

The intonation of polar questions in Italian: Where is the rise?

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Earlier studies on Standard Italian describe polar questions as being characterised by a terminal rise, as opposed to a terminal fall for statements, where a low/falling accentual movement precedes the terminal part of the contour in both sentence types. The same is generally claimed for the Northern and Central Italian varieties (including Florentine, i.e. the variety from which Standard Italian stems), whereas Southern accents are characterised by an accentual rise followed by a terminal fall, being therefore the primary cue for question in non-terminal position. However, a closer look at the existing literature on regional Italian question intonation reveals that such a geographical distribution of intonational features across Italian accents is not that clear-cut. A reason for this discrepancy might be the different speaking styles – here intended as the broad spontaneous vs. read distinction – of the spoken productions analysed. The aim of this paper is to call into question the claim that a terminal rise preceded by an accentual low/fall is the most widespread intonational feature for marking questioning across Italian accents. The goal is to provide a clearer picture of question intonation in Italian by looking at the distribution of the rise as either on terminal or non-terminal position across a large number of varieties, where speech materials have been elicited with the same methodology, and they are therefore homogeneous with respect to speaking style. Intonation analysis has been carried out on spontaneous yes–no questions extracted from the Map Task dialogues collected in the CLIPS national corpus (Corpora e Lessici di Italiano Parlato e Scritto – Corpora and Lexicons of Spoken and Written Italian) covering 15 varieties of Italian. Results of this analysis on the Northern, Central, and Southern polar questions reveals that the accentual rise prevails, and that the distribution of the rise across varieties is independent of the geography.

1 Introduction

It is widely accepted as a general trend in languages that yes–no questions are intonationally characterised by a ‘higher pitch somewhere in the utterance’ (Bolinger 1978: 501), where a rise on the terminal part of the contour ‘is clearly the dominant strain’ (ibid.), as opposed to final falling movement for statements. Rising/high pitch for cueing interrogativity and falling/low pitch for marking assertiveness can be considered intonation universals (Cruttenden 1981), the associated meaning of such different pitch use being explained by referring to some biological code (Ohala 1983, 1984; Gussenhoven 2004).

This observation is very general, and is applied when considering the so-called grammatical function of intonation. In fact, in studying question intonation, a wider range of intonational realisations are possible, as attitudinal, pragmatic, communicative aspects are normally taken into account (Crystal 1969, Ladd 1978, Bolinger 1989). This has been extensively attested, for example, in English (Geluykens 1988, Bolinger 1989, Pierrehumbert & Hirschberg 1990, Bartels 1999, Hirschberg 2006 among others).

For Italian, however, the grammatical function of intonation of marking sentence modality is particularly relevant, as this role is played by intonation alone, where no syntactic or lexical markers are used. When dealing with the description of Italian intonation, the first problem is defining a reference model of the spoken language, as the so-called ‘Standard Italian’ has a very special status with respect to other languages like English or German. Traditionally, Standard Italian is referred to as either the variety derived from the ‘cultivated’ Florentine variety (*fiorentino colto*) or, more generally, from some ‘Tuscan variety’ (see Bertinetto & Loporcaro 2005, also for further references). Yet, because of the complex evolution of Italian political history, the process of standardisation has been successfully achieved only for the written language, not for spoken Italian, which is nowadays characterised by a wide range of distinct regional accents (De Mauro 1963, Lepschy & Lepschy 1993, Tosi 2001).¹ In other words, Standard Italian has never been taught in schools or universities; consequently, everybody in Italy speaks with a regional accent, in both formal and informal situations. Standard Italian is taught to actors as part of their professional training. It was also taught to TV and radio professional speakers in the past, even though nowadays this is not considered a requirement any more, and newsreaders use their own native regional variety when reading aloud the news.

In this respect, for Italian speakers, regional accent can be considered a behavioural biometric trait (Savino 2007, 2009). Therefore, describing the primary intonational cue for marking interrogativity in Italian implies necessarily dealing with Italian regional variation.

