

Consonant Nasalization in Pronouncing Korean Words by Indonesian Learners A Phonological Study

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ABSTRACT

This study has been motivated by the lack of research on consonant nasalization in pronouncing Korean words in Indonesia. The results of such research can help Korean phonology teachers develop their teaching materials. This study focuses on identifying consonant nasalization in pronouncing Korean words by undergraduate Koreans as foreign language (KFL) students. This study was conducted to determine the most frequently and the least frequently nasalized forms along with the factors. The data in this study were obtained from interviewing 17 participants consisting of 9 female and 8 male students employing questions about pictures that refer to the 60 vocabularies. The study found that the *seolcheukeumeui bieumhwa/yueumeui bieumhwa* (liquid nasalization) type obtained the highest percentage of realized nasalization (60.88%) with the letter ㅇ [ng] and ㅓ [r]. Meanwhile, the *jangae-eum* and *yueumeui bieumhwa* (combination of obstruent and liquid nasalization) type obtained the least percentage of realized nasalization (41.18%) with the letter ㅋ [k] and ㅓ [r]. Some of the factors for the least frequently nasalized Korean words may be related to TOPIK (Test of Proficiency in Korean) level obtained by the students.

Keywords: Korean language consonant, nasalization, phonology, pronunciation.

1. INTRODUCTION

Phonological rules in Korean and Indonesian are different especially in terms of pronunciation of the languages. Some Korean pronunciation rules are different from the written rules. For example, the pronunciation of the word 십리 [sib-ri] /z^hi**b**.li/ changes to 심니 [sim-ni] [ʃ**im**.ni]. In Indonesian pronunciation, there are no rules that make word pronunciation change completely different from the written form. Brown (2007) revealed that more differences between a speaker's language and a foreign language will cause difficulties in learning the foreign language process. Therefore, Indonesian students may find it difficult to learn Korean because of the differences. Jeon (2015) stated that most communication in Korean is conducted through speaking and listening. The interpretation of a learner's ability to speak Korean differs greatly depending on how accurate the pronunciation is. If the pronunciation is unnatural or difficult for the listeners to understand, their Korean language skills are never extraordinary.

Korean learners who have inaccurate pronunciation show problems not only in speaking but also in communication. In addition, Korean learners who cannot pronounce Korean correctly also often make mistakes in writing, understanding story content, and reading (Jeon, 2015). Therefore, according to Jeon (2015), pronunciation in a language is related to all communication functions and is a basic standard for evaluating learners' Korean language skills.

Research on pronunciation inaccuracies in Korean by several researchers have been conducted, such as Uk (2018), Jang (2015), and Kim (2008). It was found the inaccuracy in pronunciation happens due to a huge difference in phoneme sound change phenomena such as consonant assimilation and palatalization in Korean and Chinese. Chinese learners who were accustomed to Chinese pronunciation had difficulty in pronouncing Korean words. Chinese learners had difficulty in distinguishing phonetic sounds that exist in Korean language.

To pronounce Korean words well, Korean learners need to know one of the important rules in Korean phonology, namely the assimilation rules. Assimilation is a sound change from two different sounds to the same or nearly the same sound because the language sounds are pronounced accordingly so that they have the potential to influence or be influenced by each other (Muslich, 2008). Park and Lee (2018) revealed that assimilation is a phenomenon where the voice changes to be the same or similar to another sound due to the effect of other sounds around it. Assimilation rules in Korean are conducted to make it easier for Korean people to pronounce a word. In Korean language, there is assimilation that occurs in consonants, and some in vowels. However, the most common assimilation is in the consonants.

The assimilation of consonants or what is called *jaeum donghwa* in Korean language is divided into several categories. The categories of consonant assimilation in Korean are: *bieumhwa* ‘nasalization’, or *seolcheukeumhwa* / *yueumhwa* ‘lateralization’, *gyeongeumhwa* ‘glottalization’, and *gugae-eumhwa* ‘palatalization’ (Sin & Cha, 2013; Park & Lee, 2018). Of all the types of Korean consonant assimilation categories, the researchers were interested in researching consonant *jaeumbieumhwa* ‘nasalization’. Based on the research conducted by Uk (2018) regarding the inaccuracy of Korean pronunciation, many realizations of *bieumhwa* ‘nasalization’ were still incorrect. Therefore, the researchers aimed to examine whether Indonesian students also have dominant errors in realizing the Korean nasalization.

The meaning of nasalization in Indonesian is the sound produced by expelling air through the nasal cavity by blocking the air in the oral cavity where these sounds are articulated (Nikelas, 1988). Meanwhile, nasalization in Korean is the phenomenon of changing the sound from a voice that is not a nasal sound (nose sound) to a nasal sound when it is in front of a nasal sound (Park & Lee, 2018). In conclusion, nasalization is changing sounds into sounds produced from the nasal cavity or nasal sounds, which occurs because of being influenced by certain phoneme sounds.

