THE LINGUISTIC RHYTHM OF FRIULIAN: FIRST DATA

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ABSTRACT

This paper aims at determining the position of Friulian, a Rhaeto-Romance language, in the rhythmic continuum. In order to do so, we collected data from 18 speakers of three languages: 6 speakers of Central Peninsular Spanish (a prototypical syllable-timed language), 6 speakers of Southern British English (a stress-timed language), and 6 speakers of Northern Friulian. The data were analysed acoustically by means of *Praat*. Statistical analyses were carried out with *Correlatore*. Global rhythm metrics (ΔC, ΔV, %V, varcoΔC and varcoΔV) suggest that Friulian is definitely not a syllable-timed language. While some metrics (ΔC, ΔV, varcoΔC, varcoΔV) seem to suggest that it is a stress-timed language, %V raises the question whether it could be a mora-timed language.

Keywords: suprasegmental phonetics, prosody, rhythm, Friulian

1. INTRODUCTION

In the supra-segmental phonetic field, languages are classified according to their rhythmic properties in a continuum ranging from a pole in which stress-timed languages (such as British English and other Germanic languages) are located to a pole in which the syllable-timed languages are found (including the Spanish variety spoken in the central part of the Iberian peninsula, but also several other Romance languages) (Lloyd James, 1940; Pike, 1945; Abercrombie, 1967). The position of each language in this continuum seems to be determined by its phonological characteristics. In this sense, stress-timed languages show complex consonant clusters and vocalic reduction processes, while syllable-timed languages are characterized by simpler consonant clusters and by the absence of vowel reduction processes (Dauer, 1987).

The general purpose of this study is to determine the position of Friulian in the aforementioned continuum, while the specific objective is to verify experimentally the hypothesis that can be formulated on the basis of the phonological features of the language in question.

In the following pages, we shall first offer a short overview of the phonological features of Friulian that can determine its position in the rhythmic continuum (Section 2). In section 3 we shall summarize the most important methodological aspects. Section 4 contains a description of the results, while Section 5 puts forward some conclusions.

2. CHARACTERISTICS OF FRIULIAN

Friulian is the Easternmost Rhaeto-Romance language and it is spoken in Friuli (Figure 1), a region in Northern Italy, by roughly half a million people.

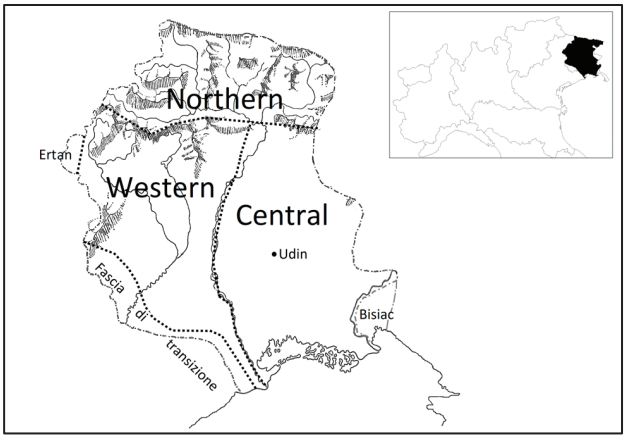

Figure 1: Map of the Friulian-speaking area, with the indication of the main dialects.

2.1. Vowels

Unlike most Romance languages, Friulian displays a contrast between long and short stressed vowels (e.g. [ˈbruːt] 'daughter in law' ~ [ˈbrut] 'ugly') (Hualde, 1990; Prieto, 1992; Iosad, 2012; Torres

Tamarit, 2012, 2014). Figure 2 contains an illustration of the stressed vowels of Friulian.

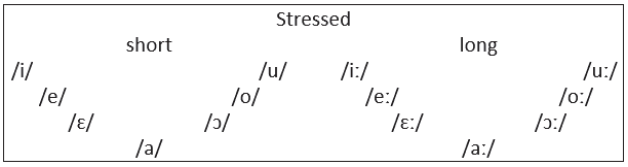

Figure 2: Stressed vowels of Friulian.

This feature, like Dankovičová and Dellwo (2007) put forward for Czech, is likely to have effects on rhythm. Since a contrast between long and short vowels implies a higher variability among vocalic intervals, we expect Friulian to be possibly closer to stress-timed languages than to syllable-timed languages.
In addition, Friulian shows vowel reduction, insofar as unstressed vowels are shorter than stressed vowels, and the ratio is 5:9 (Roseano, 2012, p. 107). Since vowel reduction is believed to be a characteristic of stress-timed languages, Friulian seems to be close to such languages from the point of view of vocalic intervals.

2.2. Consonants

Previous studies (Finco, 2015) show that Friulian has a variety of syllable structures (Table 1).

Table 1: Frequency (in 5) of the different syllable structures in Friulian.

