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/l/-vocalisation in Lucerne Swiss German dialects: a sociophonetic analysis using big data

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Abstract

*This study compares the Lucerne German allophones of Middle High German <l> using data from the crowdsourcing smartphone app *Dialäkt Äpp*, to those of the Linguistic Atlas of German-Speaking Switzerland. In doing so we examine language change in real-time across c. 70 years. In the north of the Canton of Lucerne, use of /l/-vocalisation has receded, whereas in the west, and in and around the city of Lucerne, /l/-vocalisation occurs more frequently than at the time of the historic atlas. Both age and sex differences were found to be statistically non-significant, though older speakers tended to vocalise more. Generally, however, we report substantial areal heterogeneity which we suspect is due to the Canton's geographical location in a dialectal transition zone, increased personal mobility, and the growing presence of broadcast media in dialect.*

Introduction

For German-speaking Switzerland (CH), /l/-vocalisation (/l/-VOC) refers to the use of [ɥ] rather than a consonantal allophone (e.g. [l] or [ʎ]) for /l/. It is believed to have originated in the Emmental, a rural area in the canton of Bern (BE; Christen 1988: 15), and occurs mainly orally. Thus, it remains unclear when it first appeared in CH, though historical sources from the 18th cent. suggest that it had already been around in that time (Baumgartner 1940: 73-4).

Historically, /l/-VOC has been perceived rather negatively. In L1 acquisition, /l/ is often replaced by vocalisations (Lin & Demuth 2015: 13) due to its articulatory complexity “involving coronal, lateral, and velar contact” (Hall-Lew & Fix 2012: 795). This potentially leads to an association of /l/-VOC with children's speech (Stalder 1819: 64). Furthermore, Haas found that speakers of urban dialects considered /l/-VOC amongst other attributes as peasant and unaesthetic (1973: 64), i.e. for speakers with a

prestigious non-vocalising dialect, /l/-VOC not only bore the stigma of being associated with a low socio-economic status, but was also supposedly unpleasant to listen to. Urban upper-class speakers thus allegedly avoided vocalising /l/s (Christen 1988: 203). It is then rather counterintuitive that a recent study found /l/-VOC to have spread across CH (Leemann et al. 2014: 192), implying that in some regions, /l/-VOC must have lost its stigma. We will discuss this later as this study reports similar results.

Whether social class is still a distinguishing factor for /l/-VOC today must be established in future research. There is, however, evidence for other extralinguistic factors to be correlated with /l/-VOC: The *Linguistic Atlas of German-Speaking Switzerland (SDS)* reported higher /l/-VOC rates amongst younger speakers for some regions, and amongst older speakers for others (154). Christen found younger speakers to be less likely to vocalise (1988: 203), and Leemann et al. came to a similar conclusion as the youngest speakers of their study vocalised less than the older ones (2014: 206). As for sex, no information has been found, which is why we include this factor in the current analysis.

Methodology

243 recordings of <Chälle>, i.e. VLLV (‘ladle’ *Kelle*; 111 male; 132 female; age 10-77; mean=30.1; median=26.5; SD=15.0) were extracted from the *Dialäkt Äpp (DÄ)* corpus. All tokens were recorded at a sampling rate of up to 48 kHz (iPhone Specifications 2016) and stored as .WAV format. For further information on *DÄ* see Leemann et al. 2016.

All tokens were auditorily checked for validity (background noise, clipping etc.). The remaining 219 tokens were then examined for /l/-VOC auditorily, and for velarization (VEL) with *Praat*. [ɥ] has a relatively low *f*₁, and a relatively high *f*₂, whereas for [ʎ], the opposite applies due to the retraction of the tongue body, which resembles the acoustic properties of a

high back unrounded vowel (Sproat & Fujimura 1993: 292). Based on this, the mean *f1* and *f2* values for each token were measured. The tokens were labelled as [ɪ] if the *f1-f2* difference was >1000 Hz, and as [ɨ] if <1000 Hz. The number of [ɪ], [ɨ] and [ʊ] were then counted for each location, although due to limitations of space, the discussion of VEL has been left out. We created maps using *QGIS* (Development Team 2016). For statistical analyses, *RStudio* was used applying chi-square tests. More nuanced statistics such as logic regressions or linear mixed effects models will be run in the future.

Results

In this section, we present /ɪ/-VOC distribution, the change observed when *SDS* and *DÄ* are compared, and the results on social information that may help explain the retreatment and diffusion tendencies observed. For reference, Table 1 provides an overview of the 32 localities as used in the current study.

Table 1. Names of the regions used in SDS and DÄ.