If in Indonesian the nasal consonants are m, n, ŋ [ng], and ŋ [ny], in Korean the nasal consonants are □ [m], ㄴ [n], and ㅇ [ng]. Examples of the phenomenon of nasalization in Indonesian are the word *memakai* ‘use’ which is a combination of the affix “me-” with the word “pakai”, the consonant “p” becomes melted because it is affected by the nasalization process ‘me- + p → mem- + Ø’ so that it “mem- + pakai” is not “mempakai” but “memakai”. Meanwhile, nasalization in Korean is like the word ‘먹는’ /mæg.nun/ which when read becomes [멍는] [mæŋ.nun] because it is affected by the nasalization process ‘ㄱ [k] + ㄴ [n] → ㅇ [ng] + ㄴ [n]’. There are several types of consonant nasalization processes in

Table 1. Consonants nasalization types of Korean language

Types	Examples
ㄱ [k/g] (ㄱ [kk], ㅋ [k], ㆁ [ks], ㄹ [rk]), ㄷ [d] (ㅌ [s], ㅍ [ss], ㅈ [j], ㅊ [ch], ㅌ [t], ㅎ [h]), ㅃ [b] (ㅍ [p], ㅍ [rb], ㅍ [rp], ㅃ [bs]) + ㄴ [n], □ [m] → ㅇ [ng], ㄴ [n], □ [m] + ㄴ [n], □ [m]	먹는 (meokneun) → [멍는 (meongneun)], 맞는 (matneun) → [만는 (mannneun)], 밥물 (mapmul) → [밤물 (mammul)]
□ [m], ㄴ [n], ㅇ [ng] + ㄹ [r] → □ [m], ㄴ [n], ㅇ [ng] + ㄴ [n]	담력 (damryeok) → [담녁 (damnyeok)], 결단력 (gyeoldanryeok) → [결딤녁 (gyeolttanyeok)], 강릉 (gangrung) → [강능 (gangnung)]
	막론 (makron) → [망논 (mangnon)], 명림 (myeongrim) → [멍림 (meongrim)], 심권 (simgyeon) → [שמ권 (simgyeon)]

Korean language is presented in Table 1, based on Sin and Cha (2013), Sinsang (2009), and Kim (2012).

Table 1 shows that there are many types of consonant nasalization in Korean. When pronouncing Korean words, KFL learners may not be able to realize the consonants nasalization. Moreover, the rules for nasalization in Korean are different from the rules in their native language.

Therefore, the researchers are interested in researching about the realization of consonant nasalization in the pronunciation of Korean words among the undergraduate KFL students. Based on the explanation above, this study was conducted to (1) to find out what forms of Korean consonant nasalization are most mastered by students; (2) to find out what forms of Korean consonant nasalization are mostly not realized by students, and (3) to find out what factors that cause students not to realize Korean consonant nasalization.

2. METHOD

The method used in this research was a descriptive qualitative method. This research described and explained the data about the identification of consonant nasalization realized by 17 (9 women + 8 men) undergraduate KFL students in one of the public universities in West Java, Indonesia along with the factors that cause the lack of realization of consonant nasalization. The data collection was conducted by using literature study and interview techniques through Google forms (to filter participants and obtain data from the regional origin, TOPIK (Test of Proficiency in Korean) level, and contact details). The form also contained 60 vocabulary words with consonant nasalization, 60 pictures referring to 60 vocabulary words used as the questions for the participants. It also exhibits the interview guides.

Table 2. Vocabulary list (National Institute of Korean Language, 2005)

