SWITCHING LANGUAGE DOMINANCE FOR IDEOLOGICAL REASONS: A STUDY OF GALICIAN NEW SPEAKERS' SPEECH PRODUCTION AND PERCEPTION

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ABSTRACT

In minority language communities, language choice may be related to identity. In the bilingual community of Galicia, some speakers switch language dominance at a late stage in development, normally during adolescence. These 'new speakers', *neofalantes,* are originally dominant in Spanish but switch to Galician for cultural or ideological reasons.

The present study investigated the consequences of this language shift for *neofalantes'* production and perception of Galician. The results demonstrated that *neofalantes* produced intermediate categories that were different from those of Spanish and Galician-dominants, but that changes in production were not accompanied by changes in perception. Although these findings might suggest that *neofalantes* process their new, dominant language through the categories of their former dominant language, another possibility is that they change aspects of their production to try to fit in with a new group of speakers, Galician-dominants, whilst retaining some Spanish variants to show belonging to the *neofalantes* community.

Keywords: new speakers, sociophonetics, bilingualism, speech production, speech perception

INTRODUCTION

In minority language communities, speakers who have acquired the minority language through immersion educational programmes or as adult learners, may become dominant in this 'new' language, displacing their former dominant language altogether. These so-called 'new speakers' have been documented in a variety of European minority languages, e.g., Irish, Welsh, and Basque [12]. However, the characteristics of these new speakers vary depending on the community. In the case of Galicia, *neofalantes* have been defined as "speakers who are brought up speaking Spanish, but who at some stage in their lives (usually adolescence or early adulthood) 'become' Galician speakers" [13]. *Neofalantes* are normally unbalanced bilinguals; they are dominant and have higher proficiency in Spanish, but they decide to switch to Galician for ideological or cultural reasons. Previous research has focussed on understanding *neofalantes*' language attitudes, how they evaluate other speakers in their community, and how they themselves are evaluated by the speech community to which they belong e.g., [13]. However, this group also raises interesting questions for our understanding of language learning, in particular learners' potential to build new phonetic representations or modify existing ones.

Unbalanced bilinguals do not have native-like proficiency in both their languages [2], and typically find acquiring phonetic contrasts in their non-dominant language difficult [5,15]. For example, high-proficiency, Spanish-dominant (SD) bilinguals are less accurate than Catalan-dominant bilinguals in identifying phonetic contrasts that exist in Catalan, but not in Spanish [16]. Like Catalan, Galician also has a front and back mid-vowel contrast, (/e/-/ɛ/, /ɔ/-/o/) and it is possible that both SD bilinguals and *neofalantes* in the Galician community may likewise have difficulty perceiving these contrasts.

Language use in minority language communities is likely further complicated by speakers' attitudes towards the languages they choose to use. Research in sociophonetics has shown that complex social factors affect the use of phonetic variables within a language [6,10] and that speakers sometimes change the variants they use to show belonging to or identification with a particular group [7,8]. However, rather than behaving exactly like native speakers, some speakers have been shown to produce categories inbetween their native accent and those of their new variety, as well as retaining other aspects of their native accent [8]. Galician *neofalantes* who choose to use their non-dominant language for ideological or cultural reasons may behave similarly. These speakers may change aspects of their production to try to fit in with a new group of speakers, Galician-dominants (GD), whilst retaining some Spanish variants in order to show belonging to their own group.

The present study investigates whether *neofalantes* are able to change their production of Galician open and close mid vowels, /ɛ/ - /e/ and /ɔ/ - /o/, a contrast that does not exist in Spanish, to match that of native GD speakers or whether they continue

to use their native dominant Spanish categories, and whether these changes were accompanied by changes in perception.

