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## Topic- and Stance-based Style Shift of North Korean Speakers Living in South Korea

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## Topic- and Stance-based Style Shift of North Korean Speakers Living in South Korea

### Abstract

We investigate to what extent North Korean refugee (NK) speakers shift their stop production across topic and stance in conversational speech. The twenty-two NK speakers (F:16, M:6) were engaged in a sociolinguistic interview. A total of 5042 stops were identified and analyzed for VOT and F0 in the following vowel. Stops in the sociolinguistic interview data were coded for topic-stance: contingent upon the topic, North (NK) or South Korean (SK) related topics, they responded with a positive, negative, or neutral stance. Based on previous findings, we predicted that NK speakers would produce more SK-like stops when speaking about South Korea with a positive stance (Nycz 2018). Results of mixed-effects models showed that the NK speakers produced more SK-like stops in terms of VOT when talking about NK and SK topics with emotional stance (negative and positive). This is inconsistent with the idea that speaking about the second dialect region with a positive stance typically results in more second dialect-like speech (Nycz 2018). Unlike the VOT results, the NK F0 patterns were consistent across topic-stance. We interpreted that the consistent F0 patterns might be due to prosodic mitigation (Idemaru et al. 2019, Hübscher et al. 2017). Given that speakers tend not to fluctuate F0 in polite speech, the NK speakers might also try to speak more politely because the NK speakers communicated with an unfamiliar SK interviewer (the first author), using honorific speech forms. Taken together, the findings show NK speakers' mixed pattern of stop productions across topic-stance. Effects of interlocutor and speech address form can be examined in order to further shed light on the complex pattern in a future study.

# Topic- and Stance-based Style Shift of North Korean Speakers Living in South Korea

Jungah Lee, Kaori Idemaru, and Charlotte Vaughn

## 1 Introduction

North (NK) and South (SK) varieties of the Korean language have diverged in their lexicon, morphology, phonology, and phonetics due to the 72 years of physical and political separation, and different language policies and ideologies (e.g., Lee 1991). A recent divergence is found in the three-way stop contrast (fortis, lenis, aspirated) resulting from a change that the SK variety underwent during the early 2000s. Traditionally, the stops were distinguished solely by voice onset time (VOT). Whereas fortis stops are still distinguished from the other two stops by VOT, the SK variety's lenis and aspirated stops are now neutralized in VOT and distinguished by pitch (F0) in the following vowel (e.g., Silva 2006). The three-way distinction in the NK variety, however, has continued to rely on VOT (e.g., Kang and Yun 2018, Lee forthcoming).

In this study, we investigate topic-based and stance-based style shifting in NK refugee speakers living in South Korea, focusing on their stop production. Examining NK speakers' stops across multiple contexts provides insight into their second dialect acquisition of the SK variety. Intra-speaker variation has been well-documented within second dialect acquisition. For example, speakers may shift their pronunciation depending on stance toward conversational topics. Nycz (2018) showed that Canadian English speakers living in New York produced higher (oh) (a linguistic marker in New York, speakers' D2) more when they expressed positive stances toward New York. In expressing negative stances toward New York, they produced lower (oh), a typical Canadian realization (speakers' D1). According to Nycz (2018), participants' shifted productions were part of their construction of 'place identity'; for example, in talking about New York City with a negative stance, they kept their distance from New York City by using D1 vowels, expressing Canadian place identity.

Nycz (2018) provides a useful framework for examining style shifting between D1 and D2. With this in mind, we investigated how NK speakers might shift their stop production in different regional topics (D1 North Korea, and D2 South Korea topics), especially with respect to their stance towards the topics. One of the major differences between Nycz (2018) and the current study is the circumstances surrounding the speakers. Whereas the Canadian speakers in Nycz (2018) were geographically mobile individuals who happen to move to New York City, the speakers in the current study were economic and political refugees who fled North Korea to seek better lives in South Korea. Because of their refugee status and the policy of repatriation to North in North Korea, even if refugees are not satisfied with living in South Korea, they do not have the option of being relocated back to North Korea or leaving South Korea (Lee 2005, Park and Ahn 2009). There are numerous reports that their status as refugees often leads them to be subjected to discrimination in South Korean society (e.g., Lee 2005). This, in turn, often results in refugees hiding their North Korean identity (Kim and Jang 2007). Given these differences in circumstances, and in particular the power relation between D1 and D2, style shifting patterns and the role of place identity in our study may differ from those found in Nycz (2018).

