

Effects of Sociolinguistic Factors on Second Dialect Acquisition of North Korean Refugees in Seoul

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ABSTRACT

This study investigates to what extent various factors affect North Korean (NK) refugee speakers' stop production, from the perspective of second dialect acquisition. The VOT and F0 associated with 7945 stops were measured from 22 NK speakers (F:16, M:6). The factors examined were age of arrival (AoA), length of residence (LoR), and three different aspects of social adaptation (Identification, Assimilation, and Language attitudes). Results showed that the NK speakers with stronger South Korean (SK) identity and longer LoR produced more SK-like VOT patterns. Moreover, the speakers with positive language attitude toward SK and longer LoR produced more SK-like F0 patterns. Our results also suggest gender may moderate these factors and play a role in NK speakers' acquisition of SK stops.

Keywords: Second dialect acquisition, Sociolinguistics, Sociophonetics, Korean Phonetics

1. INTRODUCTION

Considerable linguistic divergence between North Korean (NK) and South Korean (SK) varieties exists, arising due to the seventy-three years of physical and political separation, as well as different language policies [16]. One of the differences has been observed in the three-way stop contrast (fortis vs. lenis vs. aspirated stops). While acoustic cues of fortis stops have not changed, lenis and aspirated stops in have gone through changes in VOT and F0 patterns in utterance initial (IP-initial) position [6, 17, 21]. Specifically, in SK, VOT is no longer a salient cue to distinguish lenis and aspirated stops, showing VOT merger (e.g., 60 ~ 80 ms) in this position. Instead of VOT, now F0 of the following vowels is used as a cue; the lenis stops are produced with lower F0 than aspirated stops on the following vowel.

Recent studies examining the stop production of NK refugees living in SK showed that NK speakers' stop production was different from that of SK speakers [13, 17]. Unlike the SK speakers, the NK speakers used VOT to distinguish lenis and aspirated stops (30-60 ms VOT for lenis and 80-120 ms for aspirated stops). In addition, the NK speakers

distinguished F0 between lenis and aspirated stops less robustly than the SK speakers [16]. Thus, the NK speakers' stop production appeared to align with SK speakers' previous stop patterns of the early 1990s [11, 17].

However, the pattern of NK stop production was not necessarily uniform across contexts. Instead, [16] observed more SK-like stops in some speech styles (conversational) than others (read speech). Such variable production in the process of second dialect acquisition is possible and even likely, potentially triggered by such factors as the formality of the context [15] and interlocutor [4]. Prior research also has suggested that extralinguistic and sociolinguistic factors may exert influence on individual differences in second dialect production and acquisition, including (i) age of arrival (AoA), (ii) length of residence (LoR), (iii) degree of identification with the first dialect (D1) and second dialect (D2), (iv) degree of assimilation in the D2 region, and (v) language attitudes towards D1 and D2 [5, 20]. Such factors may matter since studies have shown that geographically mobile speakers who identified as members of the D2 community acquired D2 features better than those with weaker D2 identity [5, 20]. Speakers who report being more satisfied with living in D2 region and socialized with D2 locals produced more D2 variants [18].

These prior findings suggest that such extralinguistic and sociolinguistic factors may influence individual differences in NK speakers' stop productions and their acquisition of SK stop patterns. Given this, we examined the effects of the five factors listed above on the pattern of stop production (i.e., NK-like vs. SK-like) focusing on the use of VOT and F0 as cues to distinguish lenis and aspirated stops.

2. METHODOLOGY

2.1. Participants

Twenty-two NK speakers now living in Seoul (F: 16, M: 6) in their early 20s (Mean: 22.4, SD: 4.1) participated for a small amount of payment. The speakers were from towns near the capital city of Pyongyang, North Korea, in the Pyongan province, whose regional variety is considered to be standard

North Korean [22]. Their mean AoA in SK was 18.9 years old (SD: 4.9, range 9 – 31) and their mean LoR in Seoul was 3.7 years (SD: 3.4, range 1 - 10).