No.	<i>Jangae-eumeui bieumhwa</i> (Obstruent nasalization)		<i>Seolcheukeumeui bieumhwa / yueumeui bieumhwa</i> (Liquid nasalization)		<i>Jangae-eum dan yueumeui bieumhwa</i> (Combination of Obstruent and Liquid nasalization)	
	Vocabularies	Frequency of use	Vocabularies	Frequency of use	Vocabularies	Frequency of use
1	국민(<i>gukmin</i>)	(1767)	대통령(<i>daetongryeong</i>)	(1959)	폭력(<i>pokryeok</i>)	(361)
2	국내(<i>guknae</i>)02	(1165)	능력(<i>neungryeok</i>)02	(1063)	협력(<i>hyeopryeok</i>)	(284)
3	학년(<i>haknyeon</i>)	(733)	종류(<i>jongryu</i>)02	(464)	독립(<i>dokrip</i>)	(275)
4	혁명(<i>hyeokmyeong</i>)	(627)	정리하다(<i>jeongrihada</i>)	(395)	법률(<i>beopryul</i>)	(244)
5	옛날(<i>yetnal</i>)	(543)	심리학(<i>simrihak</i>)	(213)	압력(<i>apryeok</i>)	(234)
6	업무(<i>eopmu</i>)02	(490)	승리(<i>seungri</i>)	(210)	합리적(<i>haprijeok</i>)	(147)
7	측면(<i>cheukmyeon</i>)	(444)	동료(<i>dongryo</i>)	(191)	속력(<i>sokryeok</i>)	(116)
8	작년(<i>jaknyeon</i>)	(401)	장래(<i>jangrae</i>)	(153)	방법론(<i>bangbeopron</i>)	(108)
9	학문(<i>hakmun</i>)02	(327)	생리(<i>saengri</i>) 03	(127)	문학론(<i>munhakron</i>)	(104)
10	낱말(<i>natmal</i>)02	(258)	경력(<i>gyeongryeok</i>) 02	(121)	격렬하다(<i>gyeokryeolhada</i>)	(99)
11	식물(<i>sikmul</i>)02	(228)	등록(<i>deungrok</i>) 01	(106)	역량(<i>yeokryang</i>) 01	(81)
12	식민지(<i>sikminji</i>)	(194)	통로(<i>tongro</i>)	(94)	확립(<i>hwakrip</i>)	(72)
13	거짓말(<i>geojitmal</i>)	(186)	중력(<i>jongryeok</i>) 03	(90)	각료(<i>gakryo</i>)	(71)
14	뒷모습(<i>dwitnoseup</i>)	(123)	상류(<i>sangryu</i>)	(88)	수익률(<i>suikryul</i>)	(61)
15	혼잣말(<i>honjatmal</i>)	(94)	침략(<i>chimryak</i>) 02	(86)	확립하다(<i>hwakriphada</i>)	(61)
16	박물관(<i>bakmulgwan</i>)	(86)	평론가(<i>pyeongron-ga</i>)	(80)	확률(<i>hwakryul</i>)	(60)
17	막내(<i>maknae</i>)	(75)	항로(<i>hangro</i>)	(77)	목록(<i>mokrok</i>)	(50)
18	바닷물(<i>badatmul</i>)	(75)	국무총리(<i>gukmuchongri</i>)	(59)	박람회(<i>bakramhoe</i>)	(48)
19	음식물(<i>eumsikmul</i>)02	(66)	음력(<i>eumryeok</i>) 02	(45)	섭리(<i>seopri</i>) 03	(48)
20	백마(<i>baekma</i>)	(52)	음료수(<i>eumryosusu</i>)	(36)	입력하다(<i>irryeokhada</i>)	(39)

Table 2 shows the vocabulary list. The list consisted of 60 vocabularies, divided into three categories. 20 vocabularies contained the type of *jangae-eumeui bieumhwa* (obstruent nasalization) consonant nasalization. Another list containing 20 vocabularies consists of the type of *seolcheukeumeui bieumhwa / yueumeui bieumhwa* (liquid nasalization) consonant nasalization. The other list containing 20 vocabularies consists of the type of *jangae-eum dan yueumeui bieumhwa* (combination of obstruent and liquid nasalization) consonant nasalization.

The vocabularies chosen by the researchers were vocabularies that made it easier for researchers to find images related to these vocabularies. Hence, the participants found it easier to guess the words based on the pictures used in the data collection process. The researchers also referred to *sayongbindo* or the frequency of word usage so that it was possible to adjust the selected words to the use level.

3. FINDINGS AND DISCUSSION

After conducting interviews with 17 selected participants through video calls with LINE and WhatsApp applications. Based on the data presented in Table 3, the participants that the researchers chose consisted of 9 women and 8 men, most of whom come from Bandung area, Bantam, Subang, Pemalang,

Bontang, Nganjuk, Indramayu, Majalaya, Sumedang, Majalengka. Their average language of mother tongue is Indonesian and Javanese/Sundanese regional language. Then, the average TOPIK (Test of Proficiency in Korean) level from those who have not to take TOPIK (Test of Proficiency in Korean) exam to level 4 is the highest.

Table 3. Participant data recapitulation

No.	Participant	Regional Origin	First Language	TOPIK Level
1.	P1	Majalengka	Sunda, Jawa	3
2.	P2	Sumedang	Sunda	3
3.	P3	Majalaya	Sunda, Indonesia	3
4.	P4	Subang	Sunda, Melayu, Indonesia	4
5.	P5	Indramayu	Indramayu (Jawa, Sunda)	2
6.	P6	Nganjuk	Jawa	4
7.	P7	Bontang	Banjar, Melayu, Indonesia	2
8.	P8	Bontang	Bugis, Indonesia	1
9.	P9	Pemalang	Indonesia, Jawa	2
10.	L1	Subang	Sunda	2
11.	L2	Bandung	Sunda	2
12.	L3	Batam	Indonesia	0
13.	L4	Bandung	Indonesia, Sunda	2
14.	L5	Bandung	Sunda	1
15.	L6	Bandung	Indonesia	2
16.	L7	Bandung	Indonesia	1
17.	L8	Bandung	Indonesia	2

