

Intonational Features for Identifying Regional Accents of Italian

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Abstract

Aim of this paper is providing a preliminary account of some intonational features useful for identifying a large number of Italian accents, estimated as representative of Italian regional variation, by analysing a corpus of comparable speech materials consisting of Map Task dialogues. Analysis concentrates on the intonational characteristics of yes-no questions, which can be realised very differently across varieties, whereas statements are generally characterised by a (low) falling final movement. Results of this preliminary investigation indicate that intonational features useful for identifying Italian regional accents are the tune type (rising-falling vs falling-rising vs rising), and the nuclear peak alignment in rising-falling contours (mid vs late).

Index Terms: intonation, Italian regional accents, language and accent identification

1. Introduction

In the last decades, a considerable amount of multidisciplinary research has been devoted to the modelling of language and accent identification, for both linguistic and technological application aims [1]. For Italian speakers, identifying interlocutor's regional accent is a common, ordinary cognitive task, as everybody speaks with an accent, in both formal and informal situations. This is a consequence of the particular status of Italian as compared with other languages: for historical reasons, the process of standardisation has been successfully achieved for the written form but not for the spoken language, which is presently characterised by quite strong regional accents [2]. Therefore, for Italian speakers regional accent can be also considered as a personal (biometric) trait, as it gives information about the geolinguistic background of the interlocutor, i.e. it identifies the speaker as belonging to a specific linguistic (sub)community, and as such it could be used also in biometric applications [3]. Another consequence of this particular status of Italian is that the language identification process itself has to go through an accent characterisation.

In modelling (language and) accent identification, it is widely acknowledged that intonation plays a crucial role in the process (for example [4]). Therefore, a descriptive work on how Italian varieties differ intonationally is a fundamental stage of the modelling. In the last years, a number of intonation studies on some Italian varieties have been carried out, focussing on different aspects, and basing their analysis on different types of spoken materials, from laboratory to spontaneous speech (for a comprehensive account of these works and more references see [5], and also [3]).

The aim of this paper is to provide a preliminary account of some intonational features useful for identifying a large number of Italian accents, considered as representative of Italian regional variation, by analysing a corpus of comparable spontaneous speech materials consisting of Map Task dialogues. In this stage, analysis is focussed on the

intonational characteristics of yes-no questions: as shown by results of previous studies, polar questions can be realised very differently across Italian varieties, whereas statements are generally characterised by a (low) falling terminal movement [3][5]. In the above cited intonational studies on Italian, it is generally stated that Northern and Central Italian yes-no question intonation is characterised by a (falling)-rising contour (i.e. the functional rise for marking interrogativity in on the terminal part of the contour), whereas in Southern accents the melodic pattern of questions is rising-falling (i.e., the functional rise is on the nuclear syllable). Aim of this preliminary investigation is also to ascertain the validity of such general claim.

2. Corpus – Map Task dialogues in CLIPS

Intonation analysis has been carried out on the Map Task dialogues included in the “Spoken Italian Corpora” section of the national corpus CLIPS (Corpora e Lessici di Italiano Parlato e Scritto, *Corpora and Lexicons of Spoken and Written Italian*), which is freely available at [6] (all documentation on “Spoken Corpora” is in Italian). This section collects speech materials of different types relating to a selection of Northern, Central and Southern varieties estimated as geo-linguistically, socio-linguistically and socio-economically representative of Italian regional variation, namely the varieties spoken in Torino, Bergamo/Brescia, Milano, Venezia, Genova, Parma, Firenze, Perugia, Roma, Napoli, Bari, Lecce, Catanzaro and Palermo, whose geographic location is illustrated in Figure 1.



Figure 1: Geographic position of the Italian varieties collected in the Map Task dialogues in CLIPS

For each variety, 8 Map Task dialogues are available, each having an average duration between 10-20 minutes. Dialogue participants are all undergraduate/graduate students aged 18-30. For the current investigation, all dialogues available for each variety have been analysed, corresponding to spoken materials produced by 16 speakers for each Italian accent (2 participants x 8 dialogues).

3. Intonation analysis

A pragmatic analysis of the dialogues, according to the HCRC Map Task coding scheme [7], has been preliminarily carried out, based on both orthographic transcriptions and audio files listening. Analysis has been concentrated on the intonational characteristics of yes-no questions as realised in QUERY-YN, tentative CHECK and ALIGN conversational moves (see also [8] [9]). Selected utterances have been extracted from the relating dialogues, and analysed using the PRAAT software tool [10]. Preliminary intonation analysis has been carried out within the autosegmental-metrical theoretical framework [11]. The following sections report on the most frequently occurring intonational contour for polar questions in each of the analysed varieties.

