

Cluster modification processes in first language acquisition: the case of English and Polish

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Consonant clusters are rare in the languages of the world Maddieson (2006). Numerous studies report that consonant sequences are marked (Lass 1984), less natural than CV sequences (Stampe 1969, Donegan – Stampe 1979), unstable in the history of a language (Schreier 2005 and references therein, Lutz 1991), in connected speech of native speakers (Shockey 2003) as well as in second language acquisition (Broselow 1984). The field of first language acquisition is no different in this respect. Children simplify clusters by means of an array of mechanisms that they have at their disposal (Menn 1986, Fikkert & Freitas 2004, Lleó & Prinz 1996, Chervela 1981, Milewski 2005).

The present paper reports on the results of a study investigating cluster modification strategies applied by children in the process of first language acquisition, and is part of a larger longitudinal study investigating the development of English and Polish phonotactics and morphonotactics in children.

The aim of the paper is twofold. Firstly, I will present alternative (alternative equals ‘other than segment deletion’) strategies of cluster modification applied by the English and Polish subjects and their frequency of application (also in comparison to segment deletion). The English data come from the transcripts of an American child, William, whose speech was recorded and analysed between the age 1;7 and 3;4. The most common processes affecting the clusters of the American English subject included assimilations, gliding, stopping, obstruent final devoicing as well as other substitutions unrelated to the aforementioned developmental processes. The data also feature several instances of prothesis, vocalic and consonantal epenthesis, metathesis, syllable insertion, syllable deletion as well as, rather unpredictable but already reported on (Milewski 2005), cluster extension. The Polish longitudinal data come from the recordings of a Polish child, Zosia who was recorded between the age 1;7. and 3;2. The Polish child applied several alternative cluster modification strategies, namely the softening of hard consonants, assimilation, syllable deletion, metathesis, consonant harmony as well as several examples of irregular substitutions resulting from the momentary lack of articulatory coordination.

Secondly, I will focus on substitutions of all sorts affecting consonant sequences to verify whether the consonant clusters obtained after the change turn out to be less marked than the target clusters. In other words, I will answer the question whether by changing the content of the clusters children improve consonant sequences in terms of their markedness.

In the present study markedness is defined and interpreted within the Beats-and- Binding model of phonotactics proposed by Dziubalska-Kołaczyk (2002). The model is based on the Net Auditory Distance (the NAD) principle, which predicts the preferred/dispreferred status of a cluster. The NAD between two sounds can be defined in terms of a metric on threedimensional space spanned by phonetic properties: manner of articulation (MOA), place of articulation (POA) and voicing characteristic (Lx).

$$\text{NAD} = \text{MOA} + \text{POA} + \text{Lx} \cdot 2$$

These three values when added indicate the status of a cluster: preferred or dispreferred. For instance, the NAD for a preferred initial double cluster is defined below:

$$\text{NAD}(\text{C1}, \text{C2}) \geq \text{NAD}(\text{C2}, \text{V})$$

(the condition reads: the net auditory distance between the two consonants should be greater than or equal to the NAD between the second consonant and the vowel). Similar conditions can be formulated for medial and final doubles (and triples).

The distances between segments are estimated by means of a phonotactic calculator, developed by Dziubalska-Kołaczyk and Krynicki (2007). Thus all the substituted clusters (as well as the target clusters) will be evaluated according to the NAD to reveal whether the clusters modified by the children are less marked in their altered form than in their target form.

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