2. METHOD

2.1. Participants

Sixty-eight participants were tested. Participants were recruited from the University of Santiago de Compostela as this has the largest and most heterogeneous student population in Galicia. This facilitated recruitment of participants with different backgrounds and therefore different accents (urban vs. rural, East vs. West). Three participants were excluded because they did not meet the criteria for the experiment. The remaining 65 participants grew up in Galicia, had not lived anywhere else for more than a year and were bilingual in Galician and Spanish. Participants were all students and at the time of recruitment were 18–30 yrs old (median 20 yrs). After the experiment they completed a detailed language background questionnaire which included questions about language background and exposure, language use, and social variables. This was used to classify participants into three groups, resulting in 14 *neofalantes* (7 female, 7 male), 22 GD (12 female, 10 male), 20 SD (12 female, 8 male) and 6 simultaneous bilinguals (3 female, 3 male). The data from the simultaneous bilinguals will not be presented here. Participants classified as *neofalantes* were predominantly raised in Spanish and their parent(s) used to speak to them in Spanish, but they decided to adopt Galician as their dominant language in adolescence (13-20 yrs old, median 17 yrs) for ideological or cultural reasons. GDs were raised predominantly in Galician and their parent(s) spoke Galician to them. SDs were raised predominantly in Spanish and their parent(s) spoke Spanish to them. A further 3 participants who did not meet any of these criteria were also excluded, giving a final total of 56 participants. None of the subjects had any reported language or hearing disorders at the time of testing.

2.2. Stimuli

2.2.1 Production experiment

The stimuli consisted of a wordlist, a text and a spontaneous speech task. Only the read speech data will be presented here. The wordlist consisted of 27 test words which included all the variables that differ in Galician and Spanish. The subset of words used for the mid-vowel analysis was *pazo* [ˈpaθo̝], *peza* [ˈpɛθa̝], *peto* [ˈpeto̝], *pita* [ˈpita̝], *pote* [ˈpɔte̝], *pozo* [ˈpoθo̝], *pucho* [ˈput͡ʃo̝], *seca* [ˈseka̝], *sota* [ˈsɔta̝], *sopa* [ˈsopa̝]. These were recorded in phrase final position in the carrier sentence *digo a palabra* ____ (I say the word ____) and in phrase medial position in the carrier sentence *digo a palabra* ____ *con coidado* (I say the word ____ carefully). The text was a modified version of "The North Wind and the Sun" (*O vento do norte e o sol*); a sentence was added to the text to make it phonetically balanced.

All recordings were made in Praat [4], in a quiet room using a Samson C01U microphone connected to a laptop, and with a sampling rate of 44.1 kHz, 16-bit resolution.

2.2.2 Perception experiment: vowel identification

The stimuli consisted of the words *óso* [ˈɔso̝], *oso* [ˈoso̝], *pé* [ˈpɛ], *pe* [ˈpe], *só* [ˈsɔ], *so* [ˈso], *té* [ˈtɛ], *te* [ˈte] embedded in the carrier sentence "*digo a palabra* ___"(I say the word __). The carrier sentences were produced in two accents; (1) standard-accented Galician and (2) regionally-accented Galician. This included *gheada*, a very salient regional variant in which [g] and [ɣ] are produced as [ɦ], [h], [x], [ɦ] or [ʕ], here giving [ˈdihọapaˈlaβɾa̰] instead of [ˈdiɣọapaˈlaβɾa̰]. The pronunciation of the word did not vary between conditions.

All stimuli were produced by the same male GD speaker who was able to convincingly produce both accents. Recordings were made in a sound attenuated room using a RODE NT1-A microphone directly connected to a PC via an Edirol processor with a sampling rate of 44.1 kHz, 16-bit resolution. The speaker recorded two repetitions and then the best was selected for use in the experiment. Stimuli were band-pass filtered at 60-20,000 Hz with a smoothing factor of 10. Finally, intensity was scaled to 70 dB SPL. All processing was carried out in Praat [4].

Stimuli were played over a laptop (ASUS A55V) via a Realtek HD Audio sound card, and were presented over headphones (Sennheiser HD 25-C II).

2.3. Procedure

2.3.1. Production experiment

Recordings. Participants completed the spontaneous speech task first, and then the wordlist and text. They recorded 2 repetitions of each word and one repetition of the text. All testing was carried out by the first author. None of the participants had a close relationship with the experimenter; they were university students or friends of friends.

Analysis. Recordings were segmented using a forced aligner [11] and any errors hand corrected. F1 and F2 values were measured at the vowel midpoint for the stressed vowel in each target word, giving two measurements per variable for the wordlist and between 3 and 6 measurements per variable for the

text. Formant measures that were 2 standard deviations outside the F1 or F2 mean per vowel were checked and hand corrected if necessary. Data was then normalized using the Lobanov method [1]. To investigate whether participants made a difference between the open and close mid vowels, the Euclidean distance was calculated separately for each speaker for each speech style (wordlist and text) and for each pair of vowels /e/-/ɛ/ and /o/-/ɔ/.

