The Sound System Of The North Korean Dialect Of Hamgyeong

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ABSTRACT

The Korean language can be divided into six major dialects, which corresponds to the provincial-level administrative divisions. Although Standard Korean (i.e. the Seoul dialect) is a non-tonal language, there are pitch differences in the Gyeongsang dialect spoken in the southeastern part of South Korea and the Hamgyeong dialect in the northeastern part of North Korea. This research aims to examine the sound system and pitch patterns of monosyllabic words of the Hamgyeong dialect. The researcher compiled two wordlists in order to analyze the sound system and pitch differences of minimal pairs. Two native speakers of the Hamgyeong dialect who had been émigrés for no longer than 3 years were selected for the sound system analysis. Five informants with the same qualifications are chosen for acoustic analysis with respect to fundamental frequency. The results show that the North Korean dialect of Hamgyeong consists of 19 consonant and 8 vowel phonemes just like Standard Korean, except for the vowel quality of /o/ and / Λ /. As for monosyllabic words, pitch that was used to distinguish meanings of words in the past no longer exists in citation form, which is an intriguing piece of evidence of language change in the North Korean dialect of Hamgyeong. The findings thus differ from those in past analyses of tones and pitches in this dialect.

Keywords: Korean sounds and sound system, North Korean dialect of Hamgyeong

INTRODUCTION

The Korean language is spoken in the Korean Peninsula, which includes the Republic of Korea or South Korea and the Democratic People's Republic of Korea or North Korea. There are two hypotheses regarding to its classification of language family. The first hypothesis is that Korean is an isolated language like Japanese and Ainu language. The other is Altaic hypothesis which is the most accepted one. The latter hypothesis postulates Korean language as part of the Altaic language family, along with the Mongolian language. (Manchu-Tungus) and the Chuvash-Turkic language. (Ramstedt, 1916 (Poppe, 1965)

The Korean language can be divided into six geographical varieties, which corresponds to the provincial-level administrative divisions (King, 2006; Yeon, 2012) as illustrated in Figure 1.

(1) The northwestern dialect (Pyeongan province)

(2) The northeastern dialect (Hamgyeong province)

(3) The central dialect (Gyeonggi, Hwanghae, Gangwon and Chungcheong provinces)

- (4) The southwestern dialect (Jeolla province)
- (5) The southeastern dialect (Gyeongsang province)
- (6) Cheju dialect (Jeju province)



Figure 1 Map of Korea's six dialects

The division of Korea between North Korea and South Korea took place at the end of World War II when Japan lost the war, prompting the 35-year-old occupation of Korea by the Empire of Japan to come to an end. Korea is divided into two countries, namely, North Korea and South Korea. The latitude 38° north, commonly known as the 38th parallel, established by the Korean Armistice Agreement serves as a buffer zone between the two nations. The Soviet Union took control of North Korea while the United States took control of South Korea. In terms of political, economic and social aspects, North Korea and South Korea are immensely different. The gross domestic product (GDP) of South Korea in 2016 is estimated at \$1.41 trillion (as of December 2017) ("South Korea GDP," 2017). While North Korea GDP," 2017).

The separation of the two Koreas 70 years ago has also resulted in a drastic difference in the language spoken in North Korea and South Korea. Even though they are considered the same language but each has gone through different paths of change, particularly, the North Korean language policy which requires the preservation of the language set in 1964 by Kim II Sung, leader of North Korea at that time. The policy focused on the purification of the North Korean

language and against the use of Chinese characters and loanwords from foreign languages such as English, Russian and Japanese (Yeon, 2000). New words were coined by using Sino-Korean morphemes (Gim, 1994).

Korean is a non-tonal language, but there are some dialects that possess of pitch difference to distinguish the meanings, a prominent feature of Middle Korean, which was a tonal language (K. M. Lee & Ramsey, 2011), spoken from the 10th to 16th century. It has used during the era of Goryeo dynasty to the middle of Joseon dynasty when the Korean writing system was first created in 1443. With pitch criteria, the Korean language may be divided into two parts: the western dialects and the eastern dialects. The eastern dialects are those with pitch difference i.e. (1) Gyeongsang dialect spoken in the southeastern part of North Korea. Gyeongsang dialect is a pitch accent language. While such characteristic does not appear in the west coast. Although both Gyeongsang and Hamgyeong dialects use pitch to differentiate meanings but the pitch patterns of the two dialects are not identical.

Example 1

Gyeongsang dialect /mʌ.li/ 'head' HL. Hamgyeong dialect /mʌ.li/ 'head' LH Example 2 Gyeongsang dialect $/\epsilon.gi/$ HH 'baby' Hamgyeong dialect 'baby' HL $\epsilon.gi/$ (L = low pitch H = high pitch)

There have been extensive studies on Gyeongsang dialect. The classification of the Gyeongsang dialect especially Southern

Gyeongsang is still controversial whether it is a tonal language (Gim, 1994) or a pitch-accent language like Japanese (H. Lee, Politzer-Ahles & Jongman, 2013; Ramsey, 1978).

