Slept through the ice: a further look at lax vowel lowering in Canadian English

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This paper continues the investigation of earlier work done on lax vowel lowering as part of a change in progress in Canadian English. We studied the effects of linguistic environment and social factors and their influence in promoting/inhibiting the lowering of the phonemes /ê/ and /ɛ/. The study includes 13 speakers, between the ages of 10 and 59 with a total of 3439 tokens which were impressionistically judged, coded for phonetic environment and social factors, and then used to compute statistics and probability values using MacVarb. Our results are consistent with those of earlier research which suggested that lax vowel lowering is part of a chain shift taking place within the Canadian vowel system. We also report stylistic differences and a pattern of age stratification that suggests lax vowel lowering is an innovation among younger speakers.

Introduction

Recent research has provided evidence of a change in progress occurring within Canadian English. Clarke, Elms, and Youssef published a study in 1995 in which they suggested that the Canadian vowel system is changing in accordance with principle two of Labov's general principles of vowel chain shifting which states that lax vowels "fall along a nonperipheral track" (Labov 1994, 176). In particular, Clarke et al. observed variable lowering of the front lax vowels /ê/ and /ɛ/, retraction and lowering of /œ/, and fronting of the back rounded vowels, /u/, /Ü/, and /o/. This paper investigates the lowering of the front lax vowels by speakers in Toronto. To gather evidence regarding the possibility of a change in progress, the social distribution of lax vowel lowering was studied by using a sample of speakers representing both sexes and a wide age range.

Methodology

Included in the analysis were tokens of the front lax vowels /ê/ and /ɛ/ which occurred in stressed syllables. Unstressed vowels were excluded as were vowels occurring in the high frequency words 'in', 'it', 'is', and 'if'. Vowels in these contexts were often reduced to [ˊ] and thus could not be considered occurrences of the variables under investigation.

All tokens were coded impressionistically by members of the research team. We conducted reliability tests in order to ensure that all coders were in agreement as to what constitutes a lowered vowel.

Any degree of lowering was considered to be a lowered variant. We did not classify each token according to its degree of lowering.

The Sample

In all, 13 speakers were included in the sample. All speakers were part of the personal networks of the members of our research team, mostly family members or close friends. This allowed for interviews in which topics of discussion were selected easily, and natural, casual speech could be elicited. Although all interviewees were part of the speech network of the researchers, they were not part of one another's speech networks. Most speakers came from Metro Toronto, although two came from Eastern Ontario and Quebec and some speakers were from North York. Our sample included five males and eight females and ranged in age from 10 to 59. Speakers were recorded performing in two styles; reading/word list, and interview. Not all speakers provided data in both styles. In total, our data tallied at 3439 tokens of /ê/ and /ɛ/.

All statistical analysis of our data was calculated using MacVarb and analyzed according to the linguistic and social factors outlined below.

Social Factors

The analysis of the effects of social factors on rate of lowering was an important part of our study as social factors are important in determining the existence of a change in progress. Not all speakers will adopt a new change and those who do adopt it do not adopt it at equal rates. Differences in the rate of adoption of linguistic innovations correlate with broad social characteristics including age, sex and social class.

Age was one of the social factors we investigated. We divided the speakers in our sample into three age categories:

1. *adolescents* – those speakers in or close to their teenage years and with close ties to a primarily teenage speech network.

2. *young adults* – those speakers beyond the teenage speech network and engaged in adult activities like employment.

3. *older adults* – those speakers over the age of 35.

This division was made in order to facilitate coding for the effect of age on lowering when doing our multivariate analysis, as age is a crucial factor in determining the existence of a change in progress. Earlier studies concerning this change in progress studied a smaller age range of speakers and therefore didn't illustrate any apparent time effects. The study by Clarke et al. however, notes that 6 older speakers (in their 50s and 60s) were studied but no data is provided concerning their speech.