Traditional literature on Standard Italian describes this variety as sharing the feature attributed to the large majority of languages, that is a terminal rise as the primary intonational feature for marking yes–no questions, as opposed to a terminal fall for marking statements, where a low/falling accentual movement precedes the terminal part of the contour in both sentence types. The same is generally claimed to be true for the Florentine variety of Italian, i.e. the variety from which Standard Italian stems. As for other regional accents, according to the general picture offered by past studies, the great majority of varieties – typically those spoken in the north and centre of Italy – seem to share the same property of Standard Italian and Florentine, whereas the Southern accents behave differently, as in those accents the functional rise is realised on the nuclear syllable and followed by a terminal fall. However, a closer look at the literature on regional Italian question intonation reveals that such a geographical distribution of intonational features across Italian accents is not that clear, and that sometimes studies on questions in the same variety even result in diverging intonation analyses. This might be attributed to the fact that these studies are based on speech materials using two different basic speaking styles: spontaneous vs. read. Since most of these previous studies are based on the analysis of read speech, it can be hypothesised that a ‘reading style effect’ might have influenced the intonational realisation of utterances.

¹ The peculiar situation of the Italian language is nicely described by Tosi (2001: 3): ‘Had Italy been unified under the Medici family in the 15th century, Florentine would probably have become the national language at about the same time as the political and linguistic stabilisation of other European nations. Instead, the linguistic differences that we find in Italian society today are evidence of the heritage of many centuries of political division and cultural diversity, which could not be erased by the official recognition of Florentine as Italy’s national language. Interactions between different sectors of the national community, over the last 150 years, have therefore involved a far more complex process of language change in Italy than in most other European countries.’

The aim of this paper is to call into question the claim that a terminal rise preceded by a low/falling nuclear pitch accent is the most widespread intonational feature for marking questions across Italian accents, and to provide a clearer picture of question intonation in Italian by looking at the distribution of the rise for conveying questioning as in either terminal or non-terminal position across varieties.

In this study, intonation analysis of yes–no questions extracted from the Map Task dialogues collected in the CLIPS national corpus (see Section 4.1 below) covering 15 varieties of Italian has been carried out. Therefore, speaking style is homogeneous since speech materials consist of task-oriented dialogues, i.e. speech data obtained with the same elicitation method for all the 15 Italian accents. Along the spontaneous–read dimension of the speaking style, these task-oriented dialogues can be considered spontaneous, as opposed to spoken productions elicited through some reading tasks and broadly defined as read speech.

The paper is organised in the following way: Sections 2 and 3 provide an overview of the literature on polar question intonation in Standard Italian and in Italian regional accents, respectively; Section 4 describes the corpus of Italian varieties used for analysis, the methodology for selecting the yes–no question types under investigation, and the descriptive framework used for intonation analysis. Results on the distribution of the three main contour types – (fall-)rise, rise-fall and rise-fall-rise – across the 15 Italian accents are illustrated in Section 5 and discussed in Section 6, and some concluding remarks are presented in Section 7.

2 Yes–no question intonation in Standard Italian

Earlier studies on Standard Italian intonation consist, in most of the cases, of contrastive analyses comparing Italian to English intonation for the purposes of teaching the basic intonation patterns of Italian to non-native speakers (Agard & Di Pietro 1965, Chapallaz 1979, D'Eugenio 1982). One exception is the work by Canepari (1979, 1980, 1985) which is explicitly devoted to the description of spoken Standard Italian, along with a comprehensive account of Italian regional variation.

In these studies, the model of Standard Italian is assumed to be the variety spoken in Tuscany – sometimes specifically in Florence – and, within different frameworks of analysis, they all describe the basic pattern of Standard Italian yes–no question intonation as being characterised by a falling–rising movement, as opposed to statements which have a falling contour. Common to all these studies is the terminal rise as the question marker in Standard Italian. The importance of this feature for learners of Italian is emphasised by Chapallaz (1979: 192): she warns non-native speakers learning Italian on how crucial it is ‘to make the rising syllable or syllables at the end of the tune rise sufficiently [in questions], OTHERWISE THE GROUP MAY NOT SOUND AS A QUESTION AT ALL’ (emphasis added – MS).

It is worth noting here that intonation analysis in all of the above studies was carried out on read speech and was analysed only auditorily.

