process of neutralization is the same for all obstruents, coronal affricates require a change in place of articulation before the coronal stop is unreleased. This extra step is not needed for labial and dorsal stops to neutralize (Lee, 2006, p. 3). Other teaching tools could be made to cover the remaining obstruents.

While the tool is designed to be effective in teaching students coda neutralization of coda obstruents, limitations exist since not all phonological processes in Korean are explicitly addressed. For example, in activity two, some words in the CVCV column show the consonants with different sounds. This phonological process occurs with when some consonants and vowel are combined together, such as "/s/" and "/i/" becoming "[ʃi]" not "[si]" (Eckman & Iverson, 2012, p. 71). To address this limitation, a separate teaching tool can be developed to assist students' understanding of phonological processes like the example above.

6.3   Other Purposes of the Teaching Tool

Possible modifications can be made to the teaching tool to suit students with different languages and proficiencies. The teaching tool is originally designed for undergraduate students who speak English as an L1, but can be changed to a certain extent. The first activity, which features English examples, can be changed to any language as long as those languages have coda neutralization of coronal obstruents.

The teaching tool can also be modified to suit the level of students. For example, if the instructor wanted to use the tool for an upper beginner class (5-12 months), they could take out the Korean transcriptions in 3.2 and have students write the words in Korean if they are incorrect.

7   Conclusion

In this paper, Korean coronal obstruents, specifically stops and affricates, are shown to have a three way-distinction (lax, tense, and aspirated), while coronal fricatives have a two-way distinction (lax and tense). The generalization states that Korean coronal obstruents cannot be released in the coda position.

The teaching tool incorporates theoretical knowledge of coda neutralization of Korean coronal obstruents with pedagogy, thus, addressing the research problem of the study. The teaching tool uses phonological theory from existing research and concepts from Krashen's (1982) comprehensible input hypothesis, allowing L2 Korean beginner undergraduate students whose L1 is English to build and apply their knowledge of coda neutralization of coronal obstruents.

8   About the Author

My interest in languages, Korean media, and an abundance of experience with learning Japanese, led me to start studying Korean at the end of 2020. Despite the explicit knowledge of phonology and phonetics that I gained during my undergraduate at the University of Lethbridge, I struggled (and still do) with my pronunciation of Korean. In 2021, I got accepted into the Master's in Applied Linguistics program at the University of Victoria, and as part of the required courses, I took LING 505: Introduction to Phonology under Dr. Marion Caldecott. The final project for this class was to create a teaching tool using aspects of what we learned during the course. Inspired by my own difficulties with the Korean language, I strived to create a teaching instrument that could help beginner students acquire some aspects of Korean pronunciation.

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Appendix A

Name: _____

Date: _____

덧! 꽃! 멋!
(Dot! Kkot! Mot!)
How to Pronounce Coronal Obstruents in the Coda Position in Korean
(___/11 marks)

Intended Level/Proficiency: This tool is created for undergraduate students who are complete beginners (1-4 months of learning) at the Korean language.

Language Background:
Korean is a part of the *Koreanic* language family, and refers to the many dialects that differ politically, such as the Seoul, North, and Jeju dialects. Korean, unlike English, has a three-way distinction for certain consonants: lax, aspirated, and tense.

Cho, S., & Whitman, J. (2019). *Korean: A Linguistic Introduction*. Cambridge: Cambridge University Press. doi:10.1017/9781139048842

Lee, S. (2006). *Post Obstruents in Tensification in Korean*. [Paper presentation]. Annual Conference of the Canadian Linguistic Association (ACCLA), Toronto, Ontario, Canada.

Learn the Rule:

1. Read the following English words out loud.
   What do you notice about the pronunciation of these words? Focus on the pronunciation of the "t". What do you hear? Is the "t" clearly audible (released) or subtle (unreleased)?

   a. Bat
   b. Cat
   c. Tricked

2. Read the following Korean words out loud.
   What do you notice about the pronunciation of these words? Is the last sound different in the CVC column and the CVCV Column? What is the difference?

