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INTONATIONAL VARIATIONS IN FOCUS MARKING IN THE ENGLISH SPOKEN BY NORTH-EAST ITALIAN SPEAKERS

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ABSTRACT

This study analyses the prosodic variation of pitch accents in broad and narrow-contrastive focus conditions in sentence-initial position as produced in L2 English by North-East Italian speakers, and compares them with similar productions in native Italian and native English. Our aim is to understand how the phonetic properties of accent (alignment, pitch scaling, duration) are modulated to mark differences in focus in the two native languages, and to compare the use of these properties in the productions in non-native English by Italian speakers. Preliminary results show that the most remarkable difference between native Italian and native English is in the use of the pitch height: native Italian speakers use lower pitch range and pitch span in contrastive focus, while English speakers do not. Italian speakers producing English show a strong influence of the native system and a systematic lowering of peaks in initial accents of contrastive focus sentences.

Keywords: Focus production, L2 intonation, North-East Italian, Southern British English.

1. INTRODUCTION

It is known that languages differ in the way in which they use intonation and syntactic variation to mark focus: Languages such as English or German rely heavily on intonation to mark focus in a sentence, shifting the position of the pitch accent on the focused constituent, while, in Romance languages like Italian and Spanish, focus marking is achieved also through a modification in word order [1]. However, as recent studies [6] have shown, Romance languages like Italian and Spanish signal differences in focus condition using also purely intonational strategies. Crosslinguistic studies comparing varieties of Catalan, Spanish and Italian [14] show that these languages modify the prosodic cues of the initial pitch accents (alignment of the tones with the tonic syllable, pitch height of the tones and duration of the tonic syllable) in linguo-specific ways to mark a change from broad to narrow-contrastive focus: while the alignment follows a similar variation in the three languages, i.e. the peak of the initial accent is retracted in contrastive focus sentence with respect to the non-contrastive ones, the pitch height of the peak is systematically higher in Catalan and Spanish, but lower in Italian.

Also the duration of the tonic syllable is important for marking differences in focalization: narrow-contrastive focus is signaled by an increase of duration in many languages and it is considered an important cue for the distinction between broad and narrow focus in English [5].

2. FOREIGN LANGUAGE INTONATION

Language-specific differences in the realization of utterance-level prominence may affect foreign language communication, due to speakers' application of native focal-marking strategies. Ueyama [14] shows that Japanese speakers of L2 American English acquire phonological characteristics of L2 prosody before the phonetic ones and that a correct phonetic implementation of the categories may be reached only by highly competent speakers. In an articulatory study of L2 German produced by Lecce Italian speakers, Stella [13] shows that speakers with high competence of L2 are not influenced by the native system and produce the correct intonational categories in case of different focal conditions. As for the phonetic implementation, Mennen [10] shows that the correct realization of L2 intonation is a difficult task also for very advanced speakers.

In this paper, we investigate the productions of L2 English (in particular the Southern British English variety) by speakers of the Italian variety of Padua (Veneto). A first qualitative study of the production of L2 English produced by speakers of North-East Italian was carried out with data from English pronunciation classes [2], and showed that in questions and salutations the distribution of prominences is deeply influenced by the speakers' native system, which causes erroneous accent positions and/or the use of a too high pitch excursion of F0 at the end of the intonational phrase. In the present study, we deal with the fine

phonetic details of the initial pitch accents produced in sentences with different focal conditions in Italian, and English as a non-native language. The two conditions are: broad focus (BF), i.e. the whole sentence is in focus; and narrow-contrastive focus (CF), where only one constituent is in focus and represents the correction of a previous sentence.

Our aim is twofold. Firstly, we want to analyze the phonetic and phonological realization of intonational contours with different focal conditions in Padua Italian, in order to understand the relative importance of the three prosodic cues (alignment, pitch scaling, duration) in marking differences in focalization. We also want to see what the phonological categories have in common with the systems of other varieties of Italian using the Autosegmental-Metrical (henceforth, AM) description of intonation [1]. To our knowledge, Padua Italian has been never investigated at this fine phonetic detail. Second, we want to understand how the L1 prosodic system under investigation can influence the production of English as a foreign language, in order to sketch strategies for intonation didactics. To this aim, the productions of native British English speakers will be compared with productions in L2 English by Padua Italian speakers, using the same speech material.

3. NORTH-EAST ITALIAN PROSODY

Padua Italian prosody has been poorly investigated in the past. It is described in [9], dealing with the intonation of statements, questions and continuation contours, and in [3] as part of a series of studies on Italian dialects and regional varieties, among which Veneto varieties.

