Vowel perception in foreign language learning: An empirical study in the framework of Natural Phonology

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The languages of the world show a great variety of vowel systems. Vowel systems differ in respect to their size and the quality of their elements. Although there seem to be preferences for some regions of the phonetic and acoustic vowel space crosslinguistically, vowels show a wide range of phonetic variety. Even identical vowel phonemes in compared languages often differ to a great extent in phonetic details. The size and quality of sound systems and their language-specific phonetic characteristics also influence the process of learning another language. The acquisition of the L2 sound system is influenced by the L1 system in perception and production.

This paper presents the results of a study on the perception of German vowels by 160 learners of German from 8 different native languages (Albanian, Arabic, English, Hungarian, Polish, Rumanian, Serbo-Croatian, Turkish) and describes their difficulties in the perception of German vowels. A vowel identification test shows instances of language- specific misperception and confusion within vowel categories. It also shows that, cross-linguistically, some German vowels seem to be specifically difficult to learners and tend to be substituted more often by other vowels.

Natural Phonology predicts that "difficult" vowels usually undergo phonological substitution processes. Their aim is to eliminate difficult features and to replace them with vowels which are easier to pronounce and to perceive. The assumption of substitutions caused by natural phonological processes is the basic assumption of this study. In learning a foreign language the learner has to modify the L1 process inventory and find the appropriate combination of limitation and suppression of processes that are characteristic for the target language. "Wrong" production, i.e. deviations from the L2-norm or articulatoric approximations, as well as misperceptions, i.e. wrong identifications are explained by universal phonological processes resulting in sound substitutions.

It is assumed that natural phonological processes are universal and work in perception and production. Natural processes vary language-specifically but within strictly defined limits. These limits are provided by implicational hierarchies that correspond to the susceptibility of single segments to processes (e.g. a lower labiopalatal vowel will be more susceptible to delabialization than a higher labiopalatal vowel). The results of the present study show that some vowels are affected more often by substitution processes than others. This reflects universal implicational hierarchies that are valid for natural vowel classes within a given language as well as crosslinguistically.