The fact that Standard Italian question intonation has a functional terminal rise was confirmed by later Autosegmental-Metrical accounts of Standard Italian (Avesani 1995), also in connection with intonation modelling for speech technology, like the implementation in text-to-speech systems (Avesani 1990, Quazza et al. 1993). In her study, based on spontaneous and read speech produced by Tuscan and professional speakers, Avesani (1995) proposes two alternative tunes for the Standard Italian yes–no question: one rising, i.e. a low nuclear pitch accent followed by a high boundary ($L^* H-H\%$), and one falling–rising, i.e. a falling nuclear pitch accent followed by a high boundary ($H+L^* L-H\%$). A third possible alternative with a high boundary preceded by a nuclear peak instead of a nuclear low/fall ($H^* L-H\%$) is also shown in a figure (Figure 7 in Avesani 1995: 94), even though this tune is not explicitly mentioned in the concluding summary of all the possible contours for Standard Italian yes–no

questions. This last type of tune is also found in Grice et al. (2005) as the typical question contour in Florentine Italian.

3 Regional variation in Italian yes–no question intonation

In describing the intonational characteristics of yes–no questions across regional accents of Italian, current literature generally claims that in Northern and Central varieties a functional terminal rise seems to prevail, as in Standard Italian, whereas Southern varieties are said to have a functional local rise on the nuclear accented syllable followed by a later fall (D'Imperio 2002: 38). Therefore, according to such a general view, the predominant and most typical intonational feature of regional Italian yes–no question intonation should be the same as described for Standard Italian, i.e. a terminal rise preceded by an accentual low/fall, whereas an accentual rise followed by a terminal fall is to be considered an exception to the rule, being restricted to the Southern accents. However, a closer look at past and more recent studies on regional Italian yes–no question intonation suggests that such a geographical distribution of the functional rise in yes–no questions is not that clear-cut.

A rise on the nuclear syllable for marking interrogativity is the property extensively attested for the Southern varieties spoken in Palermo (Grice 1991, 1995), Bari (Grice & Savino 1995, 1997, 2003a, b, 2004; Savino 1997, 2000; Savino & Grice 2007, 2011) and Naples (Maturi 1988; Caputo 1994; D'Imperio & House 1997; D'Imperio 1999, 2000, 2001a, b; Crocco 2006). Moreover, these studies, carried out mostly within the Autosegmental-Metrical framework (Ladd 1996) on both spontaneous and read speech, revealed that differences among those varieties are still possible in terms of different alignment of the rising movement with the nuclear syllable: Naples and Palermo have a late nuclear peak (L*+H), whereas in Bari it is earlier, i.e. around the middle of the syllable (L+H*). In all cases, the nuclear rise is followed by a fall represented with low edge tones (L-L%) (for an overall account and comparison of these three varieties, see also Grice et al. 2005). It is worth noting that an extra terminal rise after the accentual rise has been occasionally observed in Bari Italian task-oriented dialogues (Grice & Savino 1997; Savino 1997, 2000), in Palermo Italian (Grice 1995), and also in Bari (Savino & Refice 1996, Grice, Savino & Refice 1997, Refice, Savino & Grice 1997) and Neapolitan (Maturi 1988) speakers when yes–no question utterances are read aloud (see also Section 6 below).

Another Southern variety with an accentual rise is the one spoken in Cosenza, where Sorianello (2001) found that polar questions in both read and spontaneous productions are characterised by a rising-falling contour phonologically described by the author with the sequence L+H* L%.

Nevertheless, this is not the case in all Southern accents: yes–no questions in the Sicilian variety spoken in Catania, for example, have a terminal rising movement preceded by an accentual low instead, analysed with L* H% or L*H H% (Grice 1991).

A rising-falling pattern for yes–no questions has also been observed in a number of Central Italian accents, as, for example, the Roman accent (De Dominicis (2002) in read speech, Giordano (2006) in spontaneous speech, but see Sardelli & Marotta (2007) and Marotta & Sardelli (2009), where spontaneous Roman questions are analysed with a falling-rising H*+L H% contour instead), and the Tuscan varieties spoken in Pisa (Gili Fivela 2002, 2004, 2008) and Lucca (Marotta & Sorianello 2001). On the other hand, some other Tuscan accents seem to conform to the expected Standard-like pattern for questions, namely those spoken in Florence (Magno Caldognetto et al. 1978, but see a different analysis in Grice et al. 2005) and Siena (Marotta & Sorianello 1999). However, it is worth noting that in Sieneese the falling-rising pattern (which the authors analyse phonologically with H+L* L-H%) is observed as by far the most widespread in read speech, whereas in spontaneous productions half of the questions were realised with a rising-falling contour instead (Marotta & Sorianello 1999).