Syllable type	Frequency
CV	53.973 %
CVC	21.872 %
V	10.372 %
VC	4.977 %
CCV	3.892 %
CCVC	2.146 %
CVCC	1.323 %
CCVCC	0.818 %
CCCV	0.370 %
CVCCC	0.074 %
VCC	0.052 %
CCCVC	0.043 %
CCVCCC	0.030 %
CCCVCC	0.021 %
VCCC	0.017 %
CCCVCCC	0.013 %

The presence of complex syllable structures (like CCCVCCC, e.g. in [ˈʃtrents] 'tightened.pl') has led some authors (Roseano, Vanrell, & Prieto, 2015) to suggest that Friulian could be rhythmically closer to stress-timed languages like English (and in general of Germanic languages) than to Romance languages such as Spanish.

2. METHOD

In order to determine the position of Friulian in the rhythmic continuum, we collected data from 18 speakers of 3 languages (6 of Central Peninsular Spanish, 6 of Southern British English, 6 of Northern Friulian). Central Peninsular Spanish and Southern British English are the prototypical syllable-timed and stress-timed language, respectively, and will be taken as reference marks to establish the position of Friulian in the continuum.
The texts used are the respective versions of *The North Wind and the Sun*. The reading of the text took approximately 30 seconds for each informant. Speakers were recorded by means of a Maranz PMD671 digital recorder connected to a Shure SH58 microphone.
Praat (Boersma & Weenink, 2019) was used to annotate the vocalic and consonantal intervals of the recordings.
The duration of these intervals is the starting point for calculating some of the classical rhythmic parameters: ΔC and %V, ΔC and ΔV (proposed by Ramus, Nespor, & Mehler, 1999), varcoΔC and varcoΔV (proposed by Dellwo & Wagner, 2003). The metrics in question were calculated and plotted using *Correlatore* (Mairano & Romano, 2010; Mairano, 2011), a statistical software specifically designed for the analysis of rhythm.

3. RESULTS

3.1. ΔC and %V

The first combination of metrics suggested by Ramus et al. (1999) is ΔC and %V. It is worth reminding that ΔC is the standard deviation of the duration of consonant intervals. Linguistically, ΔC is related to the presence of complex syllabic structures (onsets and codas with several C). Typologically, stress-timed languages such as English have a high value of ΔC, while syllable-timed languages such as Spanish have a low value of ΔC.
On the other hand, %V is the percentage of vocalic intervals in the recording. Linguistically, according to Ramus et al. (1999), V is related to both phonological characteristics: with the presence of complex syllabic structures and with the presence of vowel reduction. Typologically, stress-timed languages such as English

have a low value of %V, while syllable-timed languages such as Spanish have a high value of %V.
The graph in Figure 3 (where bars show the standard deviation among the speakers of the same language) shows that Friulian is halfway between Spanish and English when we consider ΔC.
The interpretation of %V is more problematic, because our data suggest that Friulian displays a rather high value that, according to Ramus et al. (1999), is typical of mora-timed languages like Japanese.

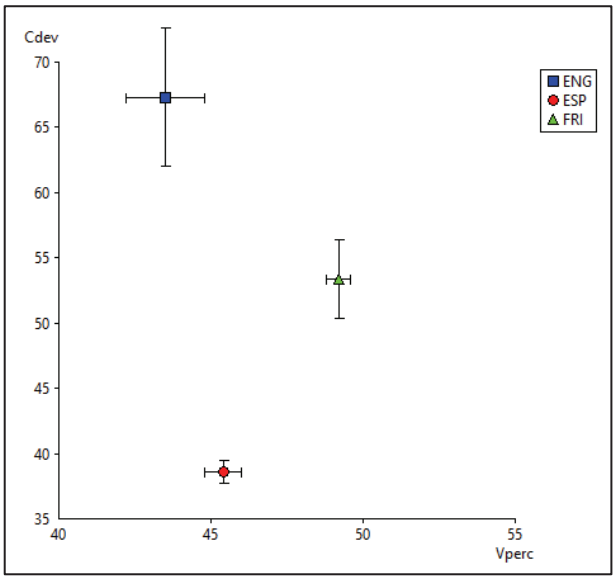

Figure 3: Mean values and standard deviation of ΔC and %V for English (ENG), Spanish (ESP) and Friulian (FRI).

3.2. ΔC and ΔV

The second combination of metrics suggested by Ramus et al. (1999) is ΔC and ΔV. The meaning of ΔC has already been explained in Section 3.1. On the other hand, ΔC is the standard deviation of vocalic intervals. Linguistically, ΔV is related to the phenomenon of vowel reduction. Typologically, stress-timed languages such as English have a high value of ΔV, while syllable-timed languages such as Spanish have a low value of ΔV.
The graph in Figure 4 shows that Friulian, in addition to having an intermediate ΔC value (as already seen in Section 3.1), displays a very high ΔV value, which is higher than English. According to this metric, thus, Friulian would then be definitely stress-timed.