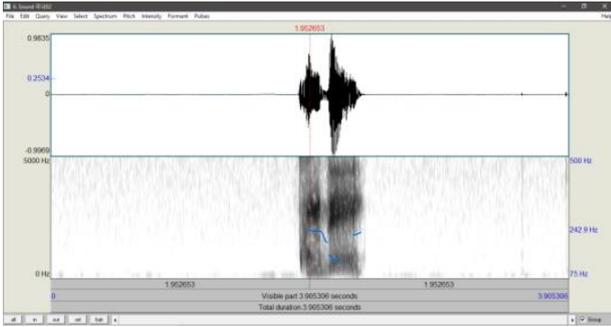


Figure 1 Soundwaves from guknae vocabulary pronunciation of concealed consonant nasalization by the participant.

Figure 1 shows an example of the realized and concealed consonant nasalization sound waves results produced by PRAAT. As many as 1020 voice recordings as data were obtained by the researchers from the pronunciation of 60 vocabularies done by 17 participants. The recorded data of the participants were identified as realized consonant nasalization or not per each type by listening to it directly and assisted by reading the results of the PRAAT wave.

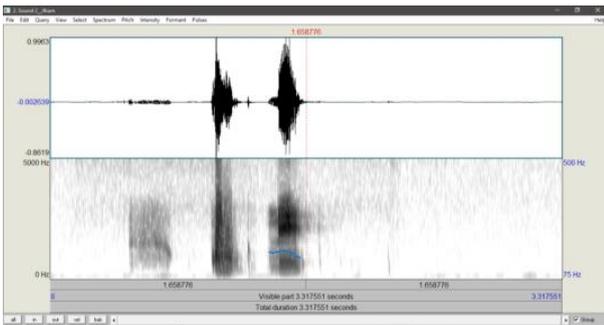


Figure 2 Soundwaves from guknae vocabulary pronunciation by realizing consonant nasalization.

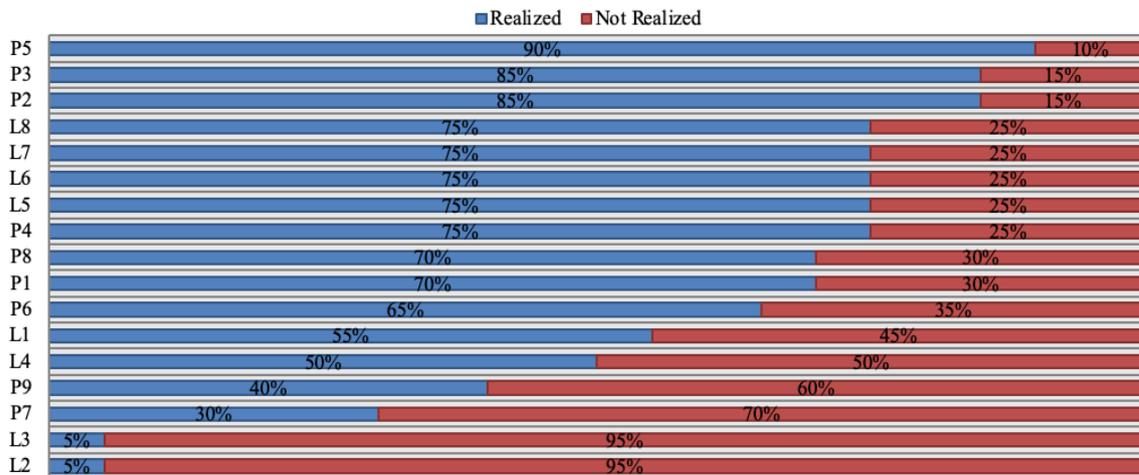
Meanwhile, from Figure 2, it can be seen that the realized consonant nasalization waveforms will look tighter than the concealed consonant nasalization. This occurs when the pronunciation is realizing nasalization, and two different sounds will be converted into the same sound, causing the waveform to unite. Meanwhile, if the pronunciation is not realizing nasalization, two different sounds are still pronounced according to the original sound, causing the waveform to separate.

3.1 Jangae-eumeui Bieumhwa (Obstruent Nasalization)

Figure 3 is showing a graph of realized and concealed consonant nasalization data from 17 participants on the consonant nasalization of the jangae-eumeui bieumhwa. Based on Figure 3, it can be concluded that 60.29% of participants realized consonant nasalization of this type in the 20 vocabularies presented by the researcher, which means this type takes the second position of the most realized types by participants. Then, 39.71% of the participants did not realize this consonant nasalization type in the 20 vocabularies presented by the researcher.

