# YN questions in L2 Italian of Dutch speaking learners

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## Abstract

In this paper we analyze the position of the elbow point L in a corpus of YN questions produced by Dutch speaking learners of Italian with five different competence levels in L2. The analysis shows that latency values increase in the groups with higher competence level in L2, confirming the preliminary results obtained in previous work on dialogical speech. The analysis also shows a strong inter-speaker variability, which has been tentatively attributed to the input received by the students in their learning context.

**Index Terms**: intonation, YN questions, L2, Belgian Dutch, Flemish, Italian, elbow.

## 1. Introduction

According to the autosegmental model [1], $f_0$ patterns are the result of the phonetic implementation of phonological categories. In consequence, during the acquisition process of an L2 intonation, interference due to L1 can affect production in L2 either at the phonetic level, or the phonological level, or both [2]. The prosodic transfer from L1 to L2 has been studied before a.o. in [3], [4] and [5] with respect to English, and in [6] and [7] for Dutch spoken in the Netherlands. Recent work on dialogical speech [8] [9] has suggested that the interlanguages of Belgian Dutch speaking learners of Italian present different degrees of prosodic transfer from L1 as far as the production of YN questions is concerned. A first investigation of a sample of 60 YN questions from dialogical speech [8] [9] has shown that the pattern produced by Dutch speaking learners of Italian presents a pitch rise starting from a L turning point located at the beginning of the stressed vowel. The latency of the L target varies according to the level of competence in L2: advanced learners (level C1 of the CEFR [10]) realize the elbow point L significantly later compared to less experienced learners (levels B1 and B2). Moreover, the interrogative pattern produced in L2 by the speakers of groups B1 and B2 closely matches that of YN questions in L1, analyzed as L*HH% [11], in the choice of the tonal categories as well as in their implementation. In the pattern produced by the learners of group C1 instead, the rise begins later. This feature makes these interrogatives more similar to those existing in Italian. Since the work presented in [8] has been carried out on a small sample of dialogical speech, where segmental environment, syllabic structure and lexical stress placement could not be controlled, the possibility that the results have been affected by the type of material used for the analysis cannot be excluded. Therefore, we decided to repeat the analysis using read speech. In order to get a more detailed picture of the interlanguage development, two more levels of competence were added which had not been taken into account in [8]. These levels correspond to A1 and C1-C2 of the CEFR.

If the analysis of read speech will confirm the preliminary results obtained on dialogical speech, we expect the alignment of the L turning point and the beginning of the rise to occur later in experienced learners than in non-experienced learners.

This result would be evidence supporting the hypothesis of a prosodic transfer from L1 to L2 in the productions of non-experienced learners, on the phonological level as well as the phonetic level.

### 1.1. YN questions in Dutch

As described in [12] and [13], the prosodic pattern of YN questions in L1 is characterized by a pitch rise. In fact, this rising movement is indispensable for a YN question in order to be perceived as such [14]. According to [11] the YN question pattern has H*LH% as its predominant contour. Three other, rather marginal, contours that have been observed are H*H%, L*HH% and L*H%. The data presented in [9] however, suggest that the predominant contour would be L*HH% (Fig.1). This difference can be attributed to the fact that [11] deals with Dutch spoken in the Netherlands, whereas the study in [9], as well as the study presented in this paper, deals with Belgian Dutch (Flemish variety). In this variety the L turning point at which the pitch rise begins occurs at the onset of the stressed vowel or even earlier [9]. It is worth noting that the pattern L*HH% with early rise does not correspond to those of YN questions in the Italian varieties to which the learners are exposed.
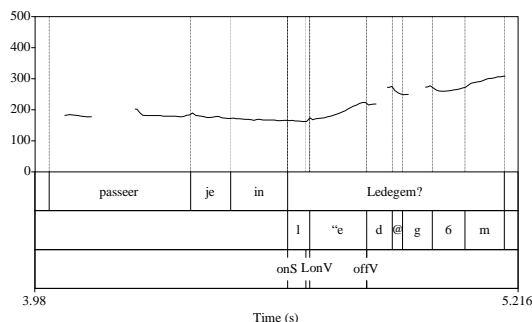