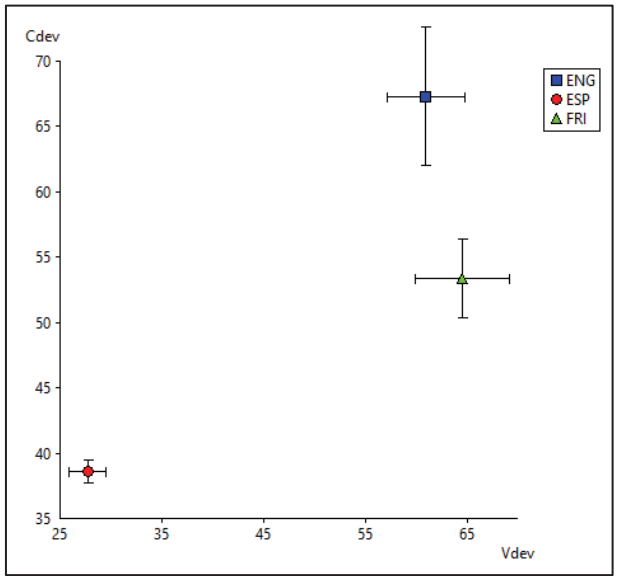

Figure 4: Mean values and standard deviation of ΔC and ΔV for English (ENG), Spanish (ESP) and Friulian (FRI).

3.3. varcoΔC and varcoΔV

The metric that was first used by Dellwo and Wagner (2003) is a version of ΔC and ΔV normalised by speech rate. In our data, the differences between ΔC/ΔV and varcoΔC/varcoΔV are not noteworthy. The data plotted in Figure 5, in fact, confirm what we have already observed in Figure 4: Friulian shows varcoΔC values that are intermediate, i.e. between Spanish and English, while varcoΔV values are even higher than in the case of English.

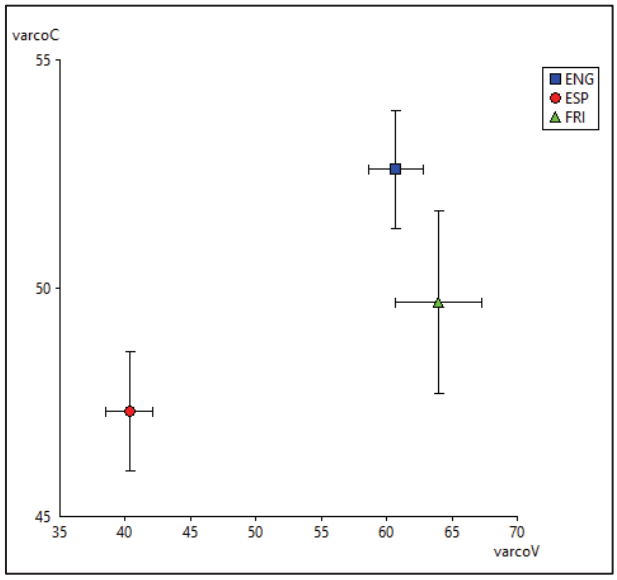

Figure 5: Mean values and standard deviation of varcoΔC and varcoΔV for English (ENG), Spanish (ESP) and Friulian (FRI).

4. DISCUSSION AND CONCLUSIONS

The general objective of this paper was determining the position of Friulian in the rhythmic continuum, while the specific objective was testing empirically the tentative hypothesis by Roseano et al. (2015), according to which Friulian was closer to stress-timed languages than to syllable-timed languages.

The analysis we carried out (which is based on different kinds of so-called *global* metrics of rhythm, like ΔC, ΔV, %V, varcoΔC and varcoΔV) does not give a clear-cut answer to these questions.

As far as vocalic intervals are concerned, Friulian shows %V values that differ from both stress-timed and syllable-timed languages, and are closer to mora-timed languages. If we consider the other two vocalic metrics (ΔV and varcoΔV), Friulian seems to be definitely stress-timed, like English.

Both ΔC and varcoΔC (which measure the variability of consonants) suggest that Friulian lies in an intermediate position between Spanish and English (although slightly closer to the second).

In sum, we can conclude that 1) Friulian is actually rhythmically distant from syllable-timed languages like Spanish, but 2) it is not clear whether it is closer to stress-times languages like English, to mora-timed languages like Japanese, or if it lies in an intermediate position.

To solve these doubts, future research is needed in two directions. On one side, one will need to include in the analysis data of Japanese, in order to check whether this language and Friulian share any rhythmic features. On the other hand, one will have to explore the results provided by the so-called *local* metrics (like rPVI and nPVI suggested by Grabe & Low, 2002).

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