VOWEL DURATION IN STRESSED POSITION IN CENTRAL & NORTHERN VARIETIES OF STANDARD ITALIAN: A PILOT STUDY

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ABSTRACT

We report the results of a pilot study investigating the effect of 2 regional accents on stressed vowel duration according to word-position and syllable type in Central v. Northern accents of Standard Italian. While there is overall convergence, we also find significant regional differences in some contexts, i.e. closed syllables, and antepenultimate position. We then consider the implications of our results for the phonological description and phonetic investigation of Italian.

Keywords: Italian, vowel duration, syllable compression, stress, lengthening, regional variation

1. INTRODUCTION

The principal aim of this study is to examine the possible difference in effect of 2 regional accents on the duration of stressed vowels in a range of inter-related prosodic contexts in Italian. We consider specifically interaction between accent and the following factors: (a) syllable structure (open vs. closed syllables); and (b) relative stress position in the word (final vs. penultimate vs. antepenultimate syllables).

Although the duration effects of temporal structure have been previously investigated for Italian, e.g. [2, 3, 5, 11, 12], with the exception of [4], interaction with different regional accents has been overlooked. This omission is somewhat surprising given the extent of regional variation on the pronunciation of Standard Italian, even amongst highly normative speakers. With few exceptions, it is usually possible to accurately identify the accent of a native speaker of Italian according to at least supra-regional level (Northern, Central or Southern), and even down to a more localized sub-regional level. This situation reflects the strong regional influence of local Italo-Romance dialects on of Standard Italian in Italy. While many speakers are now monolingual in Standard Italian only, regional, if not local, influence on their spoken accent is still normally evident (see also below).

1.1. Previous experimental investigation of Italian temporal structure and vowel duration

Many aspects of the temporal structure, especially of stressed vowels, in Italian, remain uncertain and/or debated (see also [4, 5]). For instance, there is disagreement as to the extent, if any, of word-level compression effects on stressed vowel duration (see [12] for overview). However more recently, [2, 5] and [12] have confirmed a regular phonetic compression effect as post-tonic syllables are added, at least in a comparison between penultimate and antepenultimate stress ('CVCV and 'CVCVCV). There is, in general, less, and often conflicting, information on compression effects on word-final (CV'CV) vowels vs. other positions (cf. [5, 7]).

Questions also remain about the general applicability of specific findings. There is, for instance, agreement that stressed vowels in closed syllables in Italian are always much shorter in duration than stressed vowels in open syllables - at least in penultimate position. Whether stressed vowels in all open syllables are also necessarily longer than vowels in closed syllables, as well as equally long, remains in our view unclear. This is an important point since phonological descriptions of Italian, e.g. [14] usually consider stressed vowels in final position to be identical in terms of length/duration to vowels in closed syllables i.e. always short both in phonological and phonetic terms. On the other hand, stressed antepenults and penults in open syllables are normally considered to be phonologically and phonetically equivalent as long, although [3] argues against this traditional position.

Our understanding of the interaction between basic prosodic structure and vowel duration in Italian has been hampered by substantial

methodological differences in previous experimental phonetic investigation that do not allow for useful comparisons (see [4] for an overview). However, of greatest relevance to this study is that little or nothing has been made of the possible consequence of regional origin on results presented (the recent investigation of Central vs. Southern accents by [4] is an exception).

2. DIVERGENCE IN ITALO-ROMANCE: NORTH VS. SOUTH

From a historical perspective, the Italo-Romance dialects spoken throughout Italy are normally divided into two major groupings: (1) Northern; and (2) Centro-Southern which are further divided into Central and Southern. Standard Italian is a variety of Tuscan, spoken in Central Italy. As a result of divergent historical development, the phonological structures of Central (and Southern) and Northern Italo-Romance are known to differ significantly.

In Northern dialects, there is, amongst other things, regular loss of word-medial long consonants often matched by the development of contrastive vowel length, e.g. /'pappa/ > /'papa/ 'mush' and /'papa/ > /'pa:pa/ 'pope' respectively; and the complete absence of sandhi gemination at word-boundaries, e.g. /'pju 'latte/ ['pju 'latte] 'more milk' instead of normative ['pju l'latte] (otherwise known as *raddoppiamento sintattico* (RS) and typical of Centro-Southern Italian [1, 6, 8, 14]). While Northern speakers typically omit RS in their pronunciation of Standard Italian, a failure to maintain the long/short consonant contrast in word-medial position is also sometimes noted. In any case, phonological accounts, and normative descriptions of Standard Italian always describe it without these Northern features.