Other research on the prosody of North-East varieties deals with data from different areas of the Veneto region. A phonological analysis of intonation was conducted in [11] on statements and questions in the Trevigiano dialect, and a study about the Italian variety of Treviso area was conducted in [12] in the AMPER framework.

To our knowledge, the only studies dealing with L2 prosody of North-East Italian speakers analyze the productions by Italian speakers from Venice in L2 Spanish [4]. The analyses deal with Y/N questions and declaratives, showing that the influence of L1 prosody is reflected above all on the phonetic implementation of the categories, probably due to the phonological proximity of the two languages.

4. METHOD

The productions with BF and CF conditions were elicited using two different corpora, one per language. Speech materials consist of 12 mini-dialogues (6 in English and 6 in Italian) of 2 question-answer pairs. Each pair is built in such a way that in the first answer a declarative with a BF accent in initial position is produced, while in the second one a declarative with a CF accent at the same position is produced (see Table 1). The target words of both corpora consist of sonorant segments and are stressed on the antepenultimate or the penultimate syllable. The tonic syllable structure is CV, where C is [m], [n] or [l] and V is low or middle-low.

Each mini-dialogue was presented at random in a Power-Point presentation. The A sentences of each mini-dialogue, i.e. the questions, had been previously produced by a native speaker and recorded, in order to be reproduced during the experimental session; thus, the subject listened to the question A and answered using the B sentence.

Both the Italian and the English corpora were produced by 3 Italian female speakers (S4, S5, S6 - mean age = 24) native of the area of Padua. Productions of the only English corpus by 3 English female speakers (S1, S2, S3 - mean age = 20) native of London (UK) were also recorded for control. Each corpus was read 5 times by the subjects.

Table 1: Examples of the mini-dialogues.

| | |
|------------|--|
| ITA | A: Hai saputo qualcosa? |
| | B: Sì, la MELANIA verrà domani mattina. |
| ENG | A: La Melissa verrà domani mattina? |
| | B: No, la MELANIA verrà domani mattina. |
| ENG | A: Is there anything new? |
| | B: Yes, the MEMORIAL will be built this year. |
| | A: The material? |
| | B: No, the MEMORIAL will be built this year. |

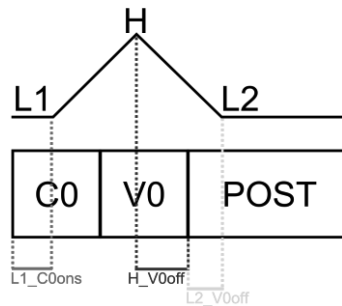
The F0 contours of the utterances were manually labeled using the software PRAAT, by auditory analysis and inspection of the F0 traces. At the segmental level, we labeled the onset and offset of each syllable of the target word, and the C and V of the tonic syllable. At the tonal level, the three targets of the pitch accent in sentence initial position were labeled: ‘L1’, the low tonal target at the beginning of the rise; ‘H’, the end of the high plateau of F0; ‘L2’, the low target at the end of the fall.

Differences in alignment are evaluated comparing the mean lag (in ms) of each target from the edges of the tonic syllable (Fig. 1): ‘L1_C0ons’: mean lag between L1 and the onset of the tonic syllable; ‘H_V0off’: mean lag between H

and the offset of the tonic syllable; ‘*L2_V0off*’: mean lag between L2 and the offset of the tonic syllable. For this measure, a positive value means that the tonal target is aligned after the syllabic landmark, and vice versa. We also calculated and took into account the duration of the accents rise and fall.

We also took into consideration the F0 values (in Hz) of the three tonal targets in order to evaluate the modifications in the accent pitch range. Pitch span of the rise and the fall was also calculated as the difference between the H target from L1 for the rise and from L2 for the fall. Finally, the mean duration of the tonic syllable for each condition is reported.

Figure 1: Lag measures of alignment.



5. RESULTS

Mean values of alignment (ms), pitch scaling (Hz) and duration (ms) are reported in Table 2 (native Italian), Table 3 (native English) and Table 4 (non-native English). Each table is divided in 3 groups of columns reporting the values for each speaker separately. Each group contains the means in BF productions (first column), CF (second column) and the difference between the CF measure and the BF one (‘*diff*’; third column). So, a positive value means that the value in CF is higher than the BF one, and vice versa.