In this study, we investigate the use of VOT and F0 by NK speakers as cues to stop consonant distinctions, and how the use of VOT and F0 might be modulated by shift of regional topics (NK vs. SK) and the speakers' positive or negative stances toward the regions. Our previous work found that NK speakers maintain the three-way stop distinction in VOT (i.e., fortis, lenis and aspirated) (Lee forthcoming), differing from the typical Seoul SK pattern in which the VOT of lenis and aspirated stops are neutralized. In terms of F0, NK speakers showed a similar pattern to SK speakers: high F0 following fortis and aspirated stops and low F0 following lenis stops. However, the degree of F0 distinction between lenis and aspirated stops, the pair for which VOT is no longer a cue in SK, was larger in SK than in NK speakers (Lee forthcoming). In this study, we ask whether shifts in regional topics and speaker stances predict variation in NK speakers' use of VOT and F0.

Our analyses focused on the lenis-aspirated distinction in this study. As noted earlier, compared

to SK speakers, NK speakers use VOT more robustly and F0 less so to differentiate lenis and aspirated. Thus, if the VOT distinction is diminished and the F0 distinction is enhanced in some contexts more than others, it could be interpreted as NK speakers shifting to more SK-like stop production. Further, following Nycz (2018), NK speakers may produce more SK-like stops when speaking about South Korea with a positive stance or when speaking about North Korea negatively. It would also follow that NK speakers would produce more NK-like stops when talking about North Korea positively or South Korea negatively.

## 2 Methodology

### 2.1 Speakers

Each of twenty-two SK speakers and NK speakers (sixteen females and six males for each) participated in a sociolinguistic interview. The participants were paid a small amount of money for their time. Since NK speakers are vulnerable in South Korea (Kim and Jang 2007), the experimenter (the first author) made sure that each participant was comfortable and understood that they could withdraw their participation at any time with no repercussions. The interviewer also explained that participants could skip any interview questions and freely express disagreement with the interviewer or with interview questions.

All participants were in their early 20s. The NK 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. Age of arrival (AoA) and length of residence in Seoul (LoR) varied among the NK speakers (AoA: 9 to 31, LoR: 1 to 10). As for their education level, four NK speakers graduated from college in Seoul and have worked in Seoul, and eighteen NK speakers attended a high school for only North Korean students in Seoul. All NK speakers arrived in SK after the early 1990s, when the sound change in SK stops began (Silva 2006). The SK speakers were born in Seoul and have lived in Seoul for their entire life. They were recruited from Hankuk University of Foreign Studies in Seoul.

### 2.2 Materials and Recording Procedure

The participant and the experimenter engaged in a sociolinguistic interview over approximately 45 minutes, wearing a lavalier microphone Audio-Technica AT 899 connected to a Marantz PMD 670 flash drive recorder. The interview questions were modified from sociolinguistic interview questions intended for immigrant population developed by Anastassiadis et al. (2017). Two sets of interview questions were developed specifically for NK refugees and SK speakers. The set for NK speakers included questions about demographic information, and on SK and NK topics. SK topics included life in SK, SK neighbors, culture shock in SK, relationship with SK people, SK culture, career and education in SK, trips in SK, and language attitudes towards SK language. NK topics consisted of life in NK, childhood in NK, NK education, NK neighbors and community, immigration process, relationship with NK group, and language attitudes towards NK language.

As for SK speakers, they were asked to answer demographic questions, as well as questions about their daily life, neighborhood, career and education, experiences in childhood and adolescence, traveling experiences, friendship, and language attitudes towards other South Korean dialects and North Korean dialects.