2.2. Speech tasks and procedure

All participants completed two reading tasks, a syllable elicitation task and a phrase elicitation task, and then a sociolinguistic interview. The syllable elicitation task included 18 CV syllables, each with one of the three-way stop contrasts (e.g., [k]/[k*]/[k^h]) followed by cardinal vowels [ʌ] or [o] (e.g., [kʌ]), across 3 places of articulation. The phrase elicitation task included 9 phrases, adopted from [10]. Each phrase had four syllables, including one of the stops in the first two (e.g., /p^han.p^han.ha.ta/ ‘To be even/flat’). Typically, the initial syllable was repeated (e.g., /p^han.p^han/, except for the case of /p*an.c*ak/ and /pan.c*ak) and followed by /ha.ta/ (‘to be’). The vowel was always [a]. The test syllables and phrases were elicited in the same carrier sentence “__ (la)ko malha-yss-ta (I said __)” [10]. Our analyses in this study focused on the lenis and aspirated stops in the initial syllable.

Each speaker sat in front of a laptop computer, wearing a lavalier microphone Audio-Technica AT 899, which was connected to a Marantz PMD 670 flash drive recorder in a quiet room. Speakers completed the syllable elicitation task first, followed by the phrase elicitation task. The computer screen presented each syllable or phrase in the carrier sentence in three randomized orders. This task took about ten minutes to finish.

Immediately after the reading tasks, the participant and the first author engaged in a sociolinguistic interview over approximately 45 minutes. The participant and the interviewer sat face to face, and the same recording device described above was used for this task. The interview questions were modified from sociolinguistic interview questions intended for an immigrant population developed by [1]. The demographic section of the interview asked participants questions about their hometown, AoA, and LoR in SK. The SK and NK topics sections asked questions about their lives, neighborhoods, and the people and language in each region. All participants answered all questions in the interview protocol.

2.3. Stops and measurements

The duration of the VOT in the IP initial stops was measured from the left edge of the burst release to the onset of the following vowel, defined as the left zero crossing of the first complete periodic cycle [9]. F0 of the following vowels was measured at the mid-point of the vowel following the stop [10]. The F0 was

centered between participants to remove gender-related effects. The articulation rate was calculated (number of syllables per second) because it is known to affect the duration of VOT [9]. Each stop was coded for the word containing the stop, and the following vowel.

2.4. Identification, Assimilation, and Language attitude scores

The NK speakers’ Identification, Assimilation, and Language attitude scores were calculated based on their sociolinguistic interview responses, combining and modifying the methodologies in [5, 20, 25].

In our study, *Identification* score represents to what extent the NK speakers identify more with D1 (NK) or with D2 (SK). *Assimilation* score indicates to what extent the NK speakers are motivated and willing to live like SK people do. The degree of the speaker’s adaptation in the D2 community has been identified as a critical factor in previous studies [20, 25]. The *Language attitude* score, based on the Accent category in [25], reflects the extent to which NK speakers were interested in and willing to acquire the SK variety.

To code speaker responses vis-à-vis these categories, the first author entered 1 point every time one of their responses reflected a sense of identification with or assimilation with the SK society and a positive attitude toward SK variety. One negative point was entered every time a speaker response indicated the same sentiment about NK society and the NK variety. For instance, for *Assimilation* scores, if a speaker responded that she liked living in South Korea, this was considered an expression of assimilation to South Korea. And if she mentions this sentiment four times during the interview, we counted this as four points for the category of Assimilation.

2.5. Analysis

We first examined collinearity between scores of Identification, Assimilation, and Language attitude. Since the degree of correlation among these scores was not very strong, albeit reliable (r ranging from -0.16 to 0.43), we took this to mean that the categories of Identification, Assimilation, and Language attitude captured some different aspects of NK speakers’ stance and adaptation to SK, while overlapping slightly with each other. We thus retained the categories in the subsequent analysis.

We used mixed-effect linear regression models to examine the factors that influence variation in VOT and F0 [3, 19]. The predictors were Stop (lenis vs. aspirated), AoA, LoR, Assimilation, Identification, and Language Attitudes and the interaction between

Manner and each of the other factors. Articulation rate was included in the VOT model only. Random intercepts for Participants and Word, and by-Participant random slope for Manner and by-Word random slopes for AOA, LoR, Identification, Assimilation, and Language Attitude were also included.

The dredge() function from the MuMIn package was used to validate the contribution of predictors [2, 8] and it confirmed that the best-fit model should retain all factors. The function model.avg() was used to evaluate predictors by averaging coefficients across the model's fit. Finally, the sw() function was used to calculate predictor importance in a model, i.e., the probability that each predictor contributes to the VOT and F0 production.