3.1. Yes-no question intonation in Northern Italian accents

This section deals with the description of the typical yes-no question melodic pattern of the varieties spoken in the following towns, situated in the North of the country: Bergamo, Milano, Genova, Parma, Torino, and Venezia. Results of this preliminary investigation show that, contrary to the general assumption by which the typical yes-no question tune in Northern Italian accents is characterised by a falling-rising shape, this pattern has been regularly observed in our data only for Bergamo and Milano varieties. The intonational sequence proposed here for describing such pattern is $H+L^*L-H\%$, and an example for Bergamo accent is shown in Figure 2.

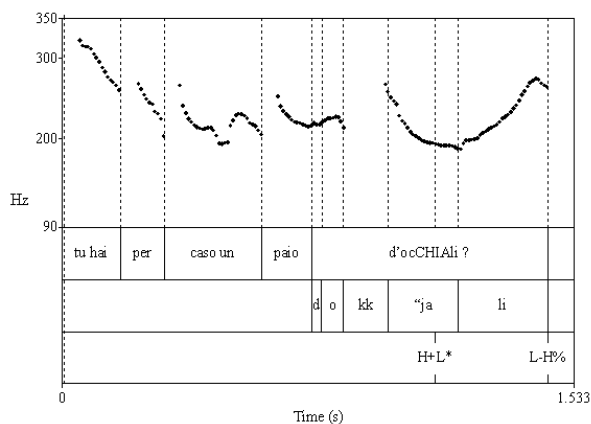


Figure 2: Bergamo Italian yes-no question intonation contour of the utterance “tu hai per caso un paio d’ocCHIAli?” (do you have by chance glasses?) analysed with $H+L^*L-H\%$

The varieties spoken in Torino, Parma and Venezia are characterised, instead, by a rising-falling melodic shape, with a functional rise occurring on the nuclear syllable followed by a low boundary. However, nuclear peak alignment is different among these varieties – mid position in Venezia and Genova, late in Torino and Parma. Such a difference is captured in our transcription by $L+H^*L-L\%$ for the former, and $L^*+H L-L\%$

for the latter. An example of a Parma typical yes-no question intonation contour is shown in Figure 3. It is worth noting that in both types of rising-falling tunes, a $H\%$ high tone can be optionally realised after the fall (a paralinguistic meaning is associated, as also attested in Bari Italian, reported in [5]). As to the accent spoken in Genova, in the relating dialogues both rising-falling (of the type $H^*L-L\%$ or $H\%$) and falling-rising $H+L^*L-H\%$ have been regularly found. Further work is needed to ascertain the nature of these two possible intonational choices.

The typical intonational sequences of the Northern Italian polar questions analysed in CLIPS are summarised in Table 1.

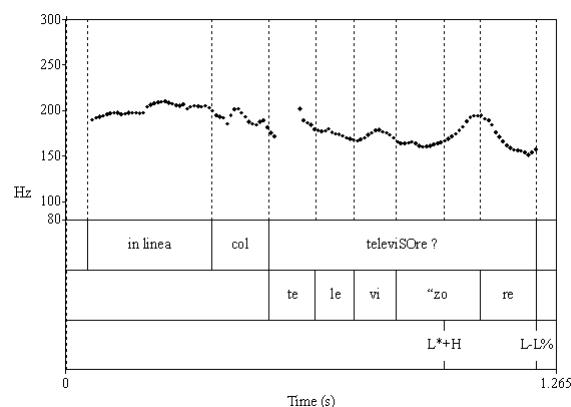


Figure 3: Parma Italian question intonation contour of the utterance “in linea col televisiOre?” (in line with the television set?), analysed with $L^*+H L-L\%$

Table 1. Typical intonational sequences of Northern Italian varieties yes-no questions analysed in the Map Task dialogues of the CLIPS corpus

NORTHERN IT. VAR.	PITCH ACCENT	BOUNDARY TONE
Bergamo	$H+L^*$	$L-H\%$
Milano	$H+L^*$	$L-H\%$
Genova	$H+L^*$	$L-H\%$
	$L+H^*$	$L-L\%(H\%)$
Parma	L^*+H	$L-L\%(H\%)$
Torino	L^*+H	$L-L\%(H\%)$
Venezia	$L+H^*$	$L-L\%(H\%)$