### 2.3 Tokens and Measurement

Since the Korean language has phrasal intonation patterns, previous research emphasizes that the stops in accentual phrase (AP)-initial position, rather than middle or final position, should be analyzed (e.g., Kang and Guion 2008). All stops analyzed here were in AP-initial positions. A total of 5042 stops (lenis and aspirated) were identified. Each stop was coded for the word containing the stop and the topic and the stance (see next section). The duration of the VOT 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 (Idemaru and Guion 2008). F0 was measured at the mid-point of the vowel following the stop (e.g., Kang and Guion 2008).

The F0 was centered between participants to remove gender effects on F0 by calculating mean of F0 in each participant's production and using 'part' function in R environment (R Core Team 2020). Articulation rate was obtained as it is known to affect the duration of VOT (Holliday 2015, Kang 2014, Li 2013). Phrases including AP-initial stops were identified and their duration was measured in seconds. Then, the number of syllables in each phrase was divided by its duration to obtain the number of syllables per second as our measure of articulation rate. A phrase was defined here as a grammatical word which often consists of a head element and one or more grammatical morpheme(s) (Na 2007), such as a noun phrase (noun + particle) or a verb phrase (verb + sentence ending).

## 2.4 Coding Topic and Stance

Each stop was coded according to the regional topic and stance being expressed in the utterance in which the stop was produced. We adopted the general coding methodology of Nycz (2018) but focused on three stances: positive, negative, and neutral. The two topics (South Korea and North Korea) and three stances thus produced six types of topic-stance categories: 1) neutral stance towards North Korean topics (NKNeu), 2) negative stance towards North Korean topics (NKN), 3) positive stance towards North Korean topics (NKP), 4) neutral stance towards South Korean topics (SKNeu), 5) negative stance towards South Korean topics (SKN), and 6) positive stance towards South Korean topics (SKP).

As described above, the interview was divided into questions about NK and questions about SK. Across all participants, their responses to NK questions addressed only NK topics (not mentioning SK), and their responses to SK questions involved only SK topics (not mentioning NK). Thus, the responses to NK questions were coded as having NK topics and the responses to SK questions were coded as having SK topics. As for the stances, the first author evaluated positive evaluation, negative evaluation, or neutral description of a place for each utterance. Alignment with a place (Nycz 2018) was considered positive assessment of the place, and nonalignment was considered negative assessment of the place. Examples of coding from the current data are described below (all sentences were translated from Korean).

- (1) Topic: North Korea, Stance: Neutral (NKNeu)  
 "My neighbors were farmers in general." (Participant 2)  
 "I finished military service in NK. At that time, I fixed traffic lanes." (Participant 6)
- (2) Topic: North Korea, Stance: Negative (NKN)  
 "I wanted to leave there... Literally, there was no freedom there. People in my hometown were rats. They watched my family and wanted to report every trivial behavior to the party." (Participant 9)  
 "I did not like it when people judged my outfits and hair style in North Korea. Why do they care so much about others? I did not like it and did not understand it. I should have been able to wear what I wanted and done any hair style that I wanted." (Participant 15)
- (3) Topic: North Korea, Stance: Positive (NKP)  
 "I loved living there. It was peaceful, there was no competition. I just hung out with my neighbors and friends, without worrying about my future." (Participant 4)  
 "I miss my hometown in North Korea. My neighbors were very caring, and foods were a lot better than here." (Participant 5)
- (4) Topic: South Korea, Stance: Neutral (SKNeu)  
 "I have graduated college in Seoul and majored in literature." (Participant 3)  
 "I usually play video games after class. I want to work in a car industry right after graduating high school in SK." (Participant 18)
- (5) Topic: South Korea, Stance: Negative (SKN)  
 "I do not have any clue what SK people are thinking. They seem so friendly and nice outside, but I always feel like they hide something in their mind and blame my bad North Korean accent inside. SK people always make compliments about my academic performance, outfits, and appearance. However, I never trust them." (Participant 7)  
 "I cannot stand it when SK people do not say something directly. I do not understand why they have to pretend they care or like something even though they do not. I dislike the way

of their talking and I cannot trust what they really mean because of their ‘pretentious way.’” (Participant 14)