3. RESULTS

3.1. VOT

Results for VOT showed that the main effects of Articulation rate and Stop were significant as expected ($\beta = -8.5$, $SE = 0.2$, $z = 33.9$, $p < 0.001$; $\beta = 35.8$, $SE = 1.4$, $z = 25$, $p < 0.001$, respectively). More importantly, the interaction between Manner and LoR was significant ($\beta = -5.0$, $SE = 1.9$, $z = 2.6$, $p = 0.008$) and the interaction between Stop and Identification score was also significant ($\beta = -3.2$, $SE = 1.8$, $z = 1.7$, $p = 0.083$). As the model averaging analysis provides more conservative and standardized results [8], we interpret that Stop*LoR is significant. The interactions indicate that the VOT difference between lenis and aspirated, which indexes SK-likeness vs. NK-likeness, was modulated as a function of LoR and Identification score. Longer LoR and higher Identification scores (with SK) predicted more SK-like VOT patterns (Fig 1 and 2). The two factors were fairly close in their strength of prediction. LoR was the most effective factor among the factors (98% of predictability for the SK-like VOT production) and Identification was the second most influential factor (92% of predictability for the SK-like VOT pattern) as indicated by the sw() results. This suggests that the NK speakers who have lived in SK only for a few years still might be able to acquire and produce SK-like VOT if they have strong alignment with SK identity. Unlike findings in previous studies [12, 24], AoA was not a significant factor in here.

3.2. F0

Results for F0 showed that the main effects of Stop and Language attitude were significant ($\beta = 0.1948$, $SE = 0.0051$, $z = 28.2$, $p < 0.001$; $\beta = -0.00085$, $SE = 0.003$, $z = 2.7$, $p = 0.005$, respectively). Also, there

were reliable interactions between Manner and Language attitude ($\beta = 0.0464$, $SE = 0.0061$, $z = 7.6$, $p < 0.001$) and between Manner and LoR ($\beta = 0.027$, $SE = 0.0097$, $p = 0.004$). Again, the two factors were close in the strength of prediction. Language attitude (Fig 3) can predict the most SK-like F0 production (100%) among the factors and LoR (Fig 4) can be the second most factor that predicts 97% of SK-like F0 production. It is notable that Language attitude score outperformed LoR here. This suggests that NK speakers with positive language attitudes toward SK can acquire and produce SK-like F0 patterns, even when they have not been in SK for a long time. Unlike the previous literature [12, 18], AoA and Assimilation were not an important predictor in F0 production here. Interestingly, whereas Identification predicted SK-like VOT patterns, it did not predict SK-like F0 patterns. Likewise, Language attitude predicted SK-like F0 but not VOT.

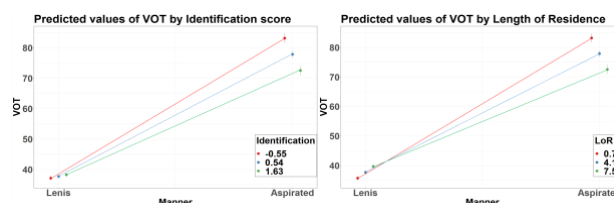


Figure 1 (left) and 2 (right)

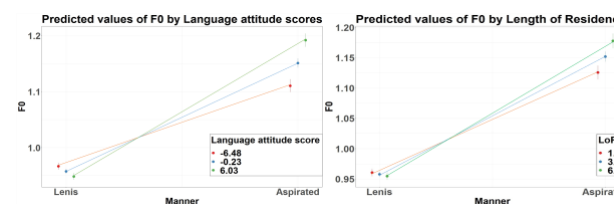


Figure 3 (left) and 4 (right)

3.3. Individual analysis

We noticed that some participants showed strong SK-like stop patterns even though they had only been in SK for one year or less; while others showed strong NK-like stop patterns even when they have lived in Seoul for 10 years. These cases prompted us to identify SK assimilators and SK dissimulators and examine their adaptation scores post hoc.

The mean difference in VOT between lenis and aspirated was calculated for each participant. We then separated assimilator and dissimilator groups based on the group mean (40 ms for VOT and 42 Hz for F0).