3.2. Yes-no question intonation in Central Italian accents

Also the Central Italian varieties analysed in the Map Task dialogues of the CLIPS corpus show different melodic shapes for yes-no questions: Perugia has a rising pattern (analysed as $L^*L-H\%$), Cagliari a falling-rising pattern (described with the sequence $H+L^*L-H\%$), whereas Roman and Florentine accents are characterised by a rising-falling shape described with the sequence $(L+)H^*L-L\%$. The L leading tone in parentheses signals the author’s uncertainty about its role in conveying interrogativity. A paralinguistic $H\%$ tone can also be optionally realised for Roma and Firenze polar question tunes. It is worth noting that in previous analyses of the Florentine variety, yes-no questions have been described with $H^*L-H\%$ as opposed to statements realised with $H+L^*L-L\%$ [5], claiming that the combination of nuclear pitch accent + boundary tone choice is responsible for marking interrogativity in this Italian accent. Since in the spontaneous materials analysed in this study both a falling $L-L\%$ and a rising $L-H\%$ phrasal tones are found, it derives that in

Florentine Italian the terminal part of the contour does not play a functional role in signalling question. Since intonation analysis of Florentine described in [5] was based exclusively on laboratory speech, diversity in results here can be explained in terms of different speaking styles involved, as already attested in Bari Italian [12]. An example of Florentine Italian yes-no question intonation contour is shown in Figure 4, and the distribution of intonational sequences typical of the Central Italian accents analysed are summarised in Table 2.

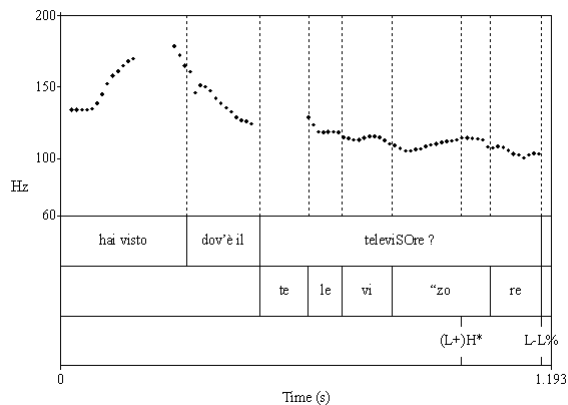


Figure 4: Firenze Italian yes-no question intonation contour of the utterance “hai visto dov’è il televiSore?” (have you seen where the television set is?) analysed with $(L+)^H L-L\%$

Table 2. Typical intonation sequence of Central Italian varieties yes-no questions analysed in the Map Task dialogues of the CLIPS corpus.

CENTRAL ITALIAN VARIETY	PITCH ACCENT	BOUNDARY TONE
Roma	$(L+)^H$	$L-L\%(H\%)$
Perugia	L^*	$L-H\%$
Firenze	$(L+)^H$	$L-L\%(H\%)$
Cagliari	L^*	$L-H\%$

3.3. Yes-no question intonation in Southern Italian accents

The Southern Italian accents spoken in Bari, Napoli and Palermo have been extensively studied in a number of previous works, especially as far as yes-no questions are concerned, some of them are also based on Map Task dialogues (for a comprehensive account and more references on single varieties see [5]). As to the intonational characteristics of the mentioned Southern varieties in the CLIPS corpus, the current investigation confirms the intonational descriptions already proposed in previous work: Bari, Napoli and Palermo yes-no questions are characterised by a rising nuclear pitch accent followed by a low boundary, with a difference in peak alignment. Palermo and Napoli have the nuclear peak in late position (L^*+H), whereas in Bari the peak is mid position ($L+H^*$). Another Southern variety sharing the same characteristics of Bari as to the intonational sequence of polar question is the one spoken in Catanzaro. Within the Southern accents analysed, only the one spoken in Lecce shows a rising melodic pattern for yes-no questions, analysed here with the sequence $L^*L-H\%$, an example of which is shown in Figure 5. A summary of the Southern Italian typical intonational sequences in yes-no questions is given in Table 3.

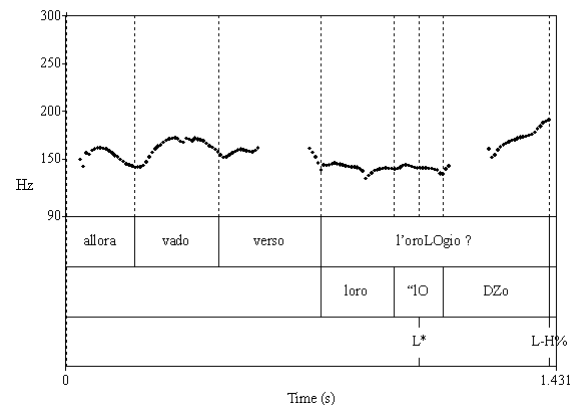


Figure 5: Lecce Italian yes-no question intonation contour of the utterance “vado verso l’oroLOGio?” (shall I go towards the clock?) analysed with $L^*L-H\%$

