Bilingual acquisition of voicing categories:  
Do bilingual children mirror their bilingual parents?

Bilinguals have to acquire more phonological categories than monolinguals, and use the appropriate categories in each language. This task is especially intricate when the bilingual’s two languages divide the same phonetic continuum differently into phonological categories. Examples are the phonological categories 'voiced' and 'voiceless' that languages space differently along the phonetic voice-onset time (VOT) continuum. Dutch contrasts phonetically prevoiced plosives with phonetically short lag plosives to realize the phonological voiced-voiceless contrast, whereas German contrasts phonetically short-lag with aspirated plosives for the voicing distinction. Bilingual children produce such voicing categories differently than monolinguals (e.g., Fabiano-Smith & Bunta, 2012; Kehoe, Lleó & Rakow, 2004, and references therein). Non-native productions in bilinguals are often accounted for in terms of negative transfer (cf. Goldstein & Bunta, 2012), which suggests that the bilingual acquisition process is qualitatively different from monolingual acquisition. In order to understand this seemingly different developmental trajectory, the following questions need to be answered: Do bilingual children differ from monolinguals in their production of VOT in both languages? Can the phonological properties of bilingual children’s speech be related to frequent exposure to non-native and attrited speakers?

This study investigates the production of plosives in Dutch-German simultaneous bilingual children (3;6 – 6;0) and their sequential bilingual parents. Child productions were elicited in an interactive book reading task and a picture-naming game in both languages. Parental productions in L1 and L2 were elicited through picture naming. Ongoing data collection of a total of 99 bilingual and monolingual children and their parents will be finished in the next few months. Data will be analyzed using multilevel regression analysis, taking into account detailed measures of language exposure and speech perception.

The first results of nine bilingual and 30 monolingual children (25 Dutch) indicate that bilinguals produced longer VOTs in Dutch and shorter VOTs in German as compared to their monolingual peers. This divergence from monolingual patterns could be explained as a result of negative transfer (Goldstein & Bunta, 2012). Our results also indicate that bilingual children nevertheless differentiate their VOTs by language: They use overall shorter VOTs in Dutch than in German (see Figure 1), a result counting against negative transfer only. We further performed a phonetic analysis on the language input that the bilingual children receive from their parents (n=15), each of whom is an L1 speaker of one language and an L2 speaker of the other. In both L1 and L2 German the parents, all of whom used Dutch more frequently than German, produced shorter VOTs than monolingual German adults (n=4), and used more aspiration in L2 Dutch than monolingual Dutch adults (n=24). As found in the child productions, the parents differentiate their VOTs by language, using shorter VOTs in Dutch than in German. The children’s shorter VOTs in German and longer VOTs in Dutch compared to monolingual children are in line with their parents’ articulation (see Figure 2).

These results suggest that simultaneous bilingual children may not suffer from negative transfer between their languages: Their non-native outcome can be explained by their language input.
Figure 1. Average VOTs in ms by language background of the children. Dutch 2L1 and German 2L1 are the same children tested in different sessions.

Figure 2. Average VOTs in ms by language in bilingual children and their parents. Each individual provides data in both languages (L1 Dutch and L2 German are the same individuals).

References