Figure 1: *YN question ("Passeer je in Ledegem?" "Do you pass by Ledegem?"), female speaker.*

### 1.2. Learning context

The learners that have been examined for the present study are exposed to different Italian accents. It is known that Italian intonation varies considerably across the country [15][16] and that the use of Standard pronunciation normally requires a specific training. Therefore, also well-educated speakers normally have the accent of their regional variety. At the university where the students have received their Italian education, the Italian courses are taught by two native speakers of Italian, and two near-native teachers who have Flemish Dutch as L1. The native speakers are from Naples (Southern variety) and Varese (near Milan; Northern variety). One of the two near-native teachers acquired Italian with a Northern accent (Turin, Piedmont), while the other has no recognizable regional accent. In the Italian varieties forming the input offered to the students the pitch rise characterizes the

YN questions far less than in Flemish Dutch. For the YN question intonation used by the teachers, we refer to autosegmental studies devoted to the varieties spoken in Naples, Milan, and Turin [15][16]. The rise is present only in Milanese Italian, while it can be absent in the variety spoken in Turin and it does not appear normally in Neapolitan Italian. The tune of the YN questions in the three varieties has been analyzed as follows [15][16]:

- Milan: H+L* L- H%
- Turin: (H* or) L+H* L- H%; L*+H H- L%
- Naples: L*+H HL- L%

## 2. Methodology

### 2.1. Participants

A group of 10 university students of Italian at Ghent University participated in this study. All were male (2) and female (8) monolingual native speakers of Dutch between 18 and 24 years old. They all came from (West and East) Flanders. They had not taken any Italian classes prior to their university studies, with the partial exception of one student (Rob), who had started learning Italian before coming to university on an autodidactic basis using a textbook. At the moment of the recording, the speakers were attending Italian courses of the first, second, third and fourth year or were preparing their PhD. Based on the competences ideally obtained at the end of these courses, the speakers represent different levels of competence in L2, ranging from A1 (beginners) to C1-C2 (quasi-native) in the CEFR. The information concerning the speakers is summed up in Table 1.

Table 1. *Participants.*

| Year | Id.Year | Comp. lev. | Id.stud. |
|---|---|---|---|
| I bachelor | BA1 | A1 | Lar; Lor |
| II bachelor | BA2 | B1 | Ich; Rob |
| III bachelor | BA3 | B2 | Joy; Lis |
| Master | MA | C1 | Eli; Jul |
| PhD | PhD | C1-C2 | Jes; Mat |

All students had received a one-week pronunciation training at the beginning of their first term of university study, but the training sessions did not deal explicitly with intonation.

### 2.2. Procedure

A set of YN questions has been produced by Dutch speaking learners of Italian. In these questions the main pitch accent occurs on the last word. Segmental context, syllabic structure and stress position within the word carrying the nuclear accent have been controlled. The corpus contains questions ending with a word stressed on the penultimate or on the antepenultimate syllable. The stressed syllables are of the CV type, with sonorant onset (rhotic, lateral or nasal: [r, l, n]). The questions have been presented to the speakers in an appropriate context using a ppt presentation. To insure that the first-year students could correctly understand the content of the contexts and the questions, the experimenter who has performed the recordings provided them with a (spoken) translation. The speakers have produced 3 renditions. Target questions have been interspersed with utterances of other types and have been presented in a different order each time. The contexts employed to present the questions have been modeled on those used for the Italian section of the IARI [17].

An example of a context followed by a target sentence is given in (1):

(1) Context: *Un tuo amico dice che è stato in Italia durante l'estate. Gli chiedi se ha visitato Rimini.*
(A friend says that he has been in Italy during the summer. You ask him if he has visited Rimini)
Target utterance: *Hai visitato Rimini?*
(Have you visited Rimini?)