Table 3. Typical intonation pattern of Southern Italian varieties yes-no questions analysed. For Napoli, intonational analysis is the one proposed by D’Imperio (see [5] for references)

SOUTHERN ITALIAN VARIETY	PITCH ACCENT	BOUNDARY TONE
Bari	$L+H^*$	$L-L\%(H\%)$
Napoli	L^*+H	$HL-L\%$
Lecce	L^*	$L-H\%$
Catanzaro	$L+H^*$	$L-L\%(H\%)$
Palermo	L^*+H	$L-L\%$

4. Discussion

Results of this preliminary intonation analysis indicate that two intonational features are crucial for identifying the Italian regional accents under investigation, when considering yes-no question contour:

1) the tune type in holistic terms, which can be rising-falling, falling-rising, or rising. As summarised in Table 4, it appears that this distribution is not geographical, and that the rising-falling intonation pattern is the most widespread across Northern, Central and Southern varieties. These results give some counter-evidence to the common statement that the main intonational feature distinguishing Northern (and sometimes Central) from Southern varieties is the (falling)-rising intonation pattern in the former vs the rising-falling pattern in the latter. These results also stress the important role played by nuclear pitch movement in identifying regional accents of Italian. A crucial implication for automatic identification of Italian varieties is that sentence processing should not be limited to considering the terminal part of the contour when analysing yes-no questions. As discussed above, the rising-falling contour of practically all the analysed varieties may have an extra (paralinguistic) final rise, but do not need this rise for a yes-no question to be produced/perceived.

2) the alignment of the nuclear peak in rising-falling pattern. Even though the rising-falling contour is the most common across Italian varieties, the position of the peak within the nuclear syllable can vary across varieties: mid vs late. Therefore, nuclear peak alignment is an additional source of information for discriminating among Italian accents whose yes-no questions are characterised by a rising-falling melodic shape (as shown in Table 5).

Table 4. *Distribution of typical intonation pattern of yes-no questions in the varieties analysed (CLIPS)*

	ITALIAN VARIETY	INTONATION PATTERN IN YES-NO QUESTIONS		
		rising-falling	falling-rising	rising
North	Bergamo		x	
	Torino	x		
	Milano		x	
	Venezia	x		
	Genova	x	x	
	Parma	x		
Central	Firenze	x		
	Roma	x		
	Perugia			x
	Cagliari			x
South	Bari	x		
	Napoli	x		
	Lecce			x
	Catanzaro	x		
	Palermo	x		

Table 5. *Distribution of nuclear peak alignment in the analysed Italian varieties with rising-falling contour*

ITALIAN VARIETY	NUCLEAR PEAK POS. IN RISING-FALLING CONT	
	mid	late
Genova	x	
Parma		x
Torino		x
Venezia		x
Roma	x	
Firenze	x	
Bari	x	
Napoli		x
Catanzaro	x	
Palermo		x

5. Conclusions and Future Work

In this preliminary investigation of yes-no question intonation in a large number of Italian varieties, based on analysis of comparable spontaneous speech data, some intonational features useful for identifying Italian regional accents have been determined, namely the tune type (rising-falling vs falling-rising vs rising), and the nuclear peak alignment in rising-falling contours (mid vs late).

The next step of this intonational modelling of Italian regional variation will include the investigation of intonational strategies for signalling finer distinctions in yes-no questions, namely between those asking for new information and those asking for confirmation about given information (as pragmatically realised in QUERIES vs confident and very confident CHECKS in the Map Task coding scheme [7]). Such analysis, extensively carried out for Bari Italian [8][9], and followed by some preliminary studies on Map Task dialogues for Pisa (Central Italian accent) [13], and Napoli [14], has already indicated that these 3 varieties use different strategies (summarised in [3]). It will be useful to extend such investigation to all the Italian accents available in the CLIPS corpus.

Another aspect worth investigating will be the intonational strategies for signalling subordination and/or coordination

relationships within discourse segments (non-finality), and for signalling upcoming discourse boundaries (pre-finality) in all the available Italian varieties. Previous studies on Bari and Pisa varieties (based on Map Task dialogues included in the national corpus AVIP [15]) have shown that both Italian accents have a quite rich inventory of intonational sequences for signalling upcoming discourse boundary units, even though in Bari the non-finality vs pre-finality difference is captured phonologically [16] [17], whereas in Pisa is not [18].

This background intonational modelling work will be essential for designing future perceptual experiments aiming to ascertain the role of intonation in the identification of regional accents of Italian.

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