

# Short vs long vowels: A kinematic analysis of labial gestures of Frignanese

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## ABSTRACT

In this study we review current issues related to the dichotomy between quantity and syllable-cut languages [1],[2]. Such distinction is first illustrated by means of some major European languages, mainly Standard German, and then applied to some data from Frignanese, an Italo-Romance variety spoken in Northern Italy. In this dialect vowel duration contrasts are accompanied by some minor quality differences. According to acoustic investigations of duration differences [3], the average V/V: ratio is 46%, whereas consonant durations after short and long vowels are virtually the same. We argue that Frignanese shares some of the typical characteristics of a syllable-cut language. One crucial fact is the role of word stress, dynamic in nature, on which the vowel duration contrasts depend both in Standard German and in Frignanese. Another property is the presence in this dialect of the so-called close contact (or abrupt syllable-cut) between the short vowel and the following consonant, which is similar to the Standard German setting.

On the other hand, in this contribution we present and discuss an articulatory analysis recently carried out [4]. The production of the Frignanese vowel duration contrasts is investigated by means of an optoelectronic system called ELITE. The analysis is focused on the four pairs /e, ø, o, a/ and /e:, ø:, o:, a:/ preceded and followed by the consonant /p/ in both /CV(:)C/ and /CV(:)CV/ words. The kinematic measures show that the duration contrast is mainly implemented by the opening gesture. The short vowels, compared with the long ones, are characterized by an opening gesture displaying significantly lesser duration, smaller amplitude, and greater velocity. We point out some interesting results which support the hypothesis of a vowel shortening process in Frignanese. First, the data show that the relationship between the acceleration and the deceleration phase is clearly different for short vowels on the one hand and long vowels on the other. For instance in the case of the opening gesture of the short vowels, the duration is significantly greater for the acceleration than for the deceleration phase. This finding can be accounted for by intergestural timing mechanisms. We believe that the smaller duration of the deceleration phase of the opening gesture (C-to-V) is due to an earlier onset of the subsequent closing gesture (V-to-C) [5]. This hypothesis is further strengthened once another important parameter is examined, namely the percentage of the complete cycle lying between the peak velocities of the opening and closing gestures. The following values are found: 34.43% in /CVC/ vs 54.98% in /CV:C/ and 35.18% in /CVCV/ vs 51.74 in /CV:CV/. This temporal difference too can be explained by the theory of intergestural coordination, which focuses on the relative phasing and the extent of overlap between two gestures[5]. The values found in short vowels reflects a decrease in duration which occurs because the closing gesture is phased earlier and cuts off the preceding opening gesture.

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