Additionally, from 20 vocabularies containing consonant nasalization of this type, vocabulary 막내 (maknae) is the vocabulary with the most realized consonant nasalization in pronunciation by 94.12% or 16 out of 17 participants. In that vocabulary, there is a condition when the letter ㄱ[k] that is not a nasal letter meets the nasal letter ㄴ[n], the letter ㄱ[k] changes its pronunciation to a nasal sound ㅇ[ng], according to the same nasal partner that has an articulation point in the velar. The conclusion is that the form of meeting the non-

Graph of Jangae-eumeui Bieumhwa 'obstruent nasalization' per student



	L2	L3	P7	P9	L4	L1	P6	P1	P8	P4	L5	L6	L7	L8	P2	P3	P5
Realized	5%	5%	30%	40%	50%	55%	65%	70%	70%	75%	75%	75%	75%	75%	85%	85%	90%
Not Realized	95%	95%	70%	60%	50%	45%	35%	30%	30%	25%	25%	25%	25%	25%	15%	15%	10%

Figure 3 Jangae-eumeui bieumhwa 'obstruent nasalization' graph per student.

nasal letter $\neg[k]$ with the nasal letter $\neg[n]$ is the most mastered form by the participants in this type.

Meanwhile, vocabularies 거짓말 (*gojitmal*) and 혼잣말 (*honjatmal*) are the vocabularies that have the least amount of realized consonant nasalization in its pronunciation by 5.88% or 1 out of 17 participants. In those vocabularies, there is a condition when the letter $\wedge[s]$ that is not a nasal letter meets the nasal letter $\square[m]$, the letter $\wedge[s]$ changes its pronunciation to a nasal sound $\neg[n]$ due to its nasal pair that both have articulation points at the alveolar. In this vocabulary, most participants mistakenly changed the sound $\wedge[s]$ to $\square[m]$ and not $\neg[n]$, so it was considered concealed consonant nasalization. In conclusion, the form of meeting non-nasal letters $\wedge[s]$ with nasal letters $\square[m]$ is the form least mastered by participants in this type.

3.2 Seolcheukeumeui Bieumhwa / Yueumeui Bieumhwa (Liquid nasalization)

Figure 4 shows realized and concealed consonant nasalization data from 17 participants on the consonant nasalization of the *seolcheukeumeui bieumhwa / yueumeui bieumhwa* type.

Based on the data in Figure 4, it can be concluded that 60.88% of participants realized consonant nasalization of this type in the 20 vocabularies presented by the researcher. This means that this type occupies the first position of the nasalization type which mostly realized by participants. This also shows a difference from the result of previous studies which stated that the type of mostly

realized consonant nasalization is the *jangae-eumeui bieumhwa* type. Then, 39.12% of participants did not realize this consonant nasalization type in the 20 vocabularies presented by the researcher.

Furthermore, from 20 vocabularies containing consonant nasalization of this type, vocabulary 동료 (*dongryo*) is the vocabulary with the most realized consonant nasalization in pronunciation by 76.47% or 13 out of 17 participants.

In that vocabulary, there is a condition when the nasal letter $\circ[ng]$ meets the letter $\equiv[r]$ which is not a nasal letter, the letter $\equiv[r]$ changes its pronunciation to a nasal sound $\neg[n]$ according to the pair of which both have an articulation point in the alveoli. So, it is concluded that the form of meeting the nasal letter $\circ[ng]$ with the non-nasal letter $\equiv[r]$ is the most mastered form by the participants in this type.

Meanwhile, vocabulary “*seungri*” is the vocabulary that has the least amount of realized consonant nasalization in its pronunciation by 41.18% or 7 out of the 17 participants. In that vocabulary, there is a condition when the nasal letter $\circ[ng]$ meets the letter $\equiv[r]$, which is not a nasal letter, the letter $\equiv[r]$ changes its pronunciation to a nasal sound $\neg[n]$ according to the pair nasal letters which both have alveolar articulation points. And it is concluded that the form where the nasal letter $\circ[ng]$ meets the non-nasal letter $\equiv[r]$ is not the only most mastered form by the participants, but also the least mastered form by the participants in this type.