Lee (1994) proposed that the Southern Gyeongsang dialect is a tonal language with 3 levels: high (H), mid (M) and low (L), in line with the number of tones in Middle Korean (See example 3).

Example 3

High	mal (H)	'unit of measure'		
Mid	mal (M)	'speech'		
Low	mal (L) 'horse'			

The linguistic research on the North Korean language is still very limited let alone the Hamgyeong dialect. This is due to its national and foreign policies. Linguists who study North Korean language published their works mostly in Chinese and Russian. Most researches focus on lexical and syntactic aspects as well as the national language policy. But not many has conducted a phonetic study especially acoustic phonetics. For this reason, the researcher is interested in exploring the sounds and sound system of North Korean dialect of Hamgyeong using the acoustic analysis.

The Revised Romanization of Korean, the latest romanization system devised by the Ministry of Culture and Tourism of South Korea in 2000, is used throughout this article ("Romanization of Korean," n.d.). Meanwhile, the International Phonetic Alphabet (IPA) is applied for phonetic transcription for the broader readers instead of Yale Romanization of Korean which stresses on the morphophonemic structure.

OBJECTIVES

To analyze the sound system (consonant and vowel) and the acoustic characteristics of pitch in the North Korean dialect of Hamgyeong.

METHODOLOGY

The research methodology consists of creating research instruments, data collection and data analysis as follows:

1. Research instruments

The researcher compiled 2 sets of word list i.e. (1) A list of 500 basic vocabularies to analyze the sound system of the North Korean dialect of Hamgyeong. (2) A list of 8 words (4 minimal pairs) to analyze the acoustic characteristics of pitch between minimal pairs (see Table 1).

말	mal	'horse'	
말	mal	'speech'	
배	рε	'pear'	
배	рε	'stomach'	
노	nun	'eye'	
눈	nun	'snow'	
새	SE	'bird'	
새	SE	'new'	

Table 1 Wordlist of monosyllabic words

2. Data collection

Two native speakers of the Hamgyeong dialect who had been émigrés for no longer than 3 years were selected for the sound system analysis. Five informants with the same qualifications are chosen for acoustic analysis with respect to fundamental frequency. Prior to recording, the researcher inquired general information about the informants and rehearsed before recording. A unidirectional microphone was plugged into a laptop computer while each informant held 10 cm apart from their mouth. Each word was recorded 5 times in a random order. The researcher then selected 3 out of 5 tokens of each word with the most clearly pronounced for the acoustic analysis. The researcher has verified the accuracy of the audio data after each recording session.

3. Analysis

500 words were used to analyze the sound system with the approach of structuralism i.e. consonant and vowel phonemes. The researcher selected the most clearly pronounced tokens for acoustic

measurement and analysis. The unit of measurement for the fundamental frequency is vowel because it is the most sonorous, hence, a tone-bearing unit. The acoustic analysis was conducted with Praat version 6.0.37 at the sampling rate of 44,100 Hz. The duration values were adjusted from milliseconds to 0-100% and the fundamental frequencies were measured at 6 points at every 20% of the duration. The statistical significance was tested.

RESULTS

The sound system

The data collected with 500 basic words showed that the sound system of the North Korean dialect of Hamgyeong consists of 19 consonants as shown in Table 2, and there are 8 vowels (see Table 3) equivalent to Standard Korean. (Seoul dialect).

Consonants in Korean can be divided into 5 types: stop, affricate, fricative, nasal and lateral. Korean stops are voiceless and can be classified into three types: lax or lenis, tense, and aspirated. However, the researcher opted the notation according to the Handbook of the International Phonetic Association (H. B. Lee, 1999) which uses /b, d, g/ for lax. /b, d, g/ are voiceless, unaspirated or slightly aspirated stops). Lax consonants are devoiced at the initial position [b d g] and become voiced intervocalically. /p, t, k/ are tense, which are produced with tension in the vocal folds (Shin, Kiaer & Cha, 2012). /p^h, t^h, k^h/ are aspirated with strong aspiration. Affricates are also divided into the same three categories /I, c, $c^{h}/.$ Although, there are some linguists who used digraphs to express affricates: /dz, tc, tc^h/, the researcher choose to follow the Korean inventory in the Handbook of the International Phonetic Association: A Guide to the Use of the International Phonetic Alphabet where /I, c, c^h/ are used for palatal affricate series as Indologists use /c/ for palate-alveolar affricate (Pullum & Ladusaw, 2013). to /I/I is devoiced at the initial position and becomes [I] intervocalically. Although the traditional analysis of Korean vowels provides 10 simple vowel phonemes that includes /y/ and $/\phi/$, many linguists has proposed 8-vowel system (Cho, 2016). The findings revealed that the vowel quality of /o/ and /A/ differ from Standard Korean in that /o/ in Hamgyeong dialect is lower than that of Standard Korean thus makes it sound more like $/\Lambda/$ in Standard Korean. Meanwhile, the vowel area $/\Lambda/$ in Hamgyeong dialect is more centralized. For example, /bom/ 'spring' in Hamgyeong dialect would sound like /b Λ m/ 'tiger' in Standard Korean. Furthermore, /e/ and / ϵ / are clearly distinct unlike Standard Korean /e/ and / ϵ / that the merger is nearly complete (Shin et al., 2012).