CVC *(Consonant/Vowel/Consonant)*	CVCV *(Consonant/Vowel/Consonant/Vowel)*
a. 끝(kkitʰ) "A point"[2] b. 낮 (nat) "Day" c. 멋 (meot) "Flavor	d. 끝이 (kkichi) "A point" e. 낮에 (naje) "Day" f. 멋이 (meoshi) "Flavor"

Please observe the following rule:

$$\left\{ \overset{/t/}{\sqcap}, \overset{/tʰ/}{\sqsubset}, \overset{/t'/}{\sqcap\sqcap}, \overset{/c/}{\nearrow}, \overset{/c̉/}{\nearrow}, \overset{/ć/}{\nearrow\nearrow}, \overset{/s/}{\curlywedge}, \overset{/ss'/}{\curlywedge\curlywedge} \right\} \underline{}^{\text{(End of the syllable)}} = "[t̚]"$$

When these sounds (ㄷ,ㅌ,ㄸ,ㅈ,ㅊ,ㅉ, ㅅ,ㅆ) are at the ***end of a syllable***, they are all pronounced as a subtle (unreleased) **"t̚"**.

Example:

In this word, "멋, (meos)" the "ㅅ" (s) is at the end of the syllable, thus it is pronounced as **"t"**.

In this word, "머수 (meosu)," the "ㅅ" (s) is at the beginning of the syllable, thus it is pronounced as "s" not **"t"**.

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[2] Examples adapted and modified from Lee, S. (2006). *Post Obstruents in Tensification in Korean*. [Paper presentation]. Annual Conference of the Canadian Linguistic Association (ACCLA), Toronto, Ontario, Canada.

Apply your Knowledge:

3. Comprehension Quiz: Listen to the audio clips and choose whether the word has an unreleased sound or released sound. (3 marks)

a.	(a) unreleased	(b) released
b.	(a) unreleased	(b) released
c.	(a) unreleased	(b) released

4. Incorrect/Correct Quiz: Listen to the audio clips and determine if the word is said properly or improperly. If not, write the correct pronunciation in English romanization. **Make sure to use "t̚"** if the last consonant is unreleased. (8 marks)

a.	"멋"	(a) correct	(b) incorrect
			_____
b.	"빛"	(a) correct	(b) incorrect
			_____
c.	"넷"	(a) correct	(b) incorrect
			_____
d.	"인터넷"	(a) correct	(b) incorrect
			_____
e.	"곧"	(a) correct	(b) incorrect
			_____

Appendix B

Answer Key:

Comprehension Quiz: Listen to the audio clips and choose whether the word has an unreleased sound or released sound. (3 marks)

      a.   (a) unreleased   **(b) released**

      b.   **(a) unreleased**   (b) released

      c.   (a) unreleased   **(b) released**

Incorrect/Correct Quiz: Listen to the audio clips and determine if the word is said properly or improperly. If not, write the correct pronunciation in English romanization. **Make sure to use "t̚"** if the last consonant is unreleased. (8 marks)

a.	"멋"	**(a) correct**	(b) incorrect
b.	"빛"	(a) correct	**(b) incorrect**
			_____**Bit̚**/Pit̚*_____
c.	"넷"	(a) correct	**(b) incorrect**
			_____**Naet̚**/Net̚_____
d.	"인터넷"	**(a) correct**	(b) incorrect
e.	"곧"	(a) correct	**(b) incorrect**
			_____**Kot̚**/Got̚_____

*For incorrect: Give one point if students write "t̚" at the end of a word. For this worksheet, do not dock marks if students write an interchanging consonant or vowel, such as "b/p", "ae/e" or "g/k," as this assignment focuses on what they perceive. Instead, write the **bolded/<u>underlined</u> version** beside the English form if they do not have the most correct consonant/vowel. For example, if a student writes "pit," write "**bit**" beside. The teacher may want to discuss how consonants are written in English after the assignment is finished as clarification.