We noted that most of VOT assimilators were female (7 females and 1 male). Three of them had very short LoR (1-2 yr) who nonetheless were VOT assimilators. Examination of these 3 participants' adaptation scores showed that their Identification to SK, Assimilation in SK and Language attitude toward SK were stronger than others. VOT dissimulators

included both female and male, and most (10 out of 11) had short LoR (1-3 yrs). One exception was a male participant who showed a dissimilar VOT pattern despite living in SK for 10 years. His adaptation scores showed zero Identification (neutral between SK and NK), high Assimilation to SK, and strong NK linguistic bias (i.e., positive language attitude to NK and negative language attitude to SK).

Similar to VOT, all nine F0 assimilators were female. While some participants had longer LoR (4-10 yrs), 3 participants had only 1 yr LoR. These 3 participants showed strong Assimilation to SK and positive Language attitude toward SK. On the other hand, F0 dissimilators included both female and male, and many had short LoR (1-2). Interestingly, four participants in this category who had longer LoR (4-10) were all male. These four participants' scores indicated zero Identification (neutral), high Assimilation to SK, and strong positive NK linguistic bias. Their SK assimilation scores were higher than the general mean, indicating that they were satisfied with their lives in SK. However, in their interview responses, they indicated that SK variety sounded too feminine and they did not wish to acquire SK dialect as, to them, NK dialect was cooler, stronger, and more masculine.

4. DISCUSSION

The current study investigated to what extent the factors AoA, LoR, Identification, Assimilation, and Language attitude influenced NK refugee speakers' stop production. We found that among those factors, *LoR*, *Identification*, and *Language attitude* predicted variation in VOT and F0. The more experience NK speakers had with SK (as estimated by longer LoR), the more their stops look like those of SK, with shorter VOT and higher F0 for aspirated stops. Finding the effect of LoR but not AoA was rather unexpected, given the opposite patterns or the strong effect of AoA reported in other studies [13]. The LoR effect we found might be because of the LoR of our participants were generally not very long ($M = 3.7$, range 1-10) and it is reported that the effect of LoR may exert a stronger influence for those speakers whose learning has not plateaued [7].

Additionally, NK speakers who more identified as members of SK society (high Identification scores) tended to produce more SK-like VOTs, and those who had more positive attitudes toward the SK variety (Language attitude scores) tended to produce more SK-like F0. The flip-side of these results is that NK speakers who maintained strong NK identity and affinity toward the NK variety retained more NK-like stops. It is noteworthy that these social stances and attitudes toward the dialect community and regions

affected the use and acquisition of the second dialect. We note that the effect of Language attitude was even stronger than that of LoR in predicting the F0 pattern.

Unlike Identity, Assimilation scores did not influence NK speakers' VOT or F0. In other words, while identifying as a member of SK society was related to more SK-like stop production, adapting well in SK was not linked to more SK-like stop production. On the surface, this may seem puzzling as identification as a person of that dialect area and assimilating to that area may seem indistinguishable. However, we suggest that the NK speakers' unstable status as refugees in South Korea is relevant here. These speakers chose to escape from North Korea, and to settle down in South Korea to find a better life [14]. As some of them reported in the interview, they preferred to live in South Korea because of the freedom, capitalistic ideology, and better infrastructure and environment in South Korea. This attitude toward their environment might lead them to more easily assimilate in South Korean society. However, enjoying and appreciating a free life with material convenience (which would lead to high assimilation scores) might not lead NK speakers to necessarily acquire SK-like stops, in the same way that identifying as a member of SK society might.

Post-hoc individual analyses indicated that the same NK speakers did not necessarily show SK-like patterns in both VOT and F0. Some showed only SK-like VOT and some showed only SK-like F0. In fact, only one speaker showed an SK-like pattern in both VOT and F0. Further, four out of six male speakers showed NK-like F0 usage, i.e., lower F0 following the aspirated stops. The content of their responses in the sociolinguistic interview indicated that while they were content with living in SK (Assimilation), they showed strong NK identity and negative attitudes toward the SK dialect, commenting, in particular, that the NK variety is more masculine and cool. The responses suggest that some male NK speakers view the SK variety as having social meanings of 'femininity' and 'softness' as opposed to the NK variety's 'masculinity.' This, in turn, may have resulted in these speakers' resisting the acquisition of higher F0 of aspirated stops in SK. Further study should investigate relations between gender (masculine) identity and acquisition of standard D2, in more depth.

5. ACKNOWLEDEMENTS

This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2021S1A5C2A02086884) awarded to TC (PI) and SK (Co-PI).

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