Quality and quantity in the West-Central-Bavarian dialect – a comparison between children and adults

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Studies in the last 20 years have pointed to various sound changes in progress by which German dialects are shifting towards the Standard German (e.g. [1],[2]). Here we investigate some of the mechanisms in this change with respect to the West Central Bavarian (WCB) dialect which differs markedly from Standard German (SG) in its pronunciation, lexicon and grammar. The focus of the study is on a WCB quantity contrast which maps non-systematically to a quality contrast in SG (e.g. [3],[4],[5]). The analysis was an apparent-time study in which WCB school children, who were re-recorded acoustically and with ultrasound, were compared with adults from the same dialect region.

The investigated contrasts were pairs like 'Besen' (*broom*) and 'Messer' (*knife*) which in SG have a quality and quantity difference in the vowel and a voiced contrast in the sibilant, thus /be:zn, mɛsə/, but a mere quantity contrast in the vowel and the following consonant in WCB, thus V:C /be:sn/ vs. VC: /mes:ə/. One of the main issues to be considered is whether there was any evidence in WCB children that this contrast was shifting towards a SG quality contrast. We further hypothesized that children might make less use of quantity for distinguishing pairs such as 'Besen/Messer' as the quality differences in the vowel begin to emerge. We also tested whether the diminished use of quantity and increased use of quality would be manifested to a greater extent in the later recordings of the children (when they were one year older) than in the first.

To test these hypotheses, 24 young (avg. age 6.5 years, 17 f, 8 m) and 21 adult (avg. age 60.6 years, 12 f, 9 m) WCB speakers were analyzed. The child recordings were obtained in two primary schools in a rural area around Munich. Parental questionnaires were used to ensure that both parents were dialect speakers from that area. Re-recordings were made from the same children one year later (i.e. at age 7-8 years). The experiment was a picture-naming task with 58 different, mostly trochaic target words (as pictures) appearing 4 times. Target sounds were vowels and diphthongs characteristic of WCB in stressed position and diverse phonetic contexts. An initial segmentation was made using forced alignment. The formant frequencies were calculated in Praat (with separate settings for children). Boundaries and formant frequencies were manually corrected. The analysis here was of three types of front vowels that are distinguished just by quantity in WCB including /i:s, is:/ ('Wiese', *lawn*, 'Schlüssel', *key*); /e:s, es:/ ('Besen', 'Messer' as above), and /a:s, as:/ ('Käse', *cheese*, 'Klasse', *class*). In the standard, these are /i:z, ys:/, /e:z, ɛs:/, and /ɛ:z, as:/ respectively. The total number of analyzed tokens for adults was 473 and for children 301.

Results showed that children made significantly less use of consonant duration, more use of vowel duration (Fig.1) and that they also distinguished quality to a greater extent in long/short vowel pairs (Fig. 2) than adults. There were however no significant differences between recordings made in year 1 and 2 for the children: instead, there were only tendencies for the potency of consonant duration to be further weakened for some of the same children when they were one year older. In general, the results show that the cues for the long/short contrast are being magnified in the vowel (through quality and a further enhancement of quantity) while those in the consonant are being diminished. We then further tested the extent to which the enhancement of the vowel (through quantity and quality) and the attrition of consonant quantity were coupled in the same children. So far, there is no evidence that these are connected. That is, there was no correlation between vowel enhancement and consonant attrition either within or between children. This result suggests that in these early stages of sound change, the earlier cues to a contrast (in this case vowel and consonant quantity) exist alongside those developing innovative cues (in this case enhanced vowel quality and quantity and diminished consonant quantity). We are currently analyzing data from the third year of

recordings (in which the children are aged 8.5 years) in order to determine whether there is evidence for the more systematic emergence of some form of trading relationship ([6]) between vowel enhancement and consonant attrition as the sound change develops.

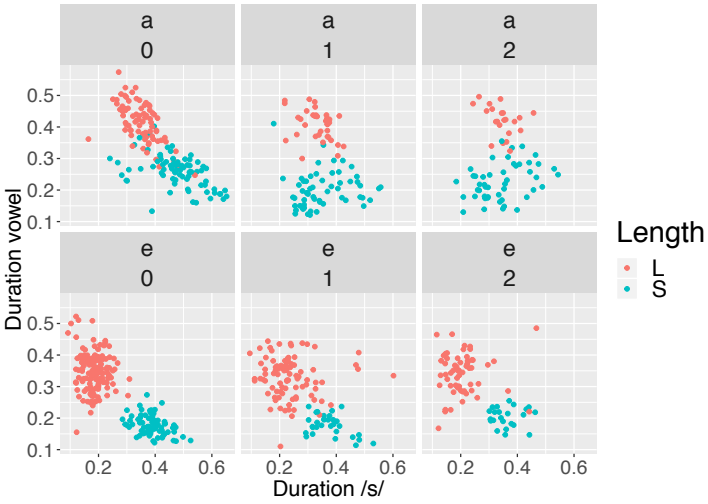

Figure 1.: *Durations of /a, e/ vowels and the following /s/ normalized for word duration. "L" are the phonological long vowels, "S" are the phonological short vowels. "0" "1" and "2" are the duration ratios of the adults, children in their 1st and in their 2nd year respectively.*

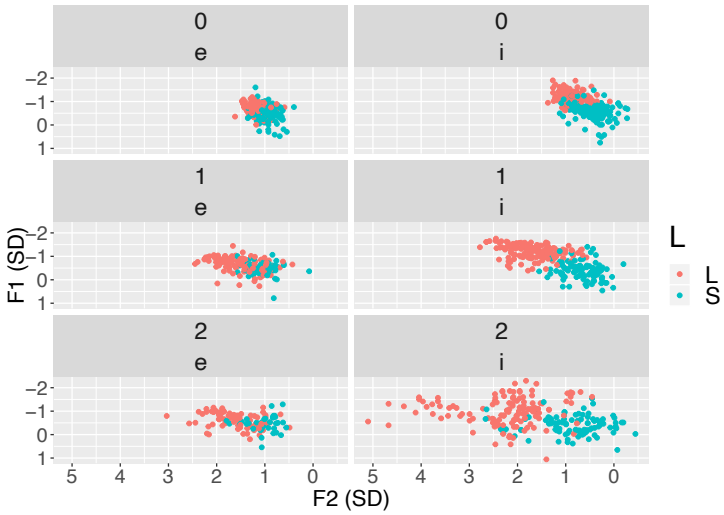

Figure 2.: *F1 and F2 in phonologically long ("L") and short ("S") /e, i/ vowels extracted at the temporal midpoint. The formant frequencies are Lobanov normalized, so the axes represent standard deviations (SD). "L" are the phonological long vowels, "S" are the phonological short vowels. "0" "1" and "2" are for adults, children in their 1st and in their 2nd year respectively.*

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