Graph *Seolcheukeumeui Bieumhwa / Yueumeui Bieumhwa* 'liquid nasalization' per student

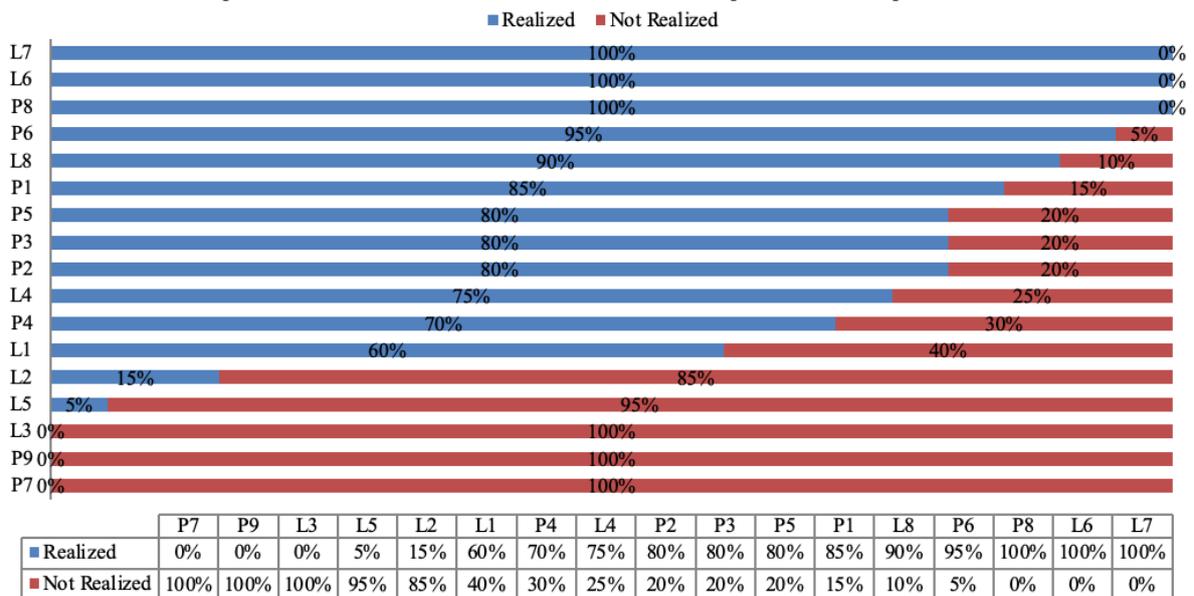


Figure 4 *Seolcheukeumeui bieumhwa / yueumeui bieumhwa* ‘liquid nasalization’ graph per student.

Graph *Jangae-eum* and *Yueumeui Bieumhwa* (Combination of Obstruent and Liquid nasalization) per student

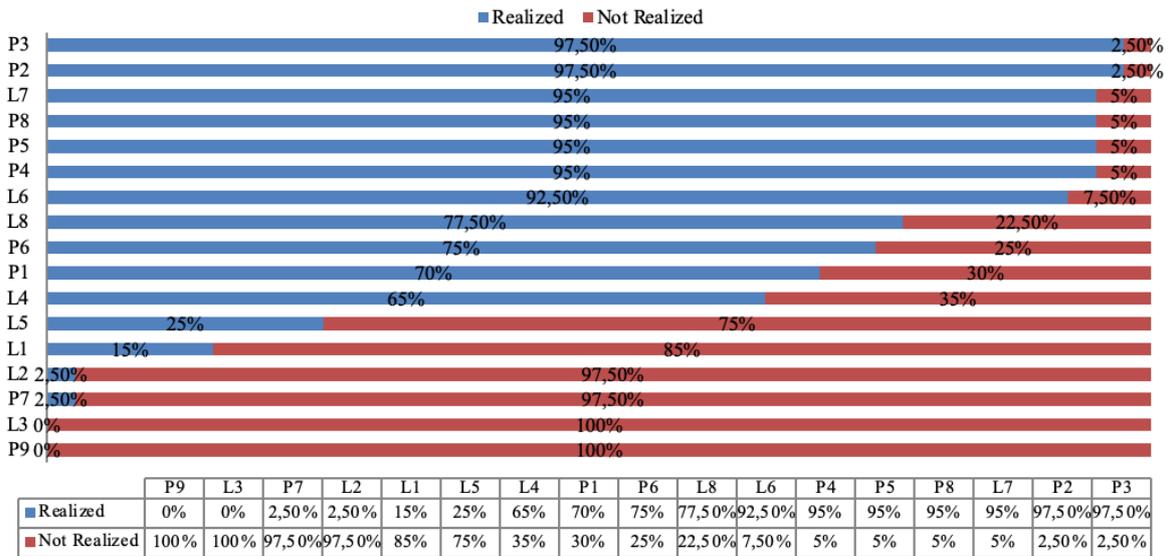


Figure 5 *Jangae-eum* and *yueumeui bieumhwa* (combination of obstruent and liquid nasalization) graph per students.

3.3 *Jangae-eum* and *Yueumeui Bieumhwa* (Combination of Obstruent and Liquid nasalization)

Realized and concealed consonant nasalization data from 17 participants on the consonant nasalization of the *jangae-eum* and *yueumeui bieumhwa* type is presented in Figure 5.