(6) Topic: South Korea, Stance: Positive (SKP)

“I love cultures in South Korea, music, dramas, and foods. I also like freedom here.” (Participant 1)

“People in Seoul are so friendly, and they helped me adapt here.” (Participant 5)

“South Korean people are so nice, and they are always willing to help others.” (Participant 13)

“I love the individualism way of lifestyle in South Korea... People are very warm-hearted, and they try to help me.” (Participant 22)

In NK Neutral (NKNeu), the NK speakers simply provided information regarding their previous occupation, lives, and experiences in North Korea, without taking an evaluative stance. We considered that, among the six categories, NKNeu might be closest to their baseline production, potentially reflecting their D1 pronunciation in North Korea. Thus, stops in NKNeu were used as the reference level in the models, and we examined whether NK speakers shifted their stop production from this baseline (NKNeu) when engaged in the five other topic-stance categories. The total number of tokens by topic and stance is shown in Table 1.

North Korean Topics			South Korean Topics			Total
Neutral	Positive	Negative	Neutral	Positive	Negative	
1389	593	917	816	825	482	5042

Table 1. The number of Tokens by Topic and Stance

## 2.5 Analysis

All analyses presented in this study were performed using mixed effect linear regression (Baayen et al. 2008) as implemented in the lme4 package (Bates, Mächler, Bolker, and Walker 2015) in the R environment (R Core Team 2020). The data and analysis code are provided in this repository: [osf.io/ckbn3/?view\\_only=9038249a5edf46089cb81eaafe938247](https://osf.io/ckbn3/?view_only=9038249a5edf46089cb81eaafe938247). The models (7) and (8) below examined the effect of Topic and Stance combined (Topic-Stance) and Stop type (focusing on lenis and aspirated stops) on each of VOT and F0. The fixed effects included Topic-Stance (categorical variable, NKNeu, NKN, NKP, SKNeu, SKN, SKP, dummy coded with NKNeu as the reference), Stop type (Lenis, Aspirated, categorical factor, sum-coded, with Lenis as the reference), and their interaction. Articulation rate was included for the VOT model (7) to control for variation of VOT due to speech rate.

As presented above, we aimed to examine the extent to which the NK speakers may change their stop production from their baseline production (NKNeu) to other Topic-Stance conditions. Given this research aim, instead of including separate level of factors as Topic (NK vs. SK) and Stance (Neutral, Negative, and Positive), one category with six levels (NKNeu, SKNeu, NKN, NKP, SKN, SKP) was entered in the model. As reduced difference in VOT between Lenis and Aspirated and enhanced difference in F0 between Lenis and Aspirated could indicate more SK-like production, we were particularly interested in the Stop type x Topic-Stance interaction, which would demonstrate a modulation of VOT or F0 effect depending on the Topic-Stance categories.

Random intercepts for Speaker and Word were included, as it was possible that dependent measures varied due to speaker and lexical context. A random slope for Stop x Topic-Stance interaction by Speaker was included because by-speaker variation in the dependent variable could be conditioned by Stop x Topic-Stance interaction. Stop x Topic-Stance and Speaker in the random effects were also uncorrelated to aid convergence.

$$(7) \text{ VOT} \sim \text{Stop} * \text{Topic-Stance} + \text{Articulation rate} + (1 + \text{Stop:Topic-Stance} \parallel \text{Speakers}) + (1 \mid \text{Word})$$

$$(8) \text{ F0} \sim \text{Stop} * \text{Topic-Stance} + (0 + \text{Stop:Topic-Stance} \parallel \text{Speakers}) + (1 \mid \text{Word})$$

### 3 Results

#### 3.1 VOT

Although the dependent variable in the models was VOT duration, for ease of interpretation Figure 1 plots the difference in VOT between aspirated and lenis stops. This difference is the critical feature that shows NK-like and SK-like pattern of stop production. The mean of this difference from SK speakers in our prior work (Lee, forthcoming) is also plotted (the left most bar). As the figure illustrates, the VOT difference varied depending on Topic-Stance. We note that VOT difference was numerically largest (NK-like) in NK neutral (NKNeu), the baseline, and numerically smallest (most SK-like) in NK negative (NKN).

