Stop voicing in two settler communities on the Canadian Prairies

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ABSTRACT

This study investigates stop voicing in two rural Canadian communities representing differing ethnoreligions: Manitobans of Ukrainian descent from the INTERLAKE region and of Low German-speaking Mennonite descent from the SOUTHERN region. Results show stop voicing differences between the two communities and a degree of prevoicing not normally found in North America English, typically described as contrasting short-lag and long-lag VOT [1]. Furthermore, Interlake speakers show more word-final voicing of their voiceless stops, and Southern speakers do not devoice, suggesting that German substrate effects seen in analogous communities in the US [2,3,4] do not continue across the border into Canada. Overall, Canadian Prairies speakers show a different stop voicing pattern than currently described in North American varieties. This is explained in part by the block settlement patterns of the region, where European immigrants of differing descent were settled into ethnically-determined villages during the main period of settlement, 1890-1940.

Keywords: Stop voicing, VOT, Canadian English, sociophonetics.

1. INTRODUCTION

1.1 The Canadian Prairies

While Canadian English has been an area of sociophonetic interest for several decades, very little work has focused on the speech of rural areas of the country, and even less in the rural areas of the Canadian Prairies. These regions, however, are of particular interest due to the settlement patterns that differed from those in the East. While most of Ontario and the Maritime provinces were settled by Anglophones, the Prairies saw a large wave of other Europeans such as Ukrainians, Poles, Icelanders, and Mennonites immigrating beginning in the 1880s, as Anglophone immigrants were not numerous enough for the Canadian government to populate the West. At the time, particular social groups were considered to have 'superior potential,' and special privileges were granted to them as they immigrated to the Prairies in large numbers, attracted by the possibility of free land to work. Groups were settled in ethnic blocks scattered around the Prairies, and these blocks remain relevant today. [5]

The Interlake region under discussion here are what were marginal agricultural lands west of Lake Winnipeg, settled by some Poles, Métis or French, but primarily Ukrainians over a few decades starting in the 1890s. Thanks to the block settlement, Ukrainian language, food and customs were maintained into the middle of the 20th century, at which point the English language had won out.

The Southern region was settled at a similar time, by Low German-speaking Mennonites seeking religious freedom. Low German in this region seems to have persisted somewhat longer than Ukrainian did in the Interlake, but in both regions, young people are learning English as a first language and no longer speak Low German, although it is often still heard in the community. Even today, however, older residents in these areas mostly speak Ukrainian or German as a first language, even if they rarely use it anymore.

1.2 Stop voicing patterns

In North American English, initial voiced stops are typically described as having no glottal pulsing and a short-lag voice onset time (VOT), while voiceless stops have long-lag VOT [1]. Recent sociophonetic studies have found that some regions show prevoicing in word-initial stops, such as in regions of Mississippi and Alabama in the US [6,7] and in Winnipeg, Canada [8]. If there are substrate effects in the rural communities in this study, we may expect to see differences in VOT, as Ukrainian has prevoicing [9] while Low German does not [10].

Word-final voicing in North American English varies by dialect, with high amounts of glottal pulsing in voiced stops reported in Southern and Western dialects [11,12], and low amounts of glottal pulsing reported in Midwestern dialects [2,3,4]. Furthermore, Purnell et al. [2,3] and Pfiffner [4] discuss German substrate effects contributing to the final stop neutralization found in Wisconsin and Minnesota English, as German has final stop neutralization [2]. This shows up not just in glottal pulsing, but also in subsegmental measurements, as shorter closure and

burst durations are cues to voicing, and longer closure and burst durations are cues to voicelessness. Given the block settlement pattern in Canada and the recent switch to English as a lingua franca, we may expect to find similar substrate features in the speech of Southern residents of Mennonite descent. This may contrast with Interlake residents of Ukrainian descent, as Ukrainian does not have final stop neutralization [9]. The interest of these groups is then twofold: to first document stop voicing patterns in two rural areas of the Prairies to see whether they follow similar patterns as elsewhere in Canada, and to investigate whether substrate influences of Ukrainian or Low German are evident in the local speech patterns.

2. METHODS

2.1. Speakers

21 residents of the Southern region and 15 residents of the Interlake region participated in the study. Age and gender distribution are given in the tables below:

	Interlake	Southern	Total
Youngest (b 86-00)	7	5	**12**
Middle (b 63-76)	6	6	**12**
Oldest (b 25-56)	8	4	**12**
Total	**21**	**15**	**21**

Table 1: Participant demographics

Speakers were also coded for (binary) gender and socioeconomic status. Details of the demographics are outlined in Rosen [13].

2.2. Materials

A list of 210 words based on Boberg [14] and Wassink [15] was elicited as part of the Languages in the Prairies Project. All words with stops in word-initial and word-final position in this word list were analyzed in this study.

2.3. Procedure

Participants were recruited and recorded between 2015-17 by two research assistants, each local to the area where they conducted the recordings. Recordings were made in participants' homes using an H4N Zoom recorder with external lavalier microphones. These recordings included a word list, two reading passages and a sociolinguistic interview

that was transcribed in Elan [16]. Only the word list was used in this analysis.

2.4. Analysis

Word lists were force-aligned using the Montreal Forced Aligner [17] and stop boundaries were hand corrected in Praat [18]. For word-initial stops, the VOT was measured. Word-finally, the duration of the closure and burst were measured as well as the glottal pulsing to closure duration ratio ('voicing ratio'). After excluding tokens that were unclear, lenited, or had background noise, we had 2,503 word-initial stops and 2,951 word-final stops.