Fundamental frequency

Table 4 indicated the average fundamental frequency (Hertz) of monosyllabic minimal pairs has no statistically significant difference (p<0.05).

Figure 5 shows the result of the acoustic analysis of the minimal pairs by measuring fundamental frequency of the vowel in monosyllabic words. The duration values were adjusted from millisecond to 0-100%. The fundamental frequencies are similar and has the same contour direction.

Table 2 Consonant phonemes of the North Korean dialect of Hamgyeong

	Labial	Alveolar	Post-alveolar	Velar	Glottal
Stop	p p ^h b	t t ^h d		k k ^h g	
Affricate			c c ^h J		
Fricative		S Z			h
Nasal	m	n		ŋ	
Lateral		1			

¹ Transcription according to the Handbook of the International Phonetic Association (H. B. Lee, 1999)

	Front	Central	Back
High	i	i	u
Mid	e	Λ	0
Low	ε	а	

Table 4 Average fundamental frequency (Hertz) of monosyllabic minimal pairs

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Minimal	pair	0%	20%	40%	60%	80%	100%
mal	'horse'	141.56	142.85	144.24	144.56	145.57	146.32
mal	'speech'	138.35	139.87	140.01	141.98	142.31	142.56
statistical significance		-	-	-	-	-	-
bε	'pear'	141.84	142.23	142.99	143.01	143.42	144.58
bε	'stomach'	140.35	141.82	143.06	143.77	144.24	144.89
statistical significance		-	-	-	-	-	-
nun	'eye'	142.85	143.10	143.54	144.39	145.46	146.73
nun	'snow'	142.47	144.19	145.97	146.28	146.39	147.03
statistical significance		-	-	-	-	-	-
se	'bird'	153.52	152.89	154.11	155.74	156.14	156.63
se	'new'	154.55	154.87	155.45	156.47	156.98	157.14
statistical significance		-	-	-	-	-	-

The fundamental frequency range indicated that the monosyllabic words have only a slight pitch contour. As for the minimal pair of $s\epsilon$, the fundamental frequencies are higher than other types of consonant, however, there is no statistically significant difference. The words in each pair are not differentiated by high pitch or low pitch. This reflected a different result from previous research on the North Korean dialect of Hamgyeong that identified the dialect as having two pitches.



1 = mal 'horse' 2 = mal 'speech' $3 = b\varepsilon$ 'pear' $4 = b\varepsilon$ 'stomach'

 $5 = \text{nun 'eye' } 6 = \text{nun 'snow' } 7 = s\varepsilon$ 'bird' $8 = s\varepsilon$ 'new

Figure 2 Fundamental frequency of monosyllabic words

CONCLUSION AND DISCUSSION

The results show that the North Korean dialect of Hamgyeong consists of 19 consonant and 8 vowel phonemes just like Standard Korean, except for the vowel quality of /o/ and / Λ /. /o/ in Hamgyeong dialect is pronounced similar to / Λ / in Standard Korea. Meanwhile, / Λ / in Hamgyeong dialect is more centralized than that of Standard Korea. The difference between /e/ and / ϵ / is evident unlike Standard Korean /e/ and / ϵ / of which the merger is nearly complete (J. H. Lee, 1995).

As for monosyllabic words, pitch differences that was used to distinguish meanings of words in the past no longer exists in citation form when compared the fundamental frequency values between minimal pairs. The findings thus differ from those in past analyses of tones and pitches in this dialect.

SUGGESTIONS

- 1. Future research could further explore the acoustic characteristics of the vowel quality of the North Korean dialect of Hamgyeong i.e. the frequencies of the formants (F1, F2) in order to identify the differences of vowel space between Hamgyeong and Standard Korean.
- 2. Future research could further also explore the acoustic characteristics of the stop consonants of the North Korean dialect of Hamgyeong especially the voice onset time (VOT) to determine if there is any phonetic compensation due to pitch loss.
- 3. Research in this area could focus on the fundamental frequency of monosyllabic words that occur with particles rather than citation form to study the morphological effect on pitch.

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