While Standard Italian (as spoken in Central Italy) retains long consonants medially and at word boundary, it is also traditionally characterised as having an entirely predictable (i.e. non-contrastive) distribution of vowel length/duration in stressed position, as already pointed to in §1.1: vowels are always long in word-medial open syllables, e.g. /'papa/ ['pa:pa] 'pope', /'papero/ ['pa:pero] 'gander', but are always short in closed syllables, e.g. /'pappa/ ['pappa] 'mush', and in word-final open position, e.g. /pa'pa/ [pa'pa] 'dad' (see, e.g. [6, 7, 8, 14] for details). By way of contrast, the precise characterisation of vowel length/duration in Northern accents of Standard Italian remains to be properly investigated and understood.

The traditional view, e.g. [2, 6, 8, 14], that stressed vowels are short in word-final position, both phonologically and phonetically, in Italian is typologically unusual [11, 13]. This shortening runs counter to the more general word-level compression hypothesis that stressed vowel duration will be greatest in word-final position and will be compressed through the addition of a post-tonic unstressed syllable, i.e. all other things being equal, the stressed vowel in /'papa/ (+1 post-tonic syllable) will be shorter in duration than final /a/ in /pa'pa/. However, not all sources (in particular [1, 10]) on Italian agree on short final vowels, claiming instead that final stressed vowels need not surface as short, as they are also subject to (optional) lengthening, i.e. /pa'pa/ [pa'pa] ~ [pa'pa:] in Italian spoken in Centro-Southern Italy.

3. METHODOLOGY

We recorded eight native speakers of Italian divided equally according to regional origin and linguistic affiliation, i.e. Central and Northern Italy respectively. Each group of 4 speakers comprised 2 male and 2 female subjects, between the ages of 24 and 40, all middle-class university graduates born and educated in Italy. While all subjects speak a normative variety of Italian, the general regional origin of each individual could still be identified on listening by their spoken accent, primarily through differences in intonation and minor phonetic isoglosses.

Five real words were selected for recording. In each case the stressed vowel was /a/. Minimal pairs were chosen that would allow for direct comparison of: (a) open vs. closed syllable (/'papa/ 'pope' vs. /'pappa/ 'mush'); and (b) different stressed syllable positions (/'papero/ 'gander' vs. /'papa/ 'pope', vs. /pa'pa/ 'dad'.

Subjects were asked to insert test items into the carrier phrase *Dico* _____ *lentamente* 'I say _____ slowly' which was repeated four times for each item. We then measured, using Praat, the duration of stressed vowels across all contexts under examination. There were 32 tokens for each item in each recorded context. After results were collated, they were first tested for normality using Q-Q plots, before we conducted to further statistical analysis (t-tests and ANOVAs where appropriate) of the results for the entire group as well as for each regional sub-group. To save on

space in discussion below: (a) only ANOVAs are specifically identified, otherwise a t-test is assumed); and (b) only *p* values are given.

4. RESULTS

4.1. The effect of syllable structure

We first examine stressed vowel duration in open and closed syllables in penultimate position. This comparison is uncontroversial, at least for Central speakers – we expect to find a clear (syllable-conditioned) difference in long vs. short vowel duration. As such, it also provides a useful baseline for long and short vowel duration in all other conditions.

Table 1: Stressed vowel duration before short and long /p pp/ respectively (std deviations in brackets).

	overall	Central	Northern
pàpa	174 (28)	183 (33)	164 (19)
pàppa	117 (27)	132 (23)	101 (21)

Our results show highly significant vowel shortening in closed syllables ($p< 0.001$) – across regional variety and all speakers.

There was no effect of regional variety on the duration of the stressed vowel in the open penult (p =0.07). However, the difference (31ms.) in the duration of the stressed vowel in the closed penult was significant ($p<0.001$), with all Northern speakers producing shorter vowels, and always below the overall average.

4.2. The effect of stress position

Vowel duration values in open syllables in the three stress positions are given in Table 2.

Table 2: Open syllable vowel duration in 3 stress positions (std deviations in brackets).