This type is a particular type and is different from the previous two types because there are two nasalization processes, so there are participants who realized all consonant nasalization, realized some consonant nasalization which was only the start or the end of it, and did not realize consonant nasalization at all. For participants who realized half consonant nasalization, the researchers categorized them into 1/2 realized points and 1/2 concealed points.

Based on the data in Figure 5, it can be concluded that 58.82% of participants realized consonant nasalization of this types in the 20 vocabularies presented by the researcher. This means that this type occupies the third or the last position of the most realized types of consonant nasalization by participants. These results also show that these types are consonant nasalization types that are mostly not realized by the participants. This result is also in line with those found in previous studies, which also revealed that this type was the type of consonant nasalization that mostly was not realized by participants. Then, as many as 41.18% of the participants did not realize consonant nasalization of this types in the 20 vocabularies presented by the researcher.

Furthermore, of the 20 vocabularies containing consonant nasalization of this type, vocabulary *확립* (*hwaklib*) is the vocabulary with the most realized

consonant nasalization in pronunciation by participants (70.59%) or 12 out of 17 participants. There is a condition when two non-nasal letters, namely the letter $\neg[k]$ and the letter $\equiv[r]$ meet, the letter $\neg[k]$ changes its pronunciation to a nasal sound $\circ[ng]$ following their nasal partners which both have an articulation point in the velar. And the letter $\equiv[r]$ changes its pronunciation to the nasal sound $\sqcup[n]$ following their nasal partners which both have an articulation point in the alveoli.

So, it is concluded that the encounter form of two non-nasal letters, the letters $\neg[k]$, and the letter $\equiv[r]$, is the most mastered form by the participants in these types.

Then, the vocabulary of *문학론* (*munhakron*) is the most concealed consonant nasalization in pronunciation by participants (64.71%) or 11 out of 17 participants. In that vocabulary, there is a condition for two non-nasal letters, namely the letter $\neg[k]$ and the letter $\equiv[r]$ meet too.

3.4 Factors Causing Concealed Consonant Nasalization

The participants did not realize consonant nasalization based on five factors chosen by the researcher, which are regional origin, TOPIK (Test of Proficiency in Korean) level, gender, knowledge of nasalization theory, and knowledge of vocabulary presented by the researcher. In addition, after doing the research, other factors that influence concealed consonant nasalization were also found, which is the inaccuracy of realized consonant nasalization.

3.4.1 Regional Origin

Table 4. The percentage consonant nasalization not realized by the participants based on regional origin

No.	Asal Daerah	Total Participants	Total Not Realized	Percentage of Not Realized
1.	Batam	1	59	98,33%
2.	Pemalang	1	52	86,67%
3.	Bontang	2	60,5	50,42%
4.	Bandung	6	140,5	39,03%
5.	Subang	2	46	38,33%
6.	Majalengka	1	15	25%
7.	Nganjuk	1	13	21,67%
8.	Sumedang	1	7,5	12,50%
9.	Majalaya	1	7,5	12,50%
10.	Indramayu	1	7	11,67%

The results percentage of concealed consonant nasalization in each region are shown in Table 4. In the table, it is concluded that Batam is the region with the highest concealed consonant nasalization (98.33%), while the lowest region where participants did not realize consonant nasalization is Indramayu (11.67%). Seen from the first language used there, on average, the participants whose regional origin occupies the highest position of concealed consonant nasalization is using the Indonesian language as the first language while those who occupy the lowest percentage on average use their respective regional languages as the first language.

If we look at the phenomena, there is no significant difference between the pronunciation of participants who use Indonesian language and those who use regional languages, such as Javanese or Sundanese language. However, if it is related to other elements, namely the TOPIK (Test of Proficiency in Korean) level, the reason why those who use Indonesian language as their first language have higher percentage of concealed consonant nasalization is because on average, participants who use Indonesian language as their first language have a lower TOPIK (Test of Proficiency in Korean) level than those whose use regional language as their first language.

3.4.2 TOPIK (Test of Proficiency in Korean) Level

Table 5 shows the results percentage of concealed consonant nasalization in each TOPIK (Test of

Table 5. The percentage consonant nasalization concealed by the participants based on TOPIK (Test of Proficiency in Korean) level

No.	TOPIK Level	Total Participants	Total Not Realized	Percentage of Not Realized
1.	Have not taken TOPIK test	1	59	98,33%
2.	Level 1	3	52	28,89%
3.	Level 2	8	242	50,42%
4.	Level 3	3	30	16,67%
5.	Level 4	2	25	20,83%

Table 6. The percentage consonant nasalization not realized by the participants based on gender

No.	Gender	Total Participants	Total Not Realized	Percentage of Not Realized
1.	Female	9	174,5	32,31%
2.	Male	8	233,5	48,65%

Proficiency in Korean) level. From the table, it can be concluded that the participants who had never taken the TOPIK test have the highest percentage of concealed consonant nasalization (98.33%), while the lowest were those who had TOPIK level 3 (16.67%). As seen from the results in the table above, participants who have low TOPIK levels such as having never taken the test, level 1, and level 2 did not realize consonant nasalization higher than participants who have high TOPIK such as level 3 and level 4. Thus, it is concluded that participants who have low TOPIK levels have a higher concealed consonant nasalization rate than those with a high TOPIK level.