5.1. Native Italian

As for alignment, the initial pitch accent in CF is retracted and compressed around the tonic syllable with respect to the productions in BF. The peak of the initial pitch accent is aligned earlier (S4: -95ms; S5: -240ms; S6: -18ms), while the position of the two low targets reflects different phonetic strategies: while S5 retracts the whole pitch accent with respect to the tonic syllable (L1: -68ms; L2: -301ms) with an extremely shorter duration of the rise (-96ms) and the fall (-76ms), S4 and S6 shorten the rise moving L1 forward (S4: +19ms; S6: +63ms). The alignment of the L2 target seems to be more variable among speakers, showing no

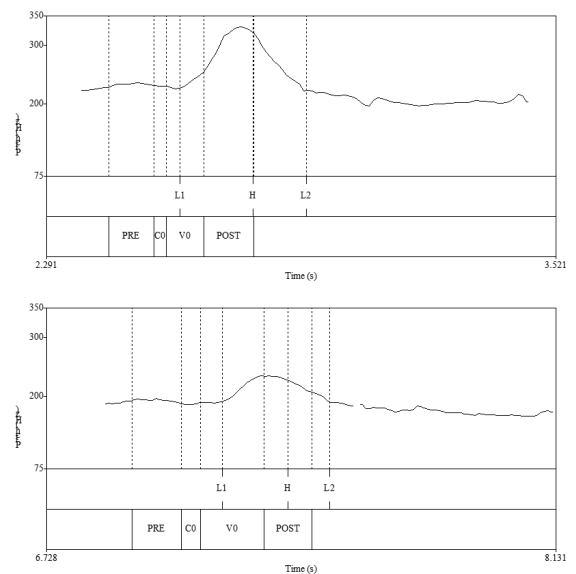
specific tendencies. However, the initial pitch accent produced in BF and CF sentences is always realized as a rise on the tonic syllable (Fig. 2).

Looking at the F0 values, the BF and CF initial pitch accents differ substantially also in tonal scaling: with respect to BF, in the production of CF by S4 and S5 the pitch range is lower (S4: L1: -35Hz; H: -64Hz; L2: -43Hz / S5: L1: -21Hz; H: -45Hz; L2: -20Hz) and the pitch span of both rise and fall is compressed (S4: rise: -28Hz; fall: -21Hz / S5: rise: -24Hz; fall: -25Hz). S6 seems to use a different strategy: only the baseline of the CF accent is lowered, i.e. L1 (-40Hz) and L2 (-10Hz), while the H remains constant (4Hz). In this way, it is produced with wider pitch range and pitch span. As for tonic syllable duration, it is about 60 ms longer in CF than BF.

Table 2: Means of alignment, scaling and duration of BF and CF productions in native Italian by S4, S5 and S6..

| L1 ITA | S4 | | | S5 | | | S6 | | |
|------------|-----|-----|------|-----|-----|------|-----|-----|------|
| | BF | CF | diff | BF | CF | diff | BF | CF | diff |
| L1_C0ons | 78 | 97 | 19 | 114 | 46 | -68 | 36 | 98 | 63 |
| H_V0off | 160 | 67 | -95 | 199 | -34 | -240 | 128 | 110 | -18 |
| L2_V0off | 301 | 221 | -80 | 377 | 76 | -301 | 258 | 258 | 0 |
| Rise lag | 172 | 125 | -47 | 216 | 120 | -96 | 187 | 180 | -7 |
| Fall lag | 190 | 216 | 26 | 229 | 153 | -76 | 188 | 195 | 7 |
| L1 pitch | 225 | 190 | -35 | 192 | 171 | -21 | 255 | 215 | -40 |
| H pitch | 301 | 237 | -64 | 257 | 212 | -45 | 305 | 309 | 4 |
| L2 pitch | 218 | 175 | -43 | 181 | 161 | -20 | 238 | 228 | -10 |
| Rise span | 75 | 47 | -28 | 65 | 41 | -24 | 50 | 94 | 44 |
| Fall span | 83 | 62 | -21 | 76 | 51 | -25 | 67 | 81 | 14 |
| Syll. Dur. | 139 | 216 | 77 | 182 | 242 | 60 | 153 | 215 | 62 |

Figure 2: F0 contours of the first part of the sentence “La Melania verrà domani mattina” by S4. Top: BF; bottom: CF.