Sex was another factor we included in our analysis. Work on language change suggests that sex is an important factor in determining a change in progress. Women tend to lead men in adopting linguistic innovations. Furthermore, earlier studies involving the Canadian vowel shift suggested that sex was an influential factor. Clarke et al.(1995) stated that "women are clearly leading the Canadian shift" (216). They also suggested

that the Canadian Shift may have parallels with the California shift which appears to be led by white, urban, middle-class women.

Furthermore, we coded each variable according to the *style* of speech in which it occurred. Reading samples are less natural and subject to a higher degree of self-monitoring than interviews which are less formal and more closely resemble natural conversation. In our sample we collected 10 interviews and 12 reading passages/word lists from our 13 speakers. Generally, innovations are used more widely in informal speech. However, earlier research suggested that vowel lowering is below the level of consciousness of Canadian speakers suggesting that lowered variants are not highly stigmatized. By coding for style, we sought to discover more about the social evaluation of vowel lowering and to acquire more evidence of a change in progress.

Linguistic Factors

In addition to the social factors, we included several linguistic factors in our analysis. Phonological processes such as lax vowel lowering are conditioned by the phonetic environment in which the variables occur. We set out to determine the linguistic factors favouring and inhibiting lowering. The factors considered included:

Following Consonant, Manner

Initially we had coded all tokens according to the following consonant's manner and voicing. However, once we started our calculations, voice appeared not to have any demonstrable effect on the behaviour of the variables (ê) and (E). The results presented in this paper reflect only the effect of manner of the following consonant. We looked at 4 factors:

1. stops
2. fricatives
3. nasals
4. laterals

Following Consonant, Place of Articulation

Again, our initial analysis included more distinctions in place of articulation than what is reported here. Finding no significant effect in our results, and seeking to streamline our analysis as much as possible, we merged some of our earlier place values and ended up with 3 places of articulation:

1. labial
2. coronal
3. velar

Syllable Type: open or closed

As Clark et al. (1995), Meechan (1996), and Hoffman (1998) had examined the type of syllable each lowered variant occurred in, we chose to follow suit for comparative purposes and to further classify the extent of the change in terms of phonetic environments. We coded each token as to whether it occurred in a closed or an open syllable.

Results

Linguistic Factors

Tables 1.1, 1.2 and 1.3 present the results of the linguistic factors:

Table 1.1. Linguistic Factors Influencing (ê)/(ɛ)Lowering

Factor	Probability	Percent of Lowering	Number of Lowerings
Vowel			
[ê]	.38	11%	183/1655
[ɛ]	.62	22%	390/1784
Syllable			
open	.45	14%	134/987
closed	.55	18%	439/2452
Place of following segment			
labial	(.49)	15%	108/711
coronal	(.49)	18%	382/2123
velar	(.51)	14%	83/605
Manner of following segment			
stop	.43	15%	182/1251
fricative	.56	20%	191/961
nasal	.30	10%	92/883
lateral	.70	31%	108/344

Table 1.2. Linguistic Factors Influencing (ê)-Lowering

Factor	Probability	Percent of Lowering	Number of Lowerings
Syllable			
open	.42	6%	28/471
closed	.58	13%	155/1184
Place of following segment			
labial	(.47)	7%	24/328
coronal	(.52)	13%	120/958
velar	(.50)	11%	39/369
Manner of following segment			
stop	.47	9%	52/565
fricative	.46	13%	56/435
nasal	.39	9%	45/480
lateral	.67	17%	30/175

Table 1.3. Linguistic Factors Influencing (E)-Lowering

Factor	Probability	Percent of Lowering	Number of Lowerings
Syllable			
open	.46	21%	106/516
closed	.54	22%	284/1268
Place of following segment			
labial	(.52)	22%	84/383
coronal	(.49)	22%	262/1165
velar	(.48)	19%	44/236
Manner of following segment			
stop	.43	19%	120/686
fricative	.58	26%	135/526
nasal	.25	12%	47/403
lateral	.74	46%	78/169

The brackets around the probability values in Tables 1.1, 1.2 and 1.3 for place of articulation indicate that place of articulation did not have a significant effect on vowel lowering either for (ê) or (E) or when both vowels were analysed together. Clarke et al.'s, as well as Meechan's studies found no significance for place of articulation while Hoffman noted place effects for only I] with following palatal consonants most favouring lowering.

