Assessing the potential of crowdsourced ‘Dialäkt Äpp’ data for research in phonetics and dialectology

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The free of charge iPhone application *Dialäkt Äpp* (Leemann & Kolly, 2013) features the following two functionalities: (1) users click on the pronunciation variants of 16 words and the application predicts their local dialect, (2) users record their pronunciation of the same 16 words, which are then uploaded on a server and displayed on an interactive map. The goal of the application is science communication to a broad public. The app has been downloaded >59’000.

As speech scientists we are now in the position to analyze the data gathered through *Dialäkt Äpp*. With the users’ consent, we retrieve pronunciation data of 16 words for thousands of dialect speakers originating from all over German-speaking Switzerland (cf. function (2) above). Until recently, traditional methods for empirical linguistic research based their analyses mostly on small sets of speakers. The use of smartphone app technology for crowdsourcing linguistic data is relatively new: smartphone applications have hitherto been used to collect speech to train acoustic models (de Vries, Davel, Badenhorst, Basson, de Wet et al., 2014) or to document endangered languages (Iwaidja Inyman Team, 2012).

The crowdscourced speech data from *Dialäkt Äpp* allows for a collection and analysis of population statistics of a number of speech signal parameters. A preliminary analysis of *Dialäkt Äpp* recordings of 115 users from Bern (city) and 205 users from Zurich (city) revealed that Bern SwG speakers speak significantly slower than Zurich SwG speakers. For 6 disyllabic words per speaker we measured the temporal duration between the two vowel onsets. We call this vowel-onset-to-vowel-onset measure *durVonVon*. In theory, this measure is motivated by Allen’s (1972) findings that vowel onsets represent perceptually prominent centers of a syllable. See Figure 1

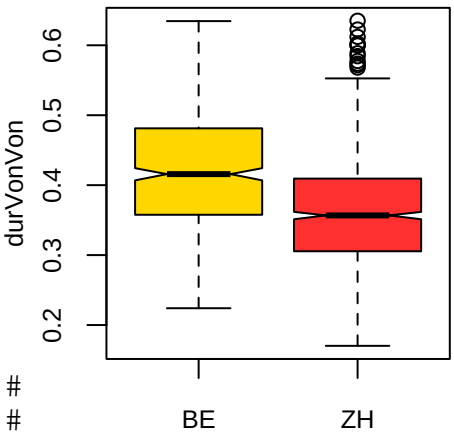

Figure 1 shows the boxplots of the two dialects’ *durVonVon* values. The longer the temporal duration between the two vowel onsets, the slower the articulation rate. The values between the two dialects are significantly different. The durational information contained in a few words alone discriminates the two dialects (cf. Leemann, Kolly & Dellwo 2014). In this presentation, we will use this example of articulation rate differences to illustrate the potential of *Dialäkt Äpp* speech data research in phonetics.

Figure 1: *Boxplots of the dialects’ durVonVon.*

With the *Dialäkt Äpp* corpus, we are now able to study the areal distribution of variants and create maps of areal variation, or quantify distances between different dialect regions, such as it has been done for varieties of American English (Katz, 2013) and German (Lameli, 2013; Elspass & Möller, 2003–2014). The *Dialäkt Äpp* data can additionally be compared to areal distributions documented in the *Linguistic Atlas of German-speaking Switzerland (SDS).* This enables a comparison of the dialectal landscape documented in the 1940s to that of 2013 and thus to study sound change phenomena.

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