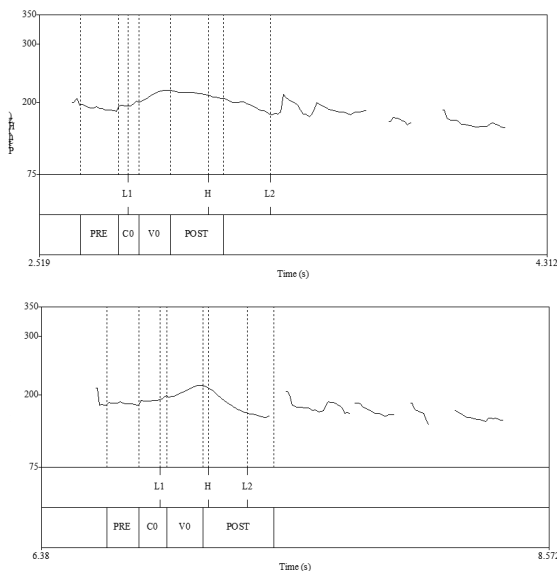
5.2. Native English

Alignment is used in different ways by the native English speakers: while the H target is interested by a systematic retraction in CF with respect to BF (S1: -11ms / S2: -147ms / S3: -97ms), the low targets seems to be aligned differently among the three speakers: S2 and S3 shorten the duration of rises (S2: -42ms; S3: -20ms) and falls (S2: -49ms; S3: -44ms), while S1 seems to make them longer (S6: rise: +11ms; fall: +43ms). See Fig. 3 for an example.

Table 3: Means of alignment, scaling and duration of the BF and CF productions in native English by S1, S2 and S3.

| L1 ENG | S1 | | | S2 | | | S3 | | |
|------------|-----|-----|------|-----|-----|------|-----|-----|------|
| | BF | CF | diff | BF | CF | diff | BF | CF | Diff |
| L1_C0ons | 13 | 92 | 79 | 75 | 85 | 10 | 137 | 126 | -11 |
| H_V0off | 45 | 34 | -11 | 185 | 37 | -147 | 162 | 64 | -97 |
| L2_V0off | 193 | 231 | 39 | 388 | 240 | -149 | 338 | 219 | -119 |
| Rise lag | 179 | 190 | 11 | 206 | 164 | -42 | 167 | 146 | -20 |
| Fall lag | 214 | 257 | 43 | 302 | 253 | -49 | 265 | 221 | -44 |
| L1 pitch | 210 | 210 | 0 | 200 | 189 | -11 | 223 | 222 | -1 |
| H pitch | 232 | 241 | 9 | 239 | 223 | -16 | 255 | 247 | -8 |
| L2 pitch | 186 | 175 | -11 | 190 | 164 | -26 | 211 | 201 | -10 |
| Rise span | 22 | 32 | 10 | 39 | 34 | -5 | 32 | 25 | -7 |
| Fall span | 46 | 66 | 20 | 49 | 60 | 11 | 44 | 46 | 2 |
| Syll. Dur. | 213 | 308 | 95 | 194 | 262 | 68 | 231 | 275 | 44 |

Figure 3: F0 contours of the sentence “The memorial will be built this year” by S2. Top: BF; bottom: CF.



The pitch scaling correlate seems not to be used by the English speakers to differentiate the pitch accents. Indeed the values in BF and CF remain stable in many cases or undergo little modifications (S1: L1: 0Hz; H2: +9Hz; L2: -11Hz / S2: L1: -11Hz; H2: -16Hz; L2: -26Hz / S3: L1: -

1Hz; H2: -8Hz; L2: -10Hz) with the result to have a similar pitch range in both focal conditions. The same holds true for the pitch span of rises and falls, which in certain cases can also be longer (see S1). Also in English, the duration of the tonic syllable is longer in CF than BF for the three speakers (S1:+95ms; S2:+68ms; S3:+44ms); the difference between the two conditions is very high for S1.

5.3. Non-native English

The non-native English productions by S4, S5 and S6 (Table 4) show a single pattern of modifications of the prosodic cues to distinguish BF and CF.

As for the alignment of the accent, the three targets are subject to a retraction in CF with respect to BF (S4: L1: -86ms; H: -200ms; L2: -231ms / S5: L1: -40ms; H: -336 ms; L2: -335ms / S6: L1: -18ms; H: -68ms; L2: -106ms), with a shortening of the duration of the whole accent, above all in the fall. As they do in Italian, speakers seems to constantly produce a rising accent aligned with the tonic syllable.