Model (7) confirmed the interaction between Stop and Topic-Stance, the critical comparison in the current analysis (see Table 2). The interaction terms were significant in NKN (Aspirated\*NKN:  $\beta = -17.47$ ,  $p < 0.001$ ), NKP (Aspirated\*NKP:  $\beta = -7.90$ ,  $p = 0.02$ ), SKN (Aspirated\*SKN:  $\beta = -14.36$ ,  $p < 0.001$ ), and SKP (Aspirated\*SKP:  $\beta = 8.15$ ,  $p = 0.028$ ). These negative beta values indicated that the lenis-aspirated VOT distinction was *diminished* in the positive and negative contexts (NKN, NKP, SKN, and SKP) compared to the baseline NKNeu. And, the VOT distinction did not differ between the two neutral contexts, SKNeu and NKNeu.

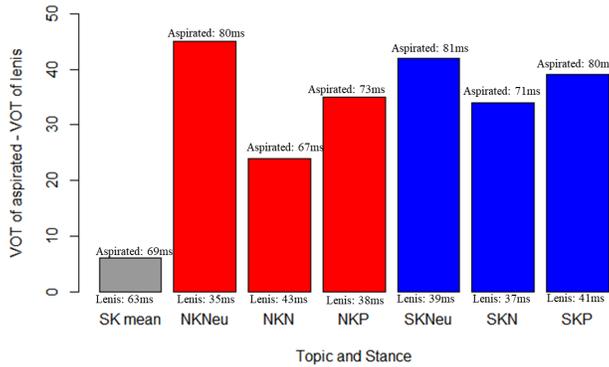


Figure 1. Effects of Topic and Stance on VOT of NK speakers

Predictors	Estimates	VOT		
		CI	Statistic	p
(Intercept)	35.37	34.16 – 36.58	57.09	<0.001***
Aspirated	41.12	37.95 – 44.29	25.41	<0.001***
NKN	7.83	6.14 – 9.53	9.05	<0.001***
NKP	3.19	1.26 – 5.12	3.24	0.001***
SKN	4.10	2.06 – 6.14	3.94	<0.001***
SKNeu	2.92	1.16 – 4.69	3.24	0.001***
SKP	6.12	4.36 – 7.88	6.80	<0.001***
Articulation rate	-9.84	-10.41 – -9.27	-34.05	<0.001***
Aspirated*NKN	-17.47	-23.21 – -11.73	-5.96	<0.001***
Aspirated*NKP	-7.90	-14.57 – -1.23	-2.32	0.020*
Aspirated*SKN	-14.36	-21.70 – -7.02	-3.83	<0.001***
Aspirated*SKNeu	-3.71	-11.77 – 4.34	-0.90	0.366
Aspirated*SKP	-8.15	-15.45 – -0.86	-2.19	0.028*

Significance. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1

Table 2. The Output of Model (7) for Topic and Stance effects

These results indicate that, regardless of regional topics (NK vs. SK), when the NK speakers

spoke with some emotional stance (Negative or Positive), their VOT pattern shifted from the baseline (NKNeu) to a more reduced distinction between lenis and aspirated stops. A follow up model examining the effect of Stance alone was conducted to further investigate this pattern (9).

$$(9) \text{ VOT} \sim \text{Stop} * \text{Stance} + \text{Articulation rate} + (1 + \text{Stop} : \text{Stance} \parallel \text{Speakers}) + (1 \mid \text{Word})$$

The results confirmed that the interaction terms were significant (Aspirated\*Negative:  $\beta = -15.10$ ,  $p < 0.001$ ; Aspirated\*Positive:  $\beta = -6.42$ ,  $p = 0.042$ ) indicating that the VOT effect was modulated by Stance. More specifically, the emotional stance overall, regardless of whether it is positive or negative, affected NK speakers' VOT toward a more SK-like pattern, minimizing the difference between lenis and aspirated compared to the neutral stance (indicated by the negative sign on the beta). When speaking with a negative stance, their VOT difference between lenis and aspirated stops was 15 ms shorter than when speaking with a neutral stance. When speaking with a positive stance, it was 6 ms shorter than in a neutral stance. The difference was numerically largest in NKN, with their lenis-aspirated VOT difference 17 ms shorter when speaking negatively about NK than when speaking neutrally about NK.