Area	Regions (1-3 political communities per region)
Entlebuch (EB)	1. Entlebuch; 2. Escholzmatt; 3. Marbach; 4. Schüpfheim
Hinterland (HL)	5. Altbüren; 6. Luthern; 7. Pfaffnau; 8. Zell
Lucerne-Hochdorf (L-H)	9. Ebikon; 10. Eschenbach; 11. Hitzkirch; 12. Hohenrain; 13. Horw; 14. Lucerne
Midland (ML)	15. Beromünster; 16. Dagmersellen; 17. Grosswangen; 18. Malters; 19. Menznau; 20. Neudorf; 21. Neuenkirch; 22. Nottwil; 23. Rothenburg; 24. Ruswil; 25. Schötz; 26. Sempach; 27. Sursee; 28. Triengen; 29. Willisau; 30. Wolhusen
Mount Rigi (RG)	31. Weggis
Schongau (SC)	32. Aesch

Comparing SDS and DÄ distributions

Figure 1 shows the use of [ʊ] based on *SDS* and *DÄ* data in %. The percentage of the *SDS* data is based on the number of [ʊ] per region: if only [ɪ] occurred (as e.g. in 6), it was coded as 0%, [ɪ] and [ɨ] (as e.g. in 2 and 8) was coded as 50%, and only [ʊ] as 100%. In the 1950s, most regions in Entlebuch (EB; 1-4), Lucerne-Hochdorf (9-14), and in the north of Midland (ML; 15-30) vocalised, while the southern ML regions predominantly used [ɪ]. Surprisingly, whilst nowadays /ɪ/-VOC is used unanimously in EB (1-4), in the 1950s one region (2) is reported to have free variation between [ɨ] and [ʊ]. In the regions that are historically vocalising, /ɪ/-VOC seems to have become less frequent.

Although it spread to the southern ML regions to some extent, [ɪ] has gained ground in 2016, most notably along the eastern border (see Figure 2).

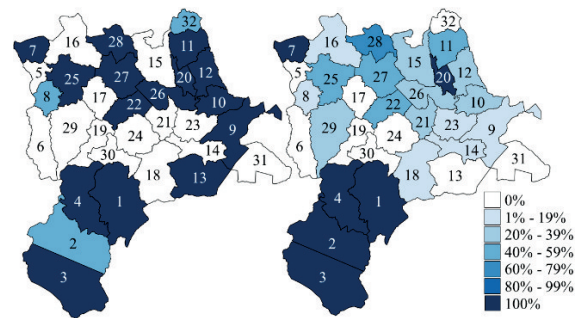


Figure 1. /ɪ/-VOC in LU in the 1950s (left; SDS) and 2016 (right; DÄ). Base map: Swisstopo.

Change by locality

Figure 2 shows the changes that have taken place in Lucerne (LU): here, we subtracted the *SDS* percentages from the *DÄ* ones, which is negative if /ɪ/-VOC has retreated, and positive if it is more frequent in 2016. We further grouped the *DÄ* data by speaker, sex, and age (<20; 21-35; 36<: each group containing approximately the same number of speakers). On balance, /ɪ/-VOC has undergone more retreatment than diffusion – especially in the eastern parts of LU (orange).

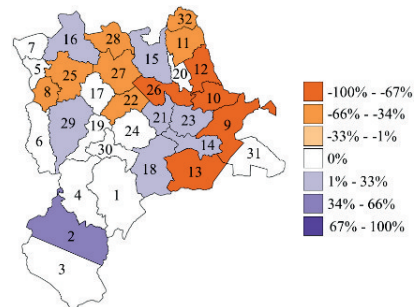


Figure 2. /ɪ/-VOC change from the 1950s to 2016. Negative numbers indicate a decrease in /ɪ/-VOC, positive numbers an increase. Base map: Swisstopo.

Effect of social categories

In all of LU in 2016, female speakers produced 23.7% [ʊ], while male speakers did so at a rate of 23.8%. No statistically significant difference in sex were found when all speakers are considered, $\chi^2(1, N = 219) < .001, p = 1.00$. We further found that 36< speakers used [ʊ] 27.3%, 20-35 ones 23.2%, and <20 ones 21.4% (not statistically significant, $\chi^2(2, N = 219) = 0.71, p = .70$). Breaking up the data (see Table 2), for the women the <20 group vocalised the least while for the men it was the 21-35 one.

Table 2. Vocalisation rates by sex and age (DÄ).

/l/-VOC	<20	21-35	36<	Overall
male	26.3%	17.2%	26.5%	23.8%
female	17.4%	27.5%	28.1%	23.7%
Overall	21.4%	23.2%	27.3%	

Discussion

Results of this study revealed that /l/-VOC has both decreased and increased – depending on the region. Before we discuss this further, however, bear in mind the different nature of data collection for *SDS* and *DÄ*. For *SDS*, the pronunciation of about 2500 words spoken by 1-3 people from each location (aged 50-70) were transcribed on an auditory basis. For *DÄ*, the speakers read recording instructions and autonomously provided their metadata in the app, amongst which was the indication of their dialect. This self-declaration can be problematic if e.g. speakers adapted their speech to a more stereotypical, and hence more prestigious dialect to avoid stigmatisation. We were therefore forced to believe the information provided by the speakers without further verification. For a more detailed discussion of the app's shortcomings see Leemann et al. 2016.