Vowels occurring in closed syllables were more likely to be lowered than vowels occurring in open syllables.

Manner of articulation had a significant effect for all our analyses (Tables 1.1-1.3). Overall, following laterals had the strongest favouring effect on vowel lowering with a Varbrul probability value of .70. This is not surprising considering the established backing effect of laterals on preceding vowels. (For example, in our study, words such as *pillow* was heard as p[E]llow, *sell* as s[œ]ll, and *healthy* as h[œ]lthy.)

Oral stops disfavoured lowering in all of our analyses.

Following fricatives created a favourable environment for (E)-lowering and had a Varbrul probability value of .58 (Table 1.3). This is comparable with the work of Clarke et al. who found fricatives to be the most favourable environment for (E)-lowering. Fricatives create a lengthening environment which may favour the production or perception of vowel lowering. The effect of a following fricative, however, was not uniform across the two vowels. Following fricatives actually had a disfavouring effect on the lowering of (ê) with a Varbrul probablility of .46.

The effect of a following nasal also showed different patterns across the two vowels. Following nasals strongly inhibited (E)-lowering with a Varbrul analysis of .25. While nasals also disfavoured the lowering of a preceding (ê) the effect was not as strong and had a Varbrul probability of .39. The disfavouring effect of nasals on preceding (E)s is consistent with the observation that many dialects show a raising and tensing of some vowels, particularly (ae) (as in the Northern Cities Shift (Labov 1994)), before a nasal. Studies also suggest that nasals may actually have a centralizing effect on preceding vowels. This would explain the different effects on (ê) and (E) as (E) is already in a mid area of the vowel space and would be less central if it were lowered whereas lowering of (ê) would bring (ê) into the mid area of the vowel space. Thus (ê)-lowering is not as strongly inhibited by following nasals.

Social Factors

Table 2.1 : Social Factors Influencing (ê)- / (ᴇ)-Lowering

Factor	Probability	Percent of Lowering	Number of Lowerings
Sex			
male	(.49)	14%	229/1692
female	(.51)	20%	344/1747
Style			
interview	.62	26%	359/1367
reading	.38	10%	214/2072
Age			
adolescents	.75	39%	203/527
young adults	.57	23%	293/1291
older adults	.20	5%	77/1621

Table 2.2. Social Factors Influencing (ê)-Lowering

Factor	Probability	Percent of Lowering	Number of Lowerings
Sex			
male	(.54)	11%	85/807
female	(.46)	12%	98/848
Style			
interview	.68	21%	139/655
reading	.32	4%	44/1000
Age			
adolescents	.85	37%	98/263
young adults	.55	12%	73/600
older adults	.12	2%	12/792

Table 2.3. Social Factors Influencing (E)-Lowering

Factor	Probability	Percent of Lowering	Number of Lowerings
Sex			
male	(.46)	16%	144/885
female	(.54)	27%	246/899
Style			
interview	.59	31%	220/712
reading	.41	16%	170/1072
Age			
adolescents	.67	40%	105/264
young adults	.60	32%	220/691
older adults	.25	8%	65/829

     Our study showed significant style effects for both vowels (Table 2.1). Overall, vowels were lowered at a rate of 26% in interviews and at a rate of 10% in reading passages and word lists (also refer to Graph 1.1). Although most speakers do not claim to have any awareness of vowel lowering and previous research suggested that the change was below the level of consciousness, the effect of style in our study suggests that speakers consider lowered vowels less acceptable than their unlowered counterparts. Tables 2.2 and 2.3 show a small difference in the probability values for (ê) .32 and (E) .41. The corresponding percentages also indicate that a formal style inhibits (ê)-lowering more than (E)-lowering. This is graphically presented in Graph 1.1.