The stimuli were recorded with a Sony ECM-MS907 microphone placed on a stand and plugged into a portable Marantz PMD 620 recorder in a silent room. The corpus is made out of 300 YN questions in L2 (2 stress positions * 5 target utterances * 5 competence levels * 2 speakers * 3 renditions) and of 50 YN questions in L1 (5 * 10 speakers). We eliminated the utterances containing hesitations compromising the production of the question intonation, or containing errors in the word stress placement of the target word, or produced with narrow focalization. The resulting sample is made out of 234 L2 YN questions divided as follows among the 5 competence groups: BA1: 51; BA2: 52; BA3: 48; MA: 31; PhD=52. YN questions in L2 have been compared with those produced by the same 10 speakers in L1. All questions have been segmented by hand using Praat [18]. The following points have been marked manually: onset of the stressed syllable (onS); onset of the stressed vowel (onV); offset of the stressed vowel (offV); elbow (L). It is well known that the individuation of the elbow point is problematic [19]. We located the elbow point using a visual procedure, choosing a local minimum after which the pitch constantly rises (e.g. when the speaker produced a level, the elbow was marked at the end). Then the latency of the elbow has been measured relative to the stressed vowel onset. The data have been statistically analyzed using R.

## 3. Results

For the statistical analysis of the corpus we compared the latency values of L to the stressed vowel onset (L to onV) in L1 (Ned) and L2 (BA1, BA2, BA3, MA, PhD). One speaker of Dutch (Mat) was considered as an outlier since his mean latency value was 2.8 standard deviations from the mean of the group, and therefore was removed from the sample used for the statistical analysis of Dutch.

The comparison of the median values of the latency (L to onV) shows a general tendency of L to occur later in experienced learners than in non-experienced learners (in sec.: BA1: 0.033650; BA2: 0.052710; BA3: 0.14370; MA: 0.15810; PhD: 0.202900). The median values can be visually compared in Fig. 2. If we contrast these latency values to the one measured in L1 (Ned: 0.055520) we see that this latency value is closer to that reported for BA2 than, as one would expect, for BA1. Since the variance for the groups L1 and L2 is different ($p < 0.001$), we have tested the significance of the differences between the latency values using a one-sided Welch pairwise t-test for unequal variances.

On the one hand, the results show that the latency values of Ned are not significantly different from those of both BA1 and BA2. On the other hand, the increase in the latency values observed in the groups with a higher competence level in L2 proves to be significant, although not for all pairs (Table 2). Therefore, the pairwise test confirmed the trend of the L to onV latency values to increase in more experienced learners, but the results also indicate that the differences in the latency

values are not significant between Ned, BA1 and BA2 on the one hand, and between BA3, MA and PhD on the other hand.
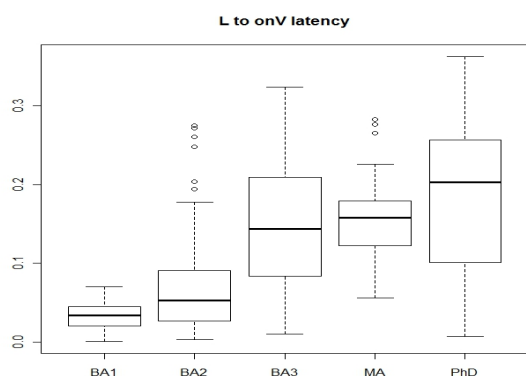
Figure 2: *Median values of L to onV latency for all L2 competence levels.*

Table 2. *For L to onV*

|  | BA2 | BA3 | MA | PhD |
|---|---|---|---|---|
| >BA1 | p<0.05 | p<0.001 | p<0.001 | p<0.001 |
| >BA2 | -- | p<0.001 | p<0.001 | p<0.001 |
| >BA3 | -- | -- | p=1 | p=0.1384 |
| >MA | -- | -- | -- | p=0.3797 |

From this result we can conclude that the expected increase in the latency values is present, but that the difference in the learner's performances becomes significant only when we compare the productions of less experienced learners (BA1 and BA2) with those of more experienced learners (BA3, MA and PhD). Moreover, the latency value of L in less experienced learners does not differ significantly from the one measured in L1.