Ss	overall	Central	Northern
pàpero	148 (31)	167 (22)	129 (27)
pàpa	174 (28)	183 (33)	164 (19)
papà	168 (33)	179 (28)	157 (35)

ANOVA testing of results in Table 2 shows that *overall* stressed vowel duration is significantly influenced by word position (p=0.003). Tukey post-hoc testing indicates this outcome is caused by a significant difference between the antepenult and the final (p=0.03) and the antepenult and the penult (p=0.003), but not between penult and final positions (p=0.73). Further analysis shows these results are dependent on regional origin.

The shortening effect on the antepenult /'papero/ compared to /'papa/ is noticeably greater and only significant for Northern speakers (-35 ms., $p< 0.001$) than it is for Central speakers (-16 ms., p=0.17).

Similarly, the difference in duration between antepenultimate /a/ in /'papero/ and final /a/ in /pa'pa/ was again significant only for Northern speakers (p= 0.02) but not for Central speakers (p=0.17).

With respect to the question of possible open syllable lengthening, the long nature of the stressed vowel in /pa'pa/ is confirmed by the same degree of significance ($p<0.001$) reported for /'papa/ when the former is also compared with the short stressed vowel in /'pappa/.

Not surprisingly, the stressed vowel in /'papero/ (Table 2) is significantly longer than short /a/ in /'pappa/ (Table 1) both overall and at regional level (always $p< 0.002$). However, we note that for at least one Northern subject (EF), antepenultimate duration was noticeably shorter (at 94 ms.), and was very close to vowel duration in (short) closed syllable position in /'pappa/ (83 ms.) for the same speaker. For all other speakers, antepenults were always much longer than short closed /a/.

5. DISCUSSION AND CONCLUSIONS

The results of our pilot study indicate that while there are many shared duration patterns in the contexts specifically tested, Central and Northern accents also differ with respect to some vowel duration effects in Standard Italian.

In the first instance, syllable structure has a fully predictable impact on stressed vowel duration - both overall, and across regional variety: vowels are much shorter in closed than in open syllables. Unexpected, however, was the significantly lower duration (av. -31ms.) of the short vowel in closed syllable position in the Northern variety when compared to the Central variety. The reason for this finding remains unknown. A similar effect was also found in an earlier comparison of Central and Southern accents [4].

With respect to possible right-to-left compression effects triggered by the addition of post-tonic unstressed syllables, our results give only partial confirmation of earlier findings of word-level compression, e.g. [5, 12]: the addition of a post-tonic unstressed syllable has an effect on stressed vowel duration in Italian but only in the case of antepenultimate (+2 post-tonic syllables) vs. penultimate stressed vowel (+1 post-tonic syllable) and final stressed vowel (+0 post-tonic

syllable) positions. There is, however, no strictly linear effect (i.e. 0, +1, +2 syllables). Moreover, while the effect appeared to occur overall, additional statistical analysis found the effect to be significant only in the Northern variety (av. -35 ms.), but not in Central Italian (-16 ms.). It may be better to describe antepenult vowels in the north as only half-long (cf. [3] on this point). Indeed, as already noted, for at least one Northern speaker (EF), antepenultimate shortening is particularly marked – with duration values equivalent to that found in short closed syllable position.

With regard to word-final vowel duration, there is no significant difference – whether overall or at regional level - between /'papa/ (+1 post-tonic syllable) and /pa'pa/ (no post-tonic syllable), with consistently similar high duration figures across regions.

Our results for final vowels are simply not in line with traditional accounts, which, as noted in §2, propose that word-final stressed vowels are always short in all circumstances. We suggest that descriptions of Standard Italian should now accept final length or lengthening as inherently characteristic, as already proposed by [1], and [9] and previously confirmed experimentally by [4] for Central and Southern accents and now also here for Northern accents of Italian.

The results of our pilot study here on Northern vs. Central accents confirm earlier work by [4] on Central vs. Southern accents that at least in some contexts different regional accents can have a significant effect on the interaction between basic prosodic structures and vowel duration in Italian, in ways not previously tested nor clearly understood. We now plan to run a much larger scale experiment that compares the effect of all three major regional accent types (Northern, Central and Southern Italian) together - with a larger number of participants and a more complex data corpus controlling for the same features as in this pilot study.

In the meantime, researchers investigating prosodic structures and temporal properties, such as vowel duration, in Standard Italian need also to be aware of the possible influence of different regional accents on findings.

6. REFERENCES

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