Production of FACE and GOAT by Slovak and Czech immigrants in Edinburgh

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ABSTRACT

This study examines the stylistic constraints on the pronunciation of the FACE and GOAT lexical sets as spoken by Slovak and Czech female immigrants who permanently reside in Edinburgh, Scotland. We undertake an acoustic analysis of monosyllabic words taken from a structured interview, a reading passage, and a wordlist to compare these speakers to fluent learners of RP English living in Slovakia, specifically investigating immigrants' acquisition of the Scottish English monophthongal variant. The results suggest that long-term immigration has a significant impact on pronunciation patterns, although more formal speech styles may trigger a reversion to instructed L2 norms.

Keywords: Immigrants, vowels, Scottish English, sociophonetic variation, L2 acquisition

1. INTRODUCTION

Since the 2004 accession of Slovakia and the Czech Republic to the EU, immigrants from these countries have experienced rights of movement, which have affected their mobility and East-West economic opportunities [10, 12], resulting in considerable migration to the United Kingdom. The pressure felt by these immigrants to adapt to British culture fosters new transnational, bicultural identities. These new identities are diverse and complex, and this is reflected in results from sociolinguistic research on immigrant communities in the US and the UK more generally: While some studies [8] have found immigrant groups who successfully replicated the linguistic constraints on variation followed by the local language community, other studies [5, 11, 15] have found the opposite or conflicting results. The present study shows some acquisition of local pronunciations, but a difference in the direction of the effect of style. This research highlights the phonetic consequences of the ways in which immigrants may negotiate their transnational and bicultural experiences.

This study examines monophthongal and diphthongal pronunciations of the FACE and GOAT lexical sets produced by Slovak and Czech immigrants in Scotland, compared to similar productions by native Scottish English speakers in Scotland and Slovak residents of English in Slovakia. We ask the following questions: To what extent do Slovak and Czech long-term adult immigrants acquire the monophthongal pronunciations of their local peers in Edinburgh? If they acquire them, do they also acquire the same stylistic constraints on that variation?

1.1 FACE and GOAT

Slovak and Czech are West-Slavic languages with phonemic distinctions of vowel quantity. This is not restricted by stress: long and short vowels alike appear in both stressed and unstressed syllables [1]. The Slovak and Czech languages are genetically closely related and so speakers of both are included in the present study. Both languages present a five-vowel system of long and short monophthongs /i/, /e/, /a/, /o/, /u/. Their diphthongs, however, are different: Slovak contains *ia* [i̯a], *ie* [i̯e], *iu* [i̯u], *ô* [u̯o] diphthongs, whereas Czech has only two, *au* [au̯], and *ou* [ou̯], where the former is used mostly in words of foreign origin, and the latter in everyday speech [17].

The study of Slovak and Czech L1 speakers' use of English therefore focuses on two variables that do not occur in the native language [7, 9, 17]: FACE and GOAT [22]. These two vowels were chosen to identify immigrants' acquisition of Scottish English in Edinburgh because a monophthongal pronunciation of both FACE and GOAT is a common feature across many varieties of Scottish English, including Scottish Standard English (SSE) [22], but a diphthongal pronunciation of both FACE and GOAT is a feature of the first English variety that Slovaks and Czechs are exposed to: Received Pronunciation (RP). The Slovak short *e* vowel phonetically approximates the RP English DRESS vowel, and the short *o* vowel is phonetically similar to the RP English THOUGHT vowel. There are no vocalic candidates in Slovak for either the FACE and GOAT lexical set, and anecdotally we observe no production English FACE and GOAT by Slovaks that approximates either Slovak vowel. In contrast, the Czech diphthongal *ou* vowel is a phonetic approximate for the GOAT vowel, which might be expected to aid in the acquisition of a diphthongal

pronunciation of GOAT in L2 English. There is, however, no similar Czech candidate for the FACE vowel. While one might predict that Czech L1 speakers will have more diphthongal GOAT vowels than Slovak L1 speakers, we do not make that prediction here, on the basis that the only model for the GOAT vowel that Slovak L1 speakers encounter in Slovakia is the RP diphthong. In short, both Slovak and Czech L1 speakers should be expected to produce diphthongal FACE and GOAT, in the absence of any outside pressure towards monophthongisation (e.g., living in Scotland) [4].