Linear mixed-effects models in R [19] were fitted in a step-up-step-down procedure to predict VOT, closure duration, burst duration, and voicing ratio. Fixed effects included underlying voicing, plosive, ethnicity, gender, age group and first language. Random effects were word and speaker.

3. FINDINGS

We present the findings of word-initial stops first in 3.1, then examine word-final stops in 3.2.

3.1. Word-initial stops

We found a substantial amount of negative VOT in initial voiced stops, with speakers in the Interlake region in particular prevoicing significantly more than those in the Southern region (p=0.03), as seen in Figure 1. Approximately 51% of voiced stops were produced with prevoicing in the Interlake region compared to 31% of stops in the Southern region. There were no significant differences in the voiceless initial stops (Figure 2).
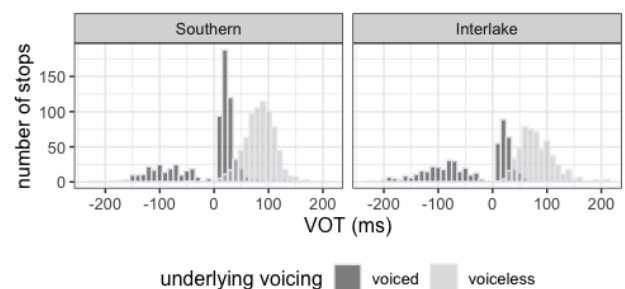
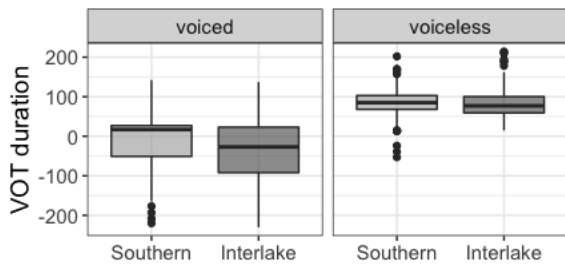

Figure 1: VOT measurements from both communities

Figure 2: Distribution of VOT measurements by voicing

No other demographic factors tested were significantly predictive of VOT of initial stops. Additionally, there were no significant factors in predicting the bimodal distribution of negative and positive VOT values within the underlyingly voiced stops.

3.2. Word-final stops

Word-finally, underlyingly voiced stops showed no significant differences between communities, while underlyingly voiceless stops did pattern differently. Closure and burst durations, as well as the voicing ratios, are given in Table 2.

Voiced stops	Closure	Burst	Voicing ratio
Interlake	65	72	90%
Southern	75	96	79%
Voiceless stops	**Closure**	**Burst**	**Voicing ratio**
Interlake	99	97	38%
Southern	121	122	18%

Table 2: Word-final measurements

In underlyingly voiceless stops, speakers in the Interlake region had significantly shorter closure (p=0.007) and burst (p=0.024) durations in comparison to speakers in the Southern region. Additionally, Interlake speakers showed significant differences in voicing ratio based on first language; L1 English speakers had significantly higher voicing ratios than L1 Ukrainian speakers (p=0.004). L1 English speakers on average voiced approximately 47% of the closure duration in underlyingly voiceless stops (Figure 3).

Interlake speakers in particular had high amounts of 'voicing bleed,' a term used to describe a pattern of glottal pulsing (possibly, but not necessarily, from a preceding sonorant) into a stop closure [20]. The voicing ratio in Table 2 shows us that this 'bleed' is very high in comparison to those reported in Wisconsin [2,3] and Minnesota [4].
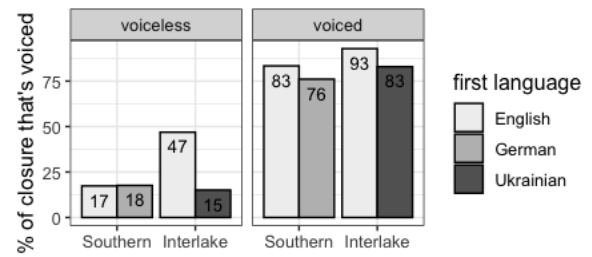

Figure 3: Glottal pulsing during closure by L1

We now turn to discussing the implications of these findings.

4. DISCUSSION

There are three main generalizations to be made from our findings. First, both communities display high levels of prevoicing and voicing bleed in comparison with other reported varieties of English. Second, within these highly voiced varieties, there were significant differences in stop voicing between the Manitoba Interlake and Southern regions. Lastly, the locus of this variation was different: word-initially, voiced stops were variably prevoiced. Word-finally, voiceless stops were produced with more voicing than expected.

We suspect that the tendency towards more voicing may be a substrate effect from Ukrainian, where /b, d, g/ are produced with voicing in all positions [9]. Note however though that there was no evidence of a German substrate effect of word-final stop voicing neutralization in either community. Given that nearby German communities in Wisconsin and Minnesota do display word-final voicing neutralization [3,4,5], we had hypothesized that the Southern community would likewise exhibit devoicing, but that was not the case. This means that there are cross-border differences in how German substrate is realized in English.

5. CONCLUSIONS

Overall, stops are strongly voiced in the Canadian Prairies. Within the Prairies, however, the two regions under investigation are consistently statistically different from each other. Both the Interlake and Southern regions under study are rural, agricultural, and settled within similar time periods, and so the primary difference between the two is the settlers' origins. These findings tell us that there are important differences between rural areas and that a closer look at these areas is important for our understanding of linguistic patterning.

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