Reasons for retreatment of /l/-VOC

In most regions [ɥ] has retreated as is evident in Figure 2. This retreatment may be explained with /l/-VOC being a stigmatised “social marker” (Labov 1972) for Lucerne-city-oriented rural people. It bears social class information on the one hand, being associated with lower-class peasants, and it is perceived at a conscious level as it does not match the orthographic rules of the high prestige variety, which in this case may be Standard German (StG), or the dominant (non-vocalising) Lucerne city dialect as it is typically represented by <u> rather than <l>. When a stigmatised feature, in this case [ɥ] for /l/, meets its prestigious equivalent, the vocalising speaker might accommodate and substitute it with the prestigious segment. Increased mobility and the fact that it is more likely for rural speakers to meet urban speakers as urban areas are more populated (Trudgill 1986: 39-40) further amplify this phenomenon.

Reduced comprehensibility may also influence /l/-VOC frequency (Trudgill 1986: 21-8): given that [ɥ] is also an allophone of /u/, new homophones – which may lead to confusion on the part of the listeners – emerge. This is illustrated by a real-life example from a LU speaker

saying *Halbzeit* ‘half-time’ [ˈhaʊ̯bʦi:t], which was parsed as *Hauptzeit* ‘main time’ [ˈhaʊ̯ptʦi:t] by a (non-vocalising) Zurich listener.

Reasons for the diffusion of /l/-VOC

There are, however, some regions where [ɥ] gained ground, e.g. the city of Lucerne (14), where Leemann et al. (2014) had found 7/90 /l/s to be vocalised (7.8%) in VLLV contexts, differing only slightly from this study's findings (4/76; 5.3%). In the rest of LU, it is mainly in ML where [ɥ] was newly observed. This apparent contradiction of /l/-VOC both spreading and retreating can occur as it can be regarded as rural and stigmatised in urban areas, while it can simultaneously be perceived as a way of distinguishing oneself from the dominant urban variety in rural areas (Haas 1973: 68). Not least did Haas report rural speakers to regard /l/-VOC as a token of down-to-earthness (64), hence implying that it is linked to positive social values. This can be extended to the Standard variety: Christen (2001: 24) proposes that /l/-VOC serves as a linguistic feature to distinguish Swiss German (SwG) from StG and hence serves as a Swiss identity marker. Moreover, the media increasingly broadcast in SwG, thereby upping the amount of dialect contact with non-vocalising speakers (Leemann et al. 2014: 195). Paired with the general positive attitude towards (vocalising) BE SwG (Ris 1992: 756), /l/-VOC found fertile soil on which to develop.

Further reasons for language change

The allophonic shifts within LU could also be related to the ever-increasing mobility. As Britain has argued, although “commuting to work, moving to college, visiting family and friends, participation in the mobile tertiary sector of the economy, the mobilities that entail the consumption of goods and services, moving home and reliance on the car” seem to be rather banal everyday activities, their impact on linguistic change is not to be underestimated (2013: 490). The average distance a Swiss person travels daily has increased from 31.3 km in 1994 to 36.7 km in 2010 (Federal Statistics Office 2016: 2). Furthermore, both the number of workers commuting inter- and intracantonally has risen from 12% to 19%, and from 47% to 51% since 1990. Inevitably, dialect contact will occur, which can lead to the diffusion or retreatment of features (Milroy & Llamas 2013: 420). Mobility has the potential to influence linguistic phenomena such as /l/-VOC in both directions.

Demographic analysis

Typically, non-prestigious, stigmatised features are used more frequently by male speakers (Trudgill 1986: 42). However, this does not apply to LU SwG as the /l/-VOC rate of the two sexes are essentially the same. Age does not play a crucial role either, although a trend can be observed for younger speakers to vocalise less. This is consistent with what has been reported in Christen (1988) and Leemann et al. (2014). A reason for male speakers aged 21-35 vocalising the least might be the with n=29 still relatively low number of participants. Future research with controlled sample groups will have to explore our findings.

Conclusion

/l/-VOC in VLLV position has both lost and gained ground in LU within the last 70 years. This can be explained by the fact that vocalising /l/s is on the one hand a stigmatised feature associated with non-prestigious varieties. Simultaneously, /l/-VOC can act as an identity marker for both ruralness (in comparison with the dominant urban variety), or Swissness (in comparison with StG). Sex and age do not seem to influence the frequency as to how much a speaker vocalise, although older speaker favoured /l/-VOC more so than younger speakers. In general, except for the speakers in EB, speech communities tend to be less homogeneous than they used to be, which can potentially be linked to dialect contact facilitated by the spread of mass media and the increased mobility.

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