     Unlike previous researchers, we did not find a significant effect for sex for either vowel.

     The most significant factor in our study was age. Overall, the adolescents in our study lowered at a rate of 39% whereas young adults lowered at a rate of 23% and older adults lowered and a rate of 5% (Table 2.1 and Graph 1.2). This age stratification is strong evidence in support of a change in progress. The effect of age on vowel lowering also differed with the different vowels and the differentiation, though clear in both cases, was more pronounced with (ê)-lowering (Table 2.2). The Varbrul probabilities for (ê)-lowering were .85 for adolescents, .55 for adults, and .12 for older adults. For (E)-lowering, the probabilities were .67 for adolescents, .60 for adults, and .25 for older adults. The strong favouring of (ê)-lowering by adolescents, a small favouring by young adults and a strong disfavouring by older adults suggests that (ê)-lowering is phenomenon associated with younger speakers while (E)-lowering at least appears in the speech of some adults. The percentages of lowering for all age groups are represented in graph 1.2. Also, the percentage for each speaker is represented and correlated with the speaker's year of birth in the scattergram (Graph 1.3).

     In their study, Clarke, Elms, and Yousseff suggested that the merger of /O/ as in caught with the vowel /A/ as in cot is the pivot of the Canadian Vowel Shift. The fact

that there is only one low back vowel in Canadian English leaves the central low area of the vowel space open and allows the lowering and retraction of (œ). If this is indeed the pivot of the Canadian shift, the lowering of (œ) should be the most advanced change and its shift should allow the lowering of (E) which in turn creates the possibility of (ê)-lowering. Our results are consistent with this hypothesis. Overall (E) was lowered at a rate of 22% and had a Varbrul probability value of .62 whereas (ê) was lowered at a rate of 11% and had a probability value of .38. The higher rate of (E)-lowering suggests that it is the more advanced change. Furthermore, the difference in age stratification also suggests that (E)-lowering is more advanced as it is more often lowered by adult speakers than (ê) which is more severely limited to adolescents and young adults.