Fieldwork in Slovakia by the first author in late 2014 confirmed that English language schools and language learning materials in Slovakia expose students to the RP accent only. Even with widespread English instruction courses and institutions, speakers of monophthongal FACE and GOAT pronunciations have very low visibility, if any, in Slovakia [18]. Ethnographic data and personal observations have revealed that pressures towards monophthongisation are indeed absent from English-speaking communities available to L2 English language learners residing in Slovakia.

The present study considers data from four Slovak teachers of English in Slovakia and compares their pronunciations with those produced by established Slovak immigrants in Scotland.

2. METHODOLOGY

The data in this study come from recordings of Slovak (N=7) and Czech (N=4) immigrants in Scotland, Slovaks in Slovakia (N=4), and Scottish English speakers (N=2), all recorded in 2014. Slovak and Czech immigrants in this study were native to their home countries, with ages ranging between 18 and 71 (mean=40.5). The length of their residency in Edinburgh was set at a minimum of five years at the time of interview (mean=14.7) to ensure participants' familiarity with the accent and culture of their local language community [cf., 13]. Participants were approached through the friend-of-a-friend technique, drawing on both personal and professional connections. All interviews were conducted by the first author, a native of Slovakia who had been living in Edinburgh for 1-1.5 years at the time of recording.

The data were collected in individual recording sessions taking place in public and private settings, using either University of Edinburgh premises or the speaker's home. A Marantz PMD661MK2 recorder (44.1 kHz sampling rate, 24 bits precision) with a head-mounted microphone and a Tascam DR-07MKII recorder (44.1 kHz sampling rate, 24 bits precision) were used during each session.

The stimuli consisted of a structured interview, a reading passage, and a wordlist (in that order), all of which contained words from the FACE and GOAT lexical sets used for analysis. The structured questionnaire was designed to elicit informal chat between the participant and interviewer. The task focused on participants' biographical information, language skills and instruction, and attitudes toward Scottish language and culture.

The second task was a reading passage written by the first author and constructed to elicit the production of the FACE and GOAT lexical sets. The target words were embedded in the text to provide meaningful sentences. The full dataset elicited 95 occurrences of FACE (N=36) and GOAT (N=59) across all 17 speakers.

The final task was a wordlist consisting of words from FACE (N=32) and GOAT (N=32) as well as LOT (N=8), THOUGHT (N=8), and DRESS (N=10) as distractors. All words were either open (CV_) and closed (CVC) monosyllables. For the latter, the vowel preceded only /t/, /d/, and /k/ to make the onset of the target vowel easier to identify [3].

The differing levels of formality across the tasks were predicted to elicit different degrees of diphthongisation among the speaker groups. The structured interview is taken as least formal and the word list as most formal, with the reading passage in between ('formality' is used loosely here; 'attention paid to speech' or other accounts of stylistic difference are equally acceptable for our purposes). The word list context may be expected to elicit more diphthongal pronunciations for the immigrant groups since the diphthong is the more standard variant, associated with RP. We expect no stylistic difference for the Slovaks in Slovakia, who have only been exposed to diphthongal pronunciations.

3. ANALYSIS

Each recording was transcribed orthographically in Praat (version 5.3.55) [2]. Tokens of FACE and GOAT were extracted from the interview speech. Inaudible tokens were eliminated and tokens that were in any way compromised by environmental or non-speech factors (e.g. clearing throat, rustling paper, etc.) were also discounted. Token selection from the reading passage and wordlist was more straightforward since it was pre-determined; only inaudible or compromised tokens were discounted in these sections. The selection process yielded hours of recording, from which a total of 4405 tokens were extracted for analysis.

Duration and formant values (at 20%, 50% and 80% of the vowel duration) were automatically measured via Praat script [20]. The extent of

monophthongisation for each individual vowel token was based on the calculation of Euclidean Distance taken from measurements of f1 and f2 taken at the 20% and 80% time points for that token [19].
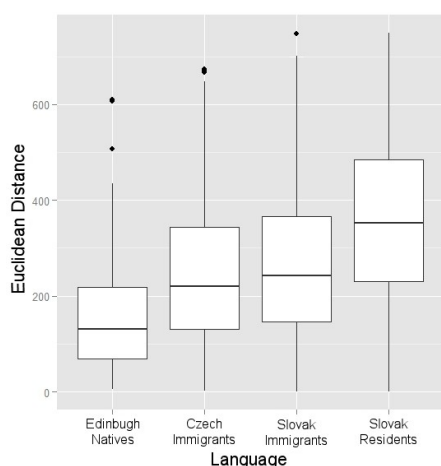
4. RESULTS

The four independent variables in this study are *speaker L1* (Scottish English, Slovak, Czech), *place of residency* (Edinburgh, Slovakia), *speech style* (interview, reading passage, word list), and *vowel* (FACE, GOAT). The dependent variable is the Euclidean distance of a token as previously described. Inferential statistics are based on independent Univariate Linear analysis conducted in SPSS and Mixed Models conducted in R.