Works on the Florentine variety, i.e. the one from which Standard Italian derives, by Magno Caldognetto et al. (1978) and by Grice et al. (2005), deserve special attention. In this case, in fact, a similar pattern for both Florentine and Standard Italian yes–no question intonation is expected, i.e. a terminal rise preceded by an accentual low/fall.

Magno Caldognetto et al. (1978) (probably the first intonation study on Italian supported by instrumental analysis) analysed a number of isolated utterances realised once as a statement (for example *Giovanni arriva* ‘John arrives’) and once as a yes–no question (*Giovanni arriva?* ‘Does John arrive?’) produced by 10 Florentine Italian speakers. Interestingly, even though the F0 traces produced by all speakers show a rising-falling shape on the nuclear syllable followed by a rise in questions, whereas statements have a nuclear falling movement followed by a terminal fall, the authors do not take into account what happens on the nuclear syllable. Instead, they focus their attention on the terminal part of the contour only. In fact, they claim that the terminal contour alone is responsible for marking the statement vs. yes–no question distinction in Florentine: the final contour for statements is a (slight) fall, and for yes–no questions has a ‘sharply rising’ movement. Moreover, Magno Caldognetto et al. (1978) also analysed the same utterances produced by five speakers of the Northern variety spoken in Padua, and compared them with the Florentine productions. For Padua, F0 contours are not shown, thus implying that they have the same shape as the Florentine ones. The only difference between questions in the two accents reported in this work is that the F0 excursion of the terminal rise is larger in Paduan than in Florentine.

A different analysis for Florentine question vs. statement distinction has been more recently proposed by Grice et al. (2005). In this study, BOTH the nuclear pitch accent and the boundary tone are claimed to be responsible for marking such a distinction. In fact, the yes–no question tune is described with H* L-H%, as opposed to the statement tune, which has a H+L* L-L% contour. Note that also this analysis of Florentine is primarily based on read speech.

As for the Northern varieties, for which the same intonational features of Standard Italian are claimed to be expected in questions, studies carried out so far do not give a clear picture in this direction. For example, spontaneous yes–no interrogatives in Milan are described by Sardelli & Marotta (2007) and Marotta & Sardelli (2009) with the expected falling-rising F0 shape (which authors analysed phonologically with H+L* H%). On the other hand, studies by Interlandi (2003) and Interlandi & Romano (2003) based on both spontaneous and read speech have shown that polar questions produced in the Northern accent of Turin are characterised by an accentual rise followed by a low boundary (phonologically described by the authors with the sequence L*+H L-L%), exactly as in Southern accents.

In their comparative study of nine Italian accents (Milan, Padua and Bologna from the North; Pisa, Macerata and Rome from the Centre; and Naples, Lecce and Cosenza from the South), Endo & Bertinetto (1997) analyse different types of marked yes–no questions inserted in a text read aloud by a number of speakers for each of the accents under investigation. Results indicate that only for the Northern variety spoken in Milan was it possible to ascertain a more systematic use of the typical Standard-like accentual low/fall followed by a terminal rise, whereas in Padua and Bologna the accentual rise followed by a final fall predominated, as in all the Central and Southern varieties analysed, even though cases of questions with a fall-rise contour are also observed in these accents.² The authors themselves recognised that a number of reasons might have influenced such non-clear-cut results. First of all, the fact that reading text can influence the intonational realisation of questions, as speakers tend to associate reading performances with a more ‘formal’ and supposed ‘Standard-like’ speaking style. Secondly, all yes–no questions the authors inserted in the text for the reading task were

² Note that Endo & Bertinetto’s (1997) results on Paduan yes–no questions intonation contour contradict those reported by Magno Caldognetto et al. (1978) for the same variety.

