Voicing assimilation in Catalan and English obstruent sequences
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The study of assimilation has implications for crucial theoretical issues. A detailed analysis of assimilation may indicate how languages differ, if they do, in the phonetic realization of alleged phonologically equivalent sequences of sounds. Secondly, the identification of differences of phonetic implementation also has implications for second language learning, since they can be used to predict potential errors of transfer from L1 to L2. The present study intends to analyze the process of voicing assimilation across different speaking rates in Catalan and English. More specifically, it aims at observing and characterizing voicing assimilation when two consonants that have a different phonological specification for voicing occur across word boundaries. Furthermore, this study intends to evaluate current descriptive frameworks, in order to see how they account for the data obtained in the experiment. An experiment was carried out using simultaneous acoustic, electropalatographic and electroglottographic data. The material consisted of meaningful two-word sequences of 4 types: 1) Obstruent sequences where C1 was phonologically voiceless and C2 was phonologically voiced, e.g., ‘fat gap’, 2) Obstruent sequences where C1 was phonologically voiced and C2 was phonologically voiceless, e.g., ‘sad cap’, 3) Sequences of sonorant plus voiceless obstruent, e.g., ‘full cap’, and 4) Sequences of voiceless obstruent plus sonorant, e.g., ‘thick lap’, as well as control sequences. It was found that in Catalan obstruent sequences speakers tend to anticipate the voicing gesture of C2 to C1, both in stop sequences and in fricative-stop sequences. The process is regressive and categorical and does not depend on speaking rate, which is congruent with a rule of voicing assimilation in Catalan. Evidence was also found that speakers can display partial anticipation of the voicing gesture of C2, which shows that voicing assimilation may also be a gradient process in this language. Thus, the voicing assimilation rule seems to be optional. In English, it was found that the coordination of oral and glottal gestures during the maximal constriction is a gradient process that may result from anticipatory overlap sensitive to time constraints and inertial effects. Thus, there is no phonological rule of voicing assimilation in English obstruent sequences. In sequences of consonants where nasals and laterals combine with obstruents, the voicing gesture seems to be switched at the transition from C1 to C2 in both languages. In addition, evidence was found for complete assimilation of voicing in Catalan obstruent-sonorant sequences, suggesting the extension of the regressive voicing assimilation rule for obstruents to these sequences, at least for some speakers. It is argued that an adequate model of phonetic implementation should explain the variability observed and also the constraints that are at work in both languages. The Catalan and English data obtained in this experiment seem to show that the range of assimilatory phenomena observed stem from the same source – gestural overlap and overlap of motor commands due to faster speaking rates or other time constraints, but they may reflect two synchronically different processes. At one end, mechanical gestural overlap and increased speaking rate may result in varying degrees of voicing assimilation (including complete assimilation). At the other end, these phonetic tendencies may have been encoded in a higher-level reorganization of motor commands or a categorical process.
References


