Mid-year report 2017

Stefano Coretta

January 13, 2017

Contents

1 Introduction

1.1 Previous research

The duration of vowels has been shown to be correlated with the presence vs. absence of voicing in the following consonant in a variety of languages. House & Fairbanks (1953) noticed that, in English, vowels followed by voiceless consonants are on average XXX ms shorter than vowels followed by voiced consonants. This phenomenon has been thus called the "voicing effect." Other languages, like French, Spanish, Swedish, Arabic and Hindi, have been later found to show the voicing effect. While several languages are ...—although in different sizes and consistency—the voicing effect does not seem to be universal. For example, the duration of vowels in Polish is not affected by consonantal voicing.

For what concerns the causes of the voicing effect, different authors proposed different explanations. These can be classified in two main categories (Sóskuthy 2013): explanations that assume the source of the voicing effect to be in the realm of perception, and those that ascribe such phenomenon to articulatory properties of vowel-consonant sequences. Regarding the perception side of the contention, Javkin (1976) notes that the acoustic transition between vowels and voiced stops is gradual and does not involve a sudden boundary as with vowels followed by voiceless stops. He thus argues that the voiced portion of the consonant is perceived by the hearer to be part of the previous vowel.

1.2 Research hypothesis

2 Methodology

2.1 Design

The objective of the experiment is the simultaneous acquisition of audio, ultrasound tongue imaging and electroglottography recordings of spoken words. Participants are asked to read sentences from a computer screen, while audio recordings, ultrasound videos, and electroglottography (EGG) recordings are acquired separately. Post-processing allows synchronisation of audio, ultrasound and EGG recordings, which enables a time-aligned account of the acoustic and articulatory components of the participants' speech.

2.2 Participants

2.3 Materials

2.4 Procedure

2.5 Analysis

3 Preliminary results and discussion

References

House, Arthur S. & Grant Fairbanks. 1953. The influence of consonant environment upon the secondary acoustical characteristics of vowels. *The Journal of the Acoustical Society of America* 25(1). 105–113.

Javkin, Hector R. 1976. The perceptual basis of vowel duration differences associated with the voiced/voiceless distinction. *Report of the Phonology Laboratory, UC Berkeley* 1. 78–92.

Sóskuthy, Márton. 2013. *Phonetic biases and systemic effects in the actuation of sound change*: University of Edinburgh dissertation.