

Substitution of dental fricatives in English by Dutch L2 speakers

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Abstract

This paper investigates the nature of the substitutions used for the dental fricatives (/θ/ and /ð/) by Dutch learners of English as a second language. By means of an OT analysis, the underlying reasons for the difficulties encountered with these sounds are brought to light. The present data reveal that phonetics (or acoustics) rather than phonology plays a major role in the selection of the phonemes used to substitute the dental fricatives.

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Keywords: Second language acquisition; Optimality theory; Phonetics; Phonology; English

1. Introduction

Although the general level of English by Dutch learners tends to be high, these learners commonly find it difficult to master some of the sounds of English. Probably the most notorious sounds in this respect are the dental fricatives. Although in recent discussions about pronunciation pedagogy the dental fricatives are generally regarded as relatively unimportant for intelligibility (see, for instance, [Jenkins, 2000](#)), many learners of English experience

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these sounds as problematic in production (and perception). In the empirical study reported on in this paper, it turned out that indeed very few learners produce target-like realisations of these sounds. However, in this paper we will not address the question whether learners of English produce target-like realisations of these sounds or not. Instead, we will argue that a more profound insight into this matter can be gained by accounting for the substitutions produced. This approach will lead to a qualitative inventory of possible influences affecting the phonology of a second language. The framework that we regard most suitable to weigh the relative importance of the possible influences is OT (Optimality Theory; Prince and Smolensky, 1993), as in OT all factors can be captured by constraints and the most optimal output (for a particular speaker at a particular moment in time) is determined by the ranking of the constraints. We have adopted a non-modular view of OT, in which phonetic (concerning the physical characteristics of speech sounds) and phonological influences (concerning the characteristics of speech sounds as how they function in the language system) interact at the same level, similar to a connectionist model (cf. Gilbers, 2002).

In OT terms, acquiring a language involves the setting of a specific ranking of universal constraints. This implies that in learning a second language one has to learn a new constraint ranking. In either case, the unfamiliar sounds and sound combinations must be optimised to enable speaking the new language. Since Dutch speakers of English experience the production of target-like realisations of the sounds /ð/ and /θ/ as rather difficult, the constraints that would ensure an output identical to the input /ð/ and /θ/ are dominated by constraints that prohibit these sounds as optimal output. The exact nature of these constraints and the reason for this hierarchy may be based on cross-linguistic influence or may be guided by developmental factors. Due to cross-linguistic influence, the interfering ranking of the learner's first language precludes native-like realisations of sounds. Developmental factors may affect the production of the target sounds due to their relative MARKEDNESS.

The central research question in this paper is which realisations Dutch learners of English use for dental fricatives and how these realisations can be accounted for. To investigate this, we have taken three steps. First, we examined what second language acquisition research can tell us about the phonological behaviour of Dutch L2 learners of English. Next, we have investigated the production of dental fricatives of 20 Dutch learners of English in three situational contexts. Finally, we have rendered an OT-account of the actual realisations the learners produced. In this paper we will discuss these stages and draw conclusions including implications for the field of second language phonology.

2. Acquisition and substitution of L2 sounds

2.1. *Acquiring a second language sound system*

In the past few decades, several proposals have been formulated to account for the acquisition of a second language sound system. A major focus in this research area has been the relationship between similarity and dissimilarity of sounds in L1 and L2 phonology. Early ideas that the degree of difficulty of L2 sounds can be predicted by the differences between L1 and L2 based on a contrastive analysis (cf. Stockwell and Bowen, 1965; Brière, 1966), were refuted when it was discovered that the development of L2 phonology could not accurately be predicted by exclusively considering the differences between the L1 and the L2 phonological system. Similarly, it turned out to be impossible to attribute the difficulty of acquiring an L2 sound system to developmental factors alone; many studies

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