The results of the analysis indicate that the level of competence in L2 is a factor of primary importance for the position of L. In order to disentangle this factor from others that could possibly affect the position of L, we performed a one-way ANOVA for the factors "year" (i.e. competence level), "speaker" and "stress position" (penultimate vs. antepenultimate stress). The results of the ANOVA show that all three factors are highly significant in the model (year: $F_{(5,268)}$ p<0.001; speaker $F_{(9,268)}$ p<0.001; stress position $F_{(1,268)}$ p<0.001). Even though the comparison of the means of L to onV for the two stress positions shows that L occurs significantly later when the stress is on the antepenultimate syllable (p<0.001), the results of a pairwise comparison using t-tests show that the tendency observed by pooling the data in one category is still present when the stress positions are considered apart from one another (see Fig.3).

The ANOVA has also shown a clear inter-speaker variability. This result can be at least partially attributed to the input received by the students in their learning context. As we pointed out in 1.2, the students are exposed to different Italian accents, and therefore they cannot rely on a coherent model of the YN question intonation in the target language during the acquisition process. In the discussion below, we will point out that the students, while following the tendency in the elbow placement described in this study, can realize the YN question in different ways.

Table 3. *For L to onV/stress on the penultimate.*

|  | BA2 | BA3 | MA | PhD |
|---|---|---|---|---|
| >BA1 | p=0.28 | p<0.001 | p<0.001 | p<0.001 |
| >BA2 | -- | p<0.001 | p<0.001 | p<0.001 |
| >BA3 | -- | -- | p=0.45 | p=0.38 |
| >MA | -- | -- | -- | p=0.45 |

Table 4. *For L to onV/stress on the antepenultimate.*

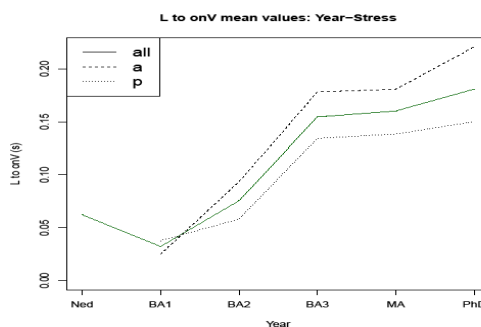|  | BA2 | BA3 | MA | PhD |
|---|---|---|---|---|
| >BA1 | p<0.01 | p<0.001 | p<0.001 | p<0.001 |
| >BA2 | -- | p<0.01 | p<0.01 | p<0.001 |
| >BA3 | -- | -- | p=0.46 | p=0.11 |
| >MA | -- | -- | -- | p=0.11 |

Figure 3: *Mean values of L to onV latency of all L2 competence levels for stress on the penultimate (dotted line) and on the antepenultimate syllable (dashed line) and for all data (solid line).*

## 4. Discussion

The statistical analysis confirms the preliminary results obtained on dialogical speech, since the elbow L and the beginning of the pitch rise occur later in experienced learners (BA3, MA, PhD) than in non-experienced learners (BA1 and BA2), in both stress conditions we observed. This result supports the hypothesis of a phonological and phonetic transfer from L1 to L2 in non-experienced learners. From the phonetic point of view, the position of the elbow does not vary significantly from L1 to the productions of the first two groups of learners. From the phonological point of view, the predominant pattern observed in L1 (L*HH%) corresponds to the one observed in BA1 and BA2. Figure 4 and 5 present two examples of YN questions produced by speakers from the groups BA1 and BA2 that can be easily compared to Figure 1. The results of the statistical analysis also point at a significant inter-speaker variability. A closer look at the patterns realized by the speakers shows that, beside the L*HH% pattern described above, the students can also make other intonational choices. All patterns found in the sample share the feature described in this paper, i.e. they present a L turning point followed by a pitch rise which occurs later when the competence level in L2 increases. However, the position of the elbow with respect to the syllable offset, and the pitch level immediately preceding the elbow can vary: L can occur within the stressed syllable boundary or after the offset, and can be preceded by a low level or by higher frequency values (ex. in Figure 6). Patterns alternative to L*HH% have been found in all competence groups, with the exception of BA1.

