

## L1 and L2 processes in speakers with sensorineural hearing loss

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Individuals with Sensorineural Hearing Loss (SNHL) have impaired perception and production of speech sounds. They perceive sounds with a higher detection threshold, their perception of sound frequencies and resolution is limited, and the intensity of dynamic range of sounds is narrowed (Boothroyd 1986; Moore 1995; Jürgens, Brand and Kollmeier 2009). In particular, individuals with SNHL have problems with sibilant sounds (Pittman and Stelmachowicz 2000; Halpern and Tobin 2008). This is especially true in languages which have many sibilant phonemes, e.g. Polish. Polish has twelve sibilants that are articulated in relative proximity. In our previous study (Marecka and Połczyńska 2009) we found that Polish individuals with SNHL frequently produce sibilants with an off-shot leading to a general merger of sibilant phonemes. We proposed to name this processes 'sibilant imprecision'. We also observed that individuals with SNHL frequently centralise vowels. This process might be caused by the fact that vowels lack tactile cues that are present in the production of e.g., stop consonants that are produced relatively well by the SNHL population. We hypothesise that individuals with SNHL should apply more processes in the second language (L2, English) than in the first language (L1, Polish), especially if proficiency level of L2 is low. At the same time, we expect that the two most common processes used by Polish individuals with SNHL – sibilant centralisation and vowel centralisation – should be used with a similar frequency of occurrence in L1 and L2. We investigated three native speakers of Polish (two females and one male) with SNHL. There was one subject (S1) with moderate SNHL and two with profound SNHL (S2 and S3). S1 acquired SNHL at the age of 7 months, whereas S2 and S3 suffered from a congenital SNHL. The average age of the participants was 24,6 years (SD=3,39). L2 proficiency level was assessed with *The Clinical Test of Proficiency in English as the Second Language* (Połczyńska 2009). S1 was a pre-intermediate speaker, S2 – intermediate and S3 – elementary. The subjects performed the *Polish Dysarthria Test* (Połczyńska-Fischer and Pufal 2006) and *English as the Second Language Test in Dysarthria* (Połczyńska 2009). Their speech was recorded, analysed acoustically with PRAAT, and transcribed. The results show that the subjects used on average 17,6 types of phonological processes in L1 and 26,6 types of processes in L2. As expected, among these processes, two were applied particularly frequently by all the subjects: sibilant centralisation (the process constituted 30,3% of all the processes applied in L1 and 28% in L2) and vowel centralisation (28,5% of all the processes applied in L1 and 26,8% in L2). We found that proficiency level affects the frequency and number of occurrence of processes in L2. S1 and S3 who were much less proficient in their L2 than S2 had more processes in L2. The results also indicate that the participants used significantly more processes in word-medial position which is less cognitively salient than in word-initial and word-final positions (52,8% of occurrence in L1 and 46,4% in L2).

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