4.1 Effect of Vowel: FACE versus GOAT

The FACE and GOAT lexical sets were chosen because of their known monophthongal realisations in Scottish English, with no significant difference in degree of monophthongisation expected between the two lexical sets. A univariate model confirmed our expectations; lexical set had no significant main effect on Euclidean distance measures ($F(1, 3693) = 1.331, p > .05$).

4.2 Effect of Speaker Group

Figure 1: Extent of diphthongal FACE/GOAT production by language and place of residency.

The results reveal significant differences in vowel quality for FACE and GOAT across language groups (Figure 1). In combined data for both lexical sets, participants native to Edinburgh consistently show shorter Euclidean distances than Slovak and Czech immigrants, as was expected. At the other extreme are the Slovaks in Slovakia, who show the most diphthongal productions, again as expected.

Univariate models indicate a significant main effect for the language relationship between Slovak and Czech immigrants and Edinburgh locals ($F(2, 3693) = 20,621, p < .001$). There was no significant difference between Slovak and Czech immigrant groups ($p > .05$). The Slovak resident group was found to be significantly different from the Slovak immigrants ($p < .001$), demonstrating an effect of place of residency (i.e. immigration status).

4.3 Effect of Speech Style

Figure 2 shows the effect of speech style with data for FACE and GOAT combined. Participants from immigrant Slovak and Czech language groups illustrated similar tendencies in pronunciation across the interview, the reading passage, and the wordlist. Both immigrant groups produce the more diphthongisation in the wordlist style than the interview (e.g., for the Slovak immigrants: $F(8, 3743) = 31.3, p < .001$). These findings are consistent with previously observed patterns of foreign-accented speech where native English speakers judged non-native speakers as more 'native' in informal speech than during more formal speech tasks [14, 21]. In contrast, the wordlist context elicits slightly more monophthongal realisations for the Scottish natives than the other two styles. Lastly, the Slovaks in Slovakia show little influence of style on their diphthongisation of FACE and GOAT. Within groups, there were no significant effects between the interview and the reading passage.

Figure 2: Extent of diphthongal FACE/GOAT production by language, place of residency, and speech style.
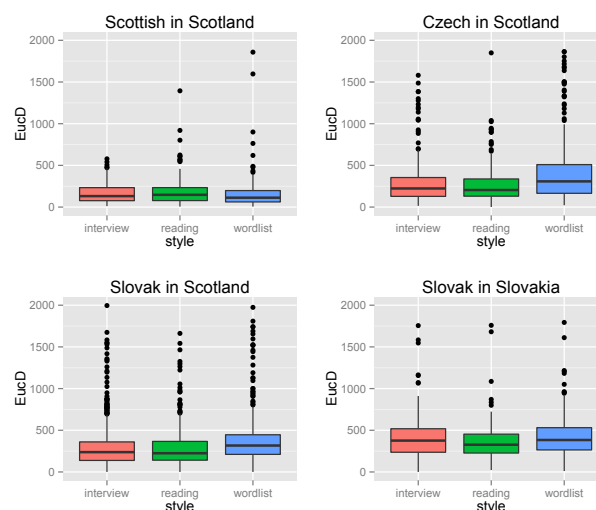

4.4 Interaction Effects

Table 1 and Figure 3 summarise the best-fit model with SPEAKER and WORD as random intercepts. Drop-one model comparisons revealed that the best-fit model includes significant interaction effects between VOWEL, STYLE and GROUP, both as a three-way interaction and as three two-way interactions.