We leave the phonological analysis of the different pitch contours for future research, limiting us to a final remark. The analysis has shown that the L point at which the pitch rise begins occurs later in advanced learners than in learners with a

lower competence level. Since the pattern L*HH% found in Flemish Dutch does not occur in the Italian varieties to which the speakers are exposed, this result suggests that the learners progressively discard a feature (i.e. the early beginning of the rise) which is consistently absent in the Italian input. By contrast, since the rise itself is present at least in one of the Italian varieties (where it occurs in the edge tone as L- H%), this feature is maintained.
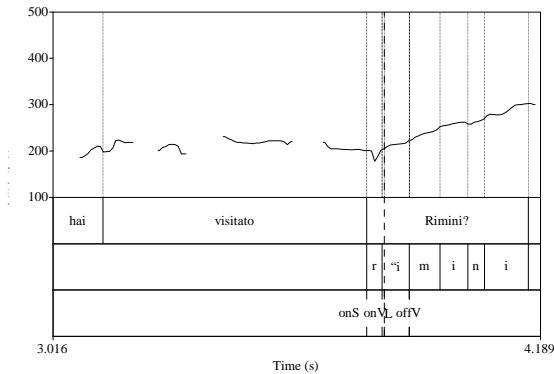


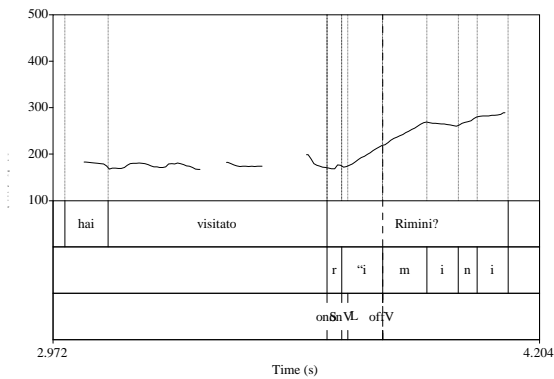Figure 4: *Hai visitato Rimini?* Female speaker (BA1).



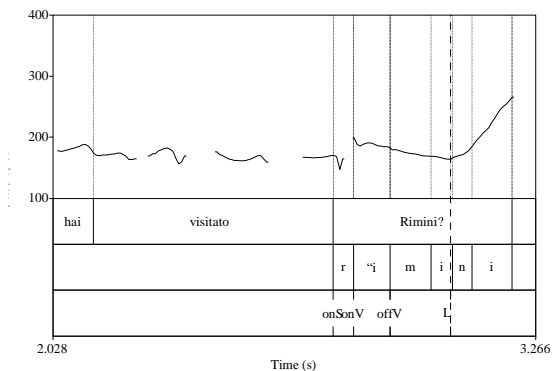Figure 5: *Hai visitato Rimini?* Female speaker (BA2).



Figure 6: *Hai visitato Rimini?* Female speaker (BA3).

## 5. Conclusions

The analysis of read speech confirmed the preliminary results obtained on dialogical speech. The expected increase in the latency values is present, but the difference in the learner's performances becomes significant only when the productions of less experienced learners (BA1 and BA2) are compared with those of more experienced learners (BA3, MA and PhD).

Moreover, the latency of L in less experienced learners does not differ significantly from that measured in L1. The data also show a strong inter-speaker variability, which has been tentatively attributed to the fact that the learners cannot rely on a consistent input. Research is needed to ascertain the role played by the learning context on the phonological choices made by the speakers.

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