Conclusion

In this study we have further quantified the progress of lax vowel lowering in the speech of Toronto speakers. Linguistically, the effect of following laterals has the greatest influence on the lowering of (ê) and (E). As far as social categories are concerned, the age differentiation extracted from our data is clearly indicative of a change in progress. Younger speakers are leading the change. As always, there is more work that needs to be done to capture the complete dynamics of this chain shift in Canadian speech.
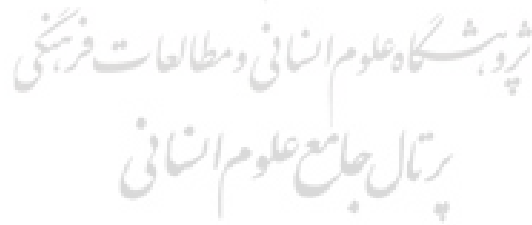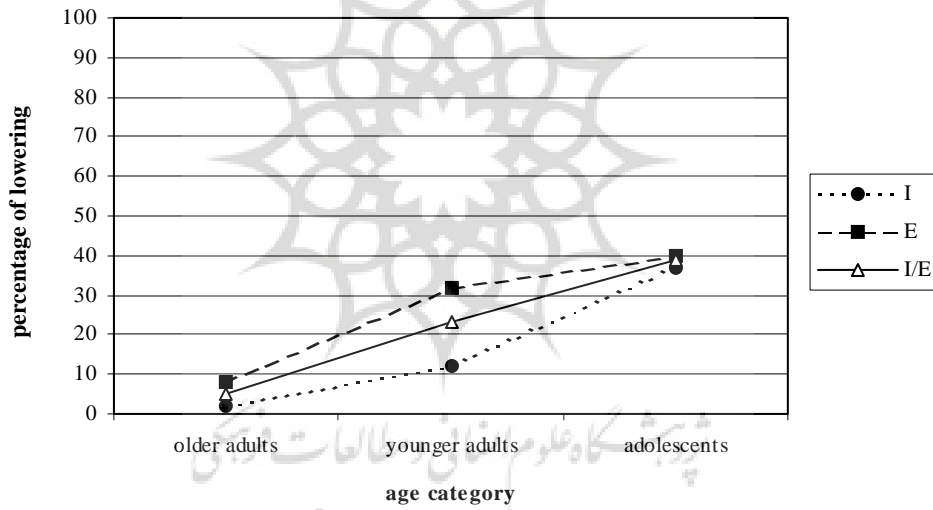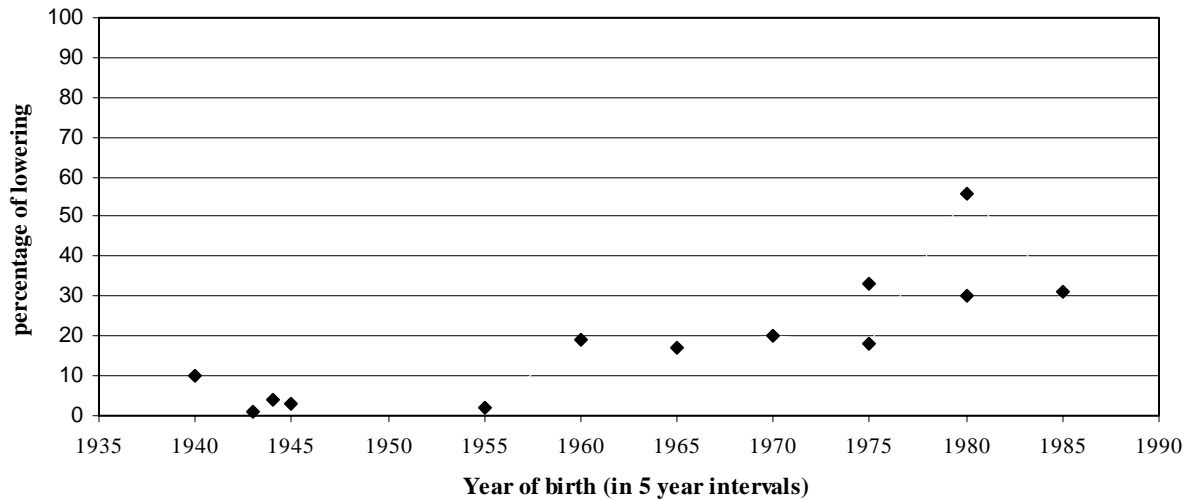
Appendix

Graph 1.1 : The effect of style on vowel lowering
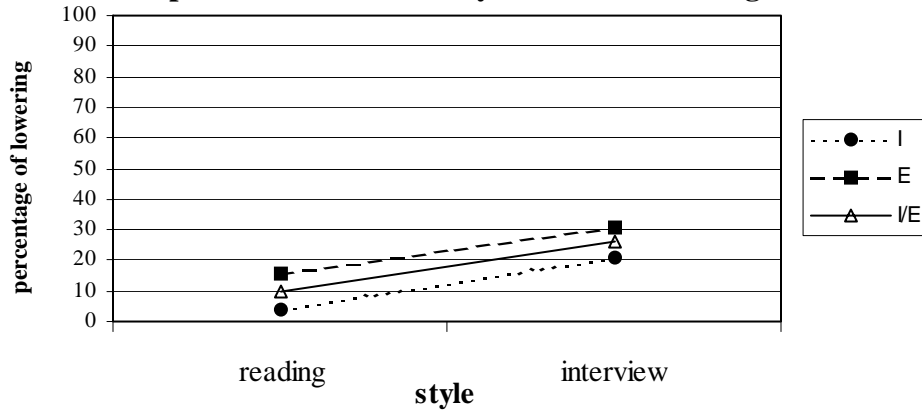
Graph 1.2 : The effect of age on vowel lowering

Graph 1.3 : Percentage of lowering by year of birth (both vowels)

References

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