As discussed earlier, Nycz (2018) found that her speakers used D2 features when speaking positively about their D2 region or when speaking negatively about their D1 region. In contrast, our NK speakers did not use the most D2-like VOT when speaking about D2 positively. They showed more D2-like VOT when they spoke either positively or negatively about either D1 or D2. There are several possible interpretations of this pattern. One is that the NK speakers used SK features, in effect performing SK place identity, when they were taking stronger emotional stances, whether the stance was positive or negative. The tendency was numerically stronger for negative stance and particularly with NK topics. Another possibility is that the minimized lenis-aspirated distinction is instead a result of reduction patterns used in utterances with stronger stances. Possibilities are considered further in the Discussion section.

### 3.2 F0

Figure 2 illustrates the difference in F0 between aspirated and lenis stops across Topic-Stance contexts. As the SK speakers' mean (the left-most bar, from Lee, forthcoming) indicates, the difference in F0 between lenis and aspirated stops is large, and thus a critical cue for this distinction in SK. Among NK speakers' productions, the F0 difference was numerically the smallest in NK neutral (NKNeu) and the largest (most SK-like) in NK negative (NKN). The F0 difference in NKN was even greater than that of SK speakers (the left-most bar).

However, the results of model (8) did not confirm these numerical differences statistically (see Table 3). None of the Stop x Topic-Stance interaction terms, critical for our analysis, were significant ( $p > .1$ ). These results indicated that, unlike VOT, the NK speakers did not shift their F0 pattern by Topic-Stance. Thus, NK speakers shifted VOT and F0 differently across Topic-Stance. Whereas Topic-Stance (and stance alone) affected VOT production, F0 was consistent across Topic-Stance categories.

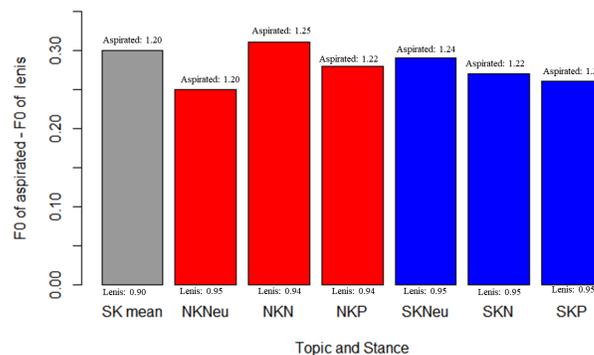


Figure 2. Effects of Topic and Stance on F0 of NK speakers

<i>Predictors</i>	<i>Estimates</i>	<i>F0</i>		
		<i>CI</i>	<i>Statistic</i>	<i>p</i>
(Intercept)	0.95	0.94 – 0.96	194.46	<0.001***
Aspirated	0.28	0.26 – 0.31	22.01	<0.001***
NKN	-0.00	-0.02 – 0.01	-0.57	0.571
NKP	-0.01	-0.02 – 0.01	-0.86	0.391
SKN	-0.00	-0.02 – 0.02	-0.01	0.994
SKNeu	-0.00	-0.02 – 0.01	-0.18	0.856
SKP	0.00	-0.01 – 0.02	0.59	0.556
Aspirated*NKN	0.03	-0.04 – 0.09	0.78	0.434
Aspirated*NKP	-0.00	-0.06 – 0.05	-0.13	0.895
Aspirated*SKN	-0.02	-0.10 – 0.05	-0.61	0.540
Aspirated*SKNeu	0.02	-0.04 – 0.09	0.68	0.494
Aspirated*SKP	-0.01	-0.07 – 0.04	-0.46	0.643

Significance. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.