2.3.2 Perception experiment: vowel identification

Participants completed the two vowel identification tasks in the same session. The order of tasks was counterbalanced across participants. In each task, participants identified the word they heard by clicking on the corresponding picture. Pictures were selected instead of the words to prevent orthographic cues influencing the results, since in written Galician the open vowel is signalled by an accent i.e., *óso* [ˈɔsǫ] (*bone*), *oso* [ˈosǫ] (*bear*). Participants identified 4 repetitions of the 8 stimuli, giving a total of 32 trials per task. They heard each trial only once, with the order of presentation randomised across participants and the same stimulus never played twice in a row.

3. RESULTS

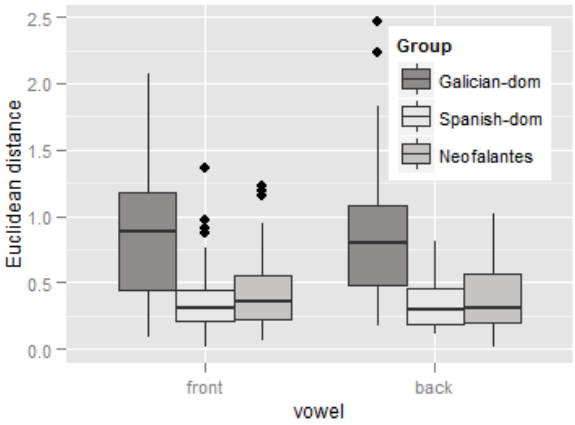
3.1. Speech production

As displayed in Fig. 1, GDs have the greatest split between the vowels, whereas SDs appear to have a merged category. *Neofalantes* seem to have a greater split than SDs, but not as great as that of GDs.

To verify this observation, a linear mixed effects model was built. The best fitting model included group (GD, SD, *neofalantes*), sex (female, male), origin (urban, rural), vowel (front, back) and speech style (wordlist, text) as fixed factors and participant as a random factor.

The main effect of group was highly significant, $\chi2(2)=27.531$, $p<.001$. The orthogonal planned contrasts showed that *neofalantes* behaved differently from GDs, b=0.490, SE=0.099, t=4.969, $p<.001$, and also from SDs, b=-0.265, SE=0.106, t=-2.486, p=.006. GDs showed the greatest Euclidean difference overall (M=0.866, SD=0.516), followed by *neofalantes* (M=0.414, SD=0.286) and then SDs (M=0.378, SD=0.272). There was a significant main effect of origin, $\chi2(1)=4.6268$, p=.031; rural participants (M=0.725, SD=0.515) had a greater Euclidean distance than urban participants (M=0.383, SD=0.239). There was also a significant main effect of vowel, $\chi2(1)=8.988$, p=.003, indicating that participants had a greater difference for front (M= 0.598, SD= 0.470) than back vowels (M=0.559, SD=0.434).

Figure 1: Boxplots of the Euclidean distance for front and back vowels across groups and speech styles.



There were three significant interactions. There was a two-way interaction between vowel and speech style, $\chi2(1)=9.842$, p=.002; front vowels were produced with a greater Euclidean distance in the wordlist, while back vowels were produced with a greater Euclidean distance in the text. This could be related to the phonetic context in which back vowels were produced in the text. There was also a significant interaction of group, sex and vowel, $\chi2(2)=7.168$, p=.028; female GDs tended to have a larger contrast for front vowels, while male GDs had a larger contrast for back vowels. Finally, there was an interaction of group, origin and speech style, $\chi2(2)=9.067$, p=.011. All groups had a greater split for vowels in the text except for urban *neofalantes* and rural GDs.

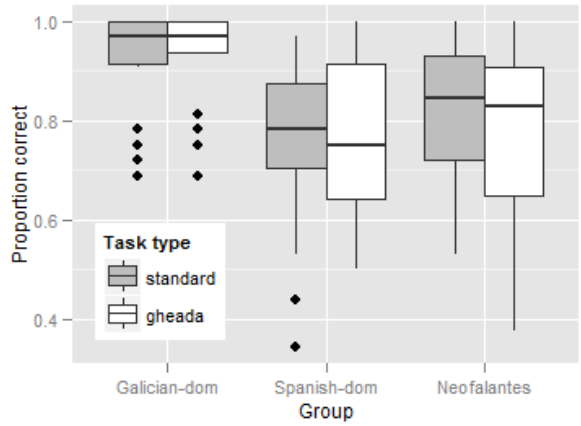
3.2. Speech perception

As displayed in Fig. 2, GD listeners had the highest score, followed by *neofalantes* and SD listeners. To verify this observation, a logistic mixed effects model was built. The best fitting model was fit by the Laplace approximation with group (GD, SD, *neofalantes*), sex (male, female), origin (rural, urban) and task type (standard, *gheada*) as fixed factors and participant, stimulus and phoneme as random factors.