Table 1: Best-fit Mixed-model analysis (summary)

Effect	Df	SumSq	MeanSq	F value
VOWEL	1	885266	885266	17.8134
STYLE	2	3063614	1531807	30.8232
GROUP	3	510876	170292	3.4266
VOWEL:STYLE	2	388336	194168	3.9071
VOWEL:GROUP	3	2461909	820636	16.5129
STYLE:GROUP	6	2105948	350991	7.0627
VOWEL:STYLE:GROUP	6	763400	127233	2.5602

Figure 3: Best-fit Mixed-model analysis (effects graph)
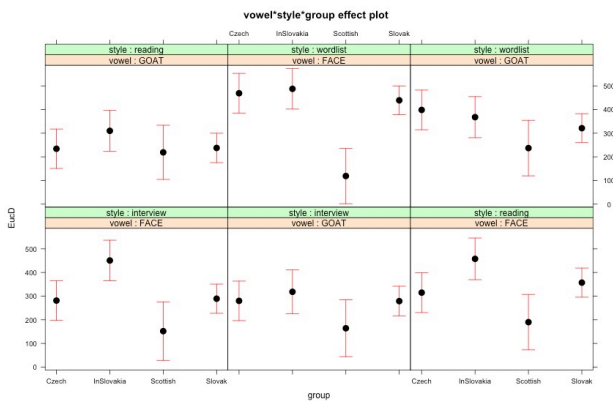
The mixed model confirms that the most monophthongal productions are produced by Scottish speakers, especially for FACE and especially in wordlists (Figure 3). For both vowels, the effect of wordlist style on native Scottish productions is very different than its effect for the other groups (β=-220.689, s.e.=50.401, t=-4.379; *Czech* as reference group), as seen in the univariate results.

The best-fit mode also confirms that the most diphthongal productions are produced by Slovaks in Slovakia, but especially for FACE. We again see that Czechs and Slovaks in Scotland pattern similarly, except for GOAT in wordlists. Both groups are more diphthongal than in the other styles, but the Czech group produces GOAT with a more diphthongal quality than even Slovaks in Slovakia (Figure 3).

Although a univariate test found that FACE and GOAT do not differ in this sample, that variability is differently conditioned by both the speaker group (*language background + place of residence*) and style. Indeed, in this mixed model, the main effect of VOWEL emerges as the second strongest predictor of monophthongisation. Furthermore, although STYLE is by far the strongest main effect in the mixed model, with *wordlist* being the exceptional level (β=187.662, s.e.=29.086, t=6.452), VOWEL-by-GROUP is the strongest interaction effect, with *GOAT*-by-*InSlovakia* the exceptional level (β=-150.807, s.e.=40.097, t=-3.761). The extent to which it is useful to conceive of the variability in FACE as the same as the variability in GOAT is something that may differ according to the speaker group.

5. DISCUSSION AND CONCLUSION

This study compares the realisation of phonetic variation in English in three groups of women: Slovak and Czech immigrants in Edinburgh, Slovaks in Slovakia, and Edinburgh natives. We considered two vowel classes and three stylistic contexts.

The results suggest that participants' language backgrounds as well as their place of residence can have a combined effect. While Slovak and Czech immigrants exhibited similar pronunciation patterns, both were different from their local Edinburgh peers, and different again from Slovaks in Slovakia. With respect to speech style, only the wordlist appeared to elicit significantly different realisations from the other two styles, and in different directions for the groups: wordlists resulted in relatively more monophthongal realisations for the Scottish natives, but more diphthongal ones for the other groups.

Previous research has hypothesised that when producing English, immigrant groups use a) an L1 phonetic inventory, b) an L2 phonetic inventory learned through language instruction, or c) a combination of the two [6, 16]. Given the differences seen here between the immigrant and non-immigrant Slovak groups, it is clear that immigrants' patterns of monophthongisation are not the result of accessing L1 or formally learned L2 phonetic inventories, but rather access to a different L2 phonetic inventory developed after immigration. The development and use of an alternative L2 phonetic inventory may indicate of a transnational linguistic identity, one that accommodates multiple personal phonetic inventories but varies based on social experiences post-immigration.

The study's results contribute to studies on the acquisition of English variation by Slavic long-term immigrants to the UK [11]. Where Meyerhoff and Schleef [11] found that style was a non-significant factor in immigrants' pronunciation patterns, this study found that Slovak and Czech immigrants do produce a style contrast but one that diverges from the native Scots pattern. In order to answer this question in full, further investigation is needed to determine immigrants' individualised access to Scottish English and Scottish culture.

5. ACKNOWLEDGEMENTS

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