Table 3. The Output of Model (8) for Topic and Stance effects

## 4 Discussion

This paper investigated how topic and stance influence VOT and F0 of stop production in the speech of North Korean refugees living in South Korea. Recall that Nycz (2018) found that her D1 Canadian English speakers produced more New York (D2) like vowel patterns when they talked about New York (D2) positively and that they produced more Canadian-like (D1) vowels when they talked about Canada (D1) positively. This was not the case for our NK refugee speakers living in SK.

Rather, we found more D1-like VOT production (larger VOT difference between lenis and aspirated stops) in the baseline NK neutral (D1) category, as expected. However, we also found equally well-distinguished VOT (D1 feature) in the SK neutral category as well. In contrast, we found more shift toward D2-like diminished VOT in all other topic-stance categories, namely those with negative and positive stances. Thus, our results seem to indicate that regardless of regional topic (NK vs. SK), emotional stance (neutral vs. emotional) influences VOT.

We did find numerically the most SK-like (D2) VOT patterns when the NK speakers expressed a negative stance towards NK. This part of the result is consistent with Nycz (2018). Perhaps when NK speakers expressed a negative stance toward NK, they might distance themselves from NK but express more closeness towards SK, expressing D2 place identity. However, this reasoning does not work well to explain the result of the SK negative context, which also showed SK-like VOT patterns. It is not consistent with Nycz’s (2018) idea that second dialect speakers may use D2 forms when being negative about D2 and also when being positive about D1. Why would NK speakers display D2 features when they are expressing strong stances, and D1 features when they are not?

Again, there are many possible explanations for the VOT finding, and our discussion here is speculative. One potential explanation, and one we favor, is that the finding stems from the NK speakers’ status and interlocutor effects. These speakers were engaged with an SK interviewer (the first author) whom they met for the first time at the interview session. It is possible that the NK speakers felt uncomfortable talking about SK negatively and about NK positively to the SK interviewer. They may have been concerned that talking about the interviewer’s country negatively would offend the interviewer. And, despite being reassured otherwise, they might have feared that they would be reported if they spoke positively about North Korea (although many comments did, in fact, refer to SK negatively and NK positively, see Table 1). The NK refugees may have felt a need to use face-saving or guarding strategies when taking stronger emotional stances, accommodating their speech style to their addressee via convergence to gain approval during these stance-taking contexts (Giles and Smith 1979, Bell 1984). Additionally, perhaps, the NK speakers felt that aligning their speech to the SK way of speaking would place them as in-group members of the SK society, making it safer to reveal their feelings. According to this kind of explanation, these NK speakers have enough command of their D2 to manipulate the VOT cue in this way. It could also

be, however, that the changes in VOT by Topic-Stance do not reflect the use of more SK-like speech, but rather less careful or reduced speech, as the SK-like VOT pattern involves the minimizing of the distinction between lenis and aspirated stops, consistent with reduction. It may be that expressing stronger stances, either positive or negative, results in less careful speech. Under this explanation, it is unclear how much the NK speakers have learned VOT cue of their D2. However, this idea is inconsistent with speakers' continual use of honorific (and more careful) speech forms, as we discuss below.