The main effect of group was significant, $\chi2(2)=9.886$, p=007. The orthogonal planned contrasts showed *neofalantes* behaved differently from GDs, b=1.091, SE=0.350, z=3.117, p=0.002, but not from SDs, b=-0.121, SE=0.360, z=-0.338, p>.05. GDs had the highest identification score overall (M=0.917, SD=0.276), followed by *neofalantes* (M=0.79, SD=0.407) and SDs had the lowest identification score (M=0.758, SD=0.428). The main effect of origin was significant, $\chi2(1)=5.656$, p= .0174; rural participants had a higher

identification score (M=0.865, SD=0.342) than rural participants (M=0.780, SD=0.414).

Figure 2: Boxplots of vowel identification (proportion correct) averaged across groups and split by task type.



There was also a significant interaction of group and sex, $\chi 2$ (2) = 9.336, p= 0.009. This could be due to male *neofalantes* having a higher score (M= 0.812, SD=0.39) than female *neofalantes* (M=0.768, SD= 0.423). The interaction of group and origin was also significant, $\chi 2(2)=9.974$, p=0.007; rural GDs and rural SDs had higher scores than participants in the respective urban groups. However, urban *neofalantes* had higher identification scores than rural ones. This mirrors the production results.

4. GENERAL DISCUSSION

Results showed that *neofalantes*' vowel production differed from that of SDs and that at least some of them had acquired the Galician front and back mid-vowel split. However, there was a lot of individual variation and as a group, the split between vowels was not as great as that of GDs. Instead, *neofalantes* seem to have a category inbetween that of the two control groups. Additionally, origin was an important factor. Overall rural participants had a greater vowel contrast than did urban participants, but this was not true for *neofalantes***;** urban *neofalantes* had a greater contrast than rural *neofalantes*. Even though *neofalantes* appear to have changed their production of these vowel contrasts at least to a certain extent, there was little evidence for a change in perception. In the vowel identification task, *neofalantes* performed similarly to SD participants, and both groups performed worse than GD participants. In parallel to the production results, rural GD and SD participants performed better than urban ones, but *neofalantes* showed the opposite pattern.

Are speakers who change language dominance late in life able to acquire native-like categories in their new language? As in previous work [5,15], *neofalantes* had limited success in acquiring the front and back mid-vowel contrast. Though they changed their production so that they distinguished the vowels more than SD speakers, the difference was not as great as that made by native GD speakers, and they showed no improvement in their ability to identify the contrasts. One possibility is that this is because they behave more like L2 learners, in the sense that they process their new, dominant language through their former dominant language categories. Theories of cross-language speech perception e.g., [3, 9], have proposed that certain phonetic contrasts are more difficult to perceive than others and that this leads to difficulties in production. According to these models, the difficulty can be predicted by the phonetic similarities of the first and second languages. The contrast between open and close mid vowels is a difficult one for SDs (and *neofalantes*) because those categories do not exist in their native, dominant language. *Neofalantes*' inbetween categories and difficulty in perception may thus be the result of constraints on their language learning as a result of their early experience with Spanish.

These hybrid categories could however, be an opportunity to mark identity. *Neofalantes* have been characterized in the literature as an active minority, one that not only has a strong commitment to changing society, but also takes "innovative action through the appropriation of a new linguistic space" [14]. These hybrid categories could thus be used as phonetic markers of their new identity as members of the *neofalantes'* community. Indeed, exploratory analysis of the role of social factors in our data supported this notion, indicating that those *neofalantes* who reported making a conscious effort to improve the way in which they spoke Galician made a greater contrast in production. Effort may also explain why urban not rural *neofalantes* acquired a greater split. Although rural *neofalantes* are likely exposed to more Galician, urban *neofalantes* may identify more with *neofalantismo* [14] and thus make more effort to change their production.

In sum, whilst underlying category representations appear hard to change with modifications to production constrained by early experience with a particular language, the resulting hybrid categories may be exploited as markers of identity by speakers within a particular community.

5. REFERENCES

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