Table 4: Means of alignment, scaling and duration of BF and CF productions in non-native English by S4, S5 and S6.

| L2 ENG | S4 | | | S5 | | | S6 | | |
|------------|-----|------|------|------|------|------|------|------|------|
| | BF | CF | diff | BF | CF | Diff | BF | CF | diff |
| L1_C0ons | -92 | -179 | -86 | -146 | -180 | -40 | -124 | -141 | -18 |
| H_V0off | 251 | -5 | -200 | 314 | -52 | -336 | 151 | 22 | -68 |
| L2_V0off | 450 | 219 | -231 | 416 | 81 | -335 | 330 | 224 | -106 |
| Rise lag | 259 | 173 | -86 | 408 | 128 | -280 | 209 | 164 | -45 |
| Fall lag | 283 | 224 | -59 | 154 | 133 | -21 | 245 | 201 | -44 |
| L1 pitch | 241 | 197 | -44 | 192 | 180 | -12 | 258 | 229 | -29 |
| H pitch | 312 | 258 | -54 | 302 | 256 | -46 | 310 | 277 | -33 |
| L2 pitch | 229 | 187 | -42 | 202 | 176 | -26 | 247 | 229 | -18 |
| Rise span | 71 | 62 | -9 | 109 | 76 | -33 | 52 | 48 | -4 |
| Fall span | 83 | 71 | -12 | 100 | 80 | -20 | 62 | 48 | -14 |
| Syll. Dur. | 206 | 245 | 39 | 261 | 307 | 46 | 184 | 221 | 37 |

Important differences emerge in the use of pitch scaling in native English and non-native English. The pitch values of the three tonal targets are substantially lowered in Italian speakers (S4: L1: -44Hz; H: -54Hz; L2: -42Hz / S5: L1: -12Hz; H: -46Hz; L2: -26Hz / S6: L1: -29Hz; H: -33Hz; L2: -18Hz), reflecting a transfer of the use of this cue from the native to the foreign language. The lowering concerns both the pitch range of the whole accent and the pitch span of the rise and the fall.

As for the duration of the tonic syllable, like native Italian and native English, it is systematically longer in CF than in BF (S4: 39ms;

S5: 46ms; S6: 37ms), but with lower difference values with respect to both the native languages.

6. DISCUSSION AND CONCLUSIONS

Comparing the realizations of BF and CF initial pitch accents in native Italian and native English, we observe a different salience of the three prosodic cues in conveying the focus interpretation in the two language. Furthermore, the comparison between Italian and English produced by Padua Italian speakers shows a complete transfer of the use of prosodic cues to mark the different pragmatic function between the initial pitch accents in the two focus conditions.

Alignment of the targets seems to be modified in a similar way in native Italian and native English: the pitch accent is realized with a rise in both focus conditions and shows a retraction of the peak in CF. The positions of L targets are highly variable, but show a speakers' tendency to shorten the duration of the tonal event in CF, narrowing the accent on the tonic syllable¹. Due to the lack of clear-cut differences and considering the small number of subjects, we cannot evaluate how the productions in foreign language are actually influenced in alignment by the native system.

The clearest differences between BF and CF accents is found in the modulation of F0 height: while Italian shows a systematic lowering of the peak in CF, in line with the results of other varieties of Italian (see Section 1), in English the pitch height of tonal targets seems to be marginally exploited to mark the different focalization. Looking at the productions in English by Italian speakers, we observe instead that the pitch cue is used in the same way as in Italian.

Duration of the tonic syllable is systematically longer in both languages, more or less with similar mean values. Two facts should be highlighted. First, among the English speakers, S1 shows a very high increase of duration of the tonic syllable (+95 ms in CF) with respect to the other two speakers; at the same time, S1 makes no marked use of the other two prosodic cues in differentiating BF and CF. This could be due to a different strategy to mark the focus difference. Second, dealing with non-native English data, our Italian speakers producing English pay no attention to duration, since its increase in CF is shorter than their productions in Italian and the production in native English. More investigations on this cue are

needed to understand if its minor salience in non-native English is due to chance or to a systematic loss of attention by the speakers.

Nevertheless, the modifications of the pitch accent are probably not the only prosodic variation that a speaker could use to convey the difference between the two focal conditions: much of the difference involves also the modification of the tonal events that follow the initial pitch accent, i.e. presence of a L- boundary after the focalized word and/or post-focal compression. Future researches will be directed to highlight the distribution of the tonal events in the whole F0 contour, and obviously to collect more data in order to confirm the tendencies put in evidence here.

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¹ It should be noted that, in English, S6 shows strategies similar to the ones used by S4 and S5. Probably, the different strategy of S6 in Italian is only due to the influence of a reading style.