The findings about F0 add more complication. We found that F0 did not vary at all between the baseline and the other Topic-Stance contexts. These differential effects between VOT and F0 are noteworthy, although Bell (1984) argued that it is no surprise that accommodation might affect different linguistic variables differently due to various factors including the status of the variables and individual speaker differences. In our case, the differential effects between VOT and F0 again could result from a number of possible explanations. Our prior work indicated that these NK speakers showed overall more use of D2 F0 pattern than D2 VOT pattern (Lee forthcoming). Why would NK speakers not vary the cue (F0) that they have more D2 mastery of when they do vary the other cue (VOT) by Topic-Stance? Walker (2014) reported that her D1 American English speakers with more British experiences showed less shifting than the speakers with less British experiences and she argued that the speakers who have already acquired D2 variants may style shift by topic less. Like the more experienced D2 learners in Walker (2014), could it be that NK speakers in this study do not shift F0, because they have already acquired D2 F0 patterns and their F0 acquisition is stable? However, style-shifting is well-documented amongst native speakers who have proficiently acquired phonetic variants (e.g., Grieser 2019, Rickford and McNair-Knox 1994). In addition, Love and Walker (2013) reported a contradictory finding that speakers with more D2 experience showed more shifting to D2 variants. Further, although these NK speakers use D2-like F0 more than D2-like VOT, in their D1 they used VOT and not F0 as a cue to stop production, which could be interpreted as suggesting that they are more used to using VOT as a cue than F0. So, in expressing stances, the NK speakers may be more able to manipulate the cue that was primary in their D1.

Another possibility, which we favor, is that the NK speakers' F0 might not be shifted because of the interviewer effects. To underscore the context, all NK speakers spoke to the unfamiliar SK interviewer using an honorific polite speech style, called *contaysmal*. This is the style socially appropriate in this case, because the speakers and the interviewer were unfamiliar with each other. The SK interviewer also reciprocated the use of the honorific *contaysmal* for the same reason. Previous studies on phonetics of polite speech have reported that in polite speech, speakers' prosodic features including F0 fluctuate less (Idemaru et al. 2019, Hübscher et al. 2017). This tendency has been reported in multiple languages and has been termed as "prosodic mitigation" in polite speech, a proposal that speakers present themselves with more monotonous (perhaps calmer) prosodic effects when they are being polite (Hübscher et al. 2017). Relevant to the current study, Idemaru et al. (2019) showed that the F0 of native South Korean speakers (and Japanese speakers) fluctuated to a lesser extent in honorific polite speech (*contaysmal*) than non-honorific speech. Because the NK speakers in the current study were all speaking in honorific polite style *contaysmal*, prosodic mitigation effects of the style might have lessened F0 variation, resulting in no reliable variation across topic and stance contexts. Under this explanation, the NK speakers have the ability to use D2-like F0, but do not do so in this case because of their use of polite speech.

Research on phonetic mitigation in polite speech has focused on prosodic features, not including segments; however, phonetic effects of polite speech are often linked to careful speech (Winter and Grawunder 2012, Oh et al. 2021). If NK speakers were adopting careful/polite speech strategies as they spoke to the unfamiliar SK interviewer, we would expect more overall hyper-articulation, thus more enhanced VOT and F0 across stop categories, and less variation (more mitigation) across topics and stances. The fact that we observed a modulation of VOT across stances suggests that there likely was a factor other than politeness that influenced their speech. However as described above, we did find less distinct VOT for positive and negative stances, which could result from less careful/polite speech styles, though this may not be likely given their continual use of honorific speech forms.

Additional data, which we have begun to collect (Lee forthcoming), will help distinguish between these possible explanations. For example, a subset of these NK speakers was also interviewed by another NK speaker who was familiar to them. And, we plan to examine other features known

to differ across NK and SK such as lexical choice and vowels, to determine if and when these features covary with stops. Data like this will help tease apart our potential explanations.

## 5 Conclusion

This study represents the first attempt to examine topic- and style-related shifting in stop production by North Korean refugee speakers living in South Korea. Our aim was to characterize variation in stop production across D1 and D2 features in order to understand the nature of their second dialect acquisition and style shifting. We found that NK speakers showed more D2-like VOT when speaking with positive or negative (compared to neutral) stances, while their F0 did not show variation across stances, likely due to speaking politely to the interviewer. The results in this study contrast with the findings of Nycz (2018), suggesting that simple association between positive stance toward D2 and negative stance toward D1 on one hand and the use of D2 varieties may not always hold. This might be the case particularly for vulnerable community members such as NK refugees who may fear how they are viewed by D2 society. The findings of this study provide more nuanced understanding of how D2 acquisition may be influenced by speakers' political status in the D2 region, their sense of self and security within the D2 community, and their alignment toward the interlocutor.

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