Based on the previous explanation, it can be concluded that Korean language skills, both vocabulary, grammar, and language skills are closely related to Korean pronunciation skills. This is because the ability to pronounce Korean is not a separate part but is related to overall language skills. Therefore, good language skills will certainly be very supportive to get good pronunciation skills too.

3.4.3 Gender

Table 6 shows the results percentage of not realized consonant nasalization in each gender. According to the table, it can be concluded that the male participants have the highest percentage of not realized consonant nasalization, with a 48.65% rate. While the lowest percentage of participants that did not realize consonant nasalization were female participants, with a 32.31% rate. When compared with the results of the TOPIK (Test of Proficiency in Korean) level for each participant, male participants have a lower TOPIK (Test of Proficiency in Korean) level than female participants, so the researchers can conclude that this affects the percentage of male gender having a higher level of not realized consonant nasalization higher than the female gender. However, because the percentage rate of male and female genders is not that different, it can be concluded that gender does not significantly affect the percentage of concealed consonant nasalization.

3.4.4 Knowledge of Nasalization Theory

Table 7 shows the results percentage of concealed consonant nasalization in each knowledge of nasalization theory. From the table, it can be concluded that participants who decently know Korean nasalization theory are in the highest category of concealed consonant nasalization (68.33%). The lowest category of concealed nasalization is participants who know the Korean nasalization theory (14,81%). As seen from the results, knowledge of nasalization theory affects the percentage level of concealed consonant nasalization.

Table 7. The percentage consonant nasalization not realized by the participants based on knowledge of nasalization theory

No.	Knowledge of Korean Nasalization Theory	Total Participants	Total Not Realized	Percentage of Not Realized
1.	Know Theory	9	80	14,81%
2.	Decently Know Theory	8	328	68,33%

3.4.5 Knowledge of Vocabulary Presented

Vocabulary in the consonant nasalization *jangae-eum* and *yueumeui bieumhwa* type are unfamiliar vocabularies among the participants while the most familiar vocabulary is the consonant nasalization *jangae-eumeui bieumhwa* type. When compared with the results percentage of concealed consonant nasalization in each type of consonant nasalization from the previous discussion, it is seen that the *jangae-eum* and *yueumeui bieumhwa* type had the highest percentage of concealed consonant nasalization than the other types (41,18%).

3.4.6 Inaccuracy of Realized Consonant Nasalization

After doing the research, it was found that 14 out of the 17 participants had realized consonant nasalization incorrectly. The inaccuracy occurs at every encounter of the letters $\text{ㅅ}[s]$, $\text{ㅌ}[t]$, which is not a nasal letter with the nasal letter $\text{ㅁ}[m]$. The letters $\text{ㅅ}[s]$, $\text{ㅌ}[t]$, when meeting the letter $\text{ㅁ}[m]$ should change the pronunciation to the nasal sound $\text{ㄴ}[n]$ following their nasal pairs which both have articulation points in the alveolar. However, 14 participants made a mistake when changing the sound $\text{ㅅ}[s]$, $\text{ㅌ}[t]$, to $\text{ㅁ}[m]$ instead of $\text{ㄴ}[n]$ so that it was considered concealed consonant nasalization.

4. CONCLUSION

From the three types of consonant nasalization, the most realized consonant nasalization by 17 students of the Korean Language Education study program class of 2017 was the *seolcheukeumeui bieumhwa / yueumeui bieumhwa* (liquid nasalization) type in the form of the letter $\text{ㅇ}[ng]$ meets the letter $\text{ㄹ}[r]$, (76.47%). The results found are different from those found in other studies. The most realized consonant nasalization was in the *jangae-eumeui bieumhwa* (obstruent nasalization) type.

Meanwhile, the consonant nasalization that 17 students of the Korean Language Education study program class of 2017 did not realize the most was the *jangae-eum* and *yueumeui bieumhwa* (combination of obstruent and liquid nasalization) type, in forms of the letter $\text{ㄱ}[k]$ meets the letter $\text{ㄹ}[r]$ with 64.71% percentage.

Then, regional origin, TOPIK (Test of Proficiency in Korean) level, gender, knowledge of nasalization theory, knowledge of vocabulary presented, and inaccuracy of realized consonant nasalization have their influence on the consonant nasalization concealed by 17 participants of the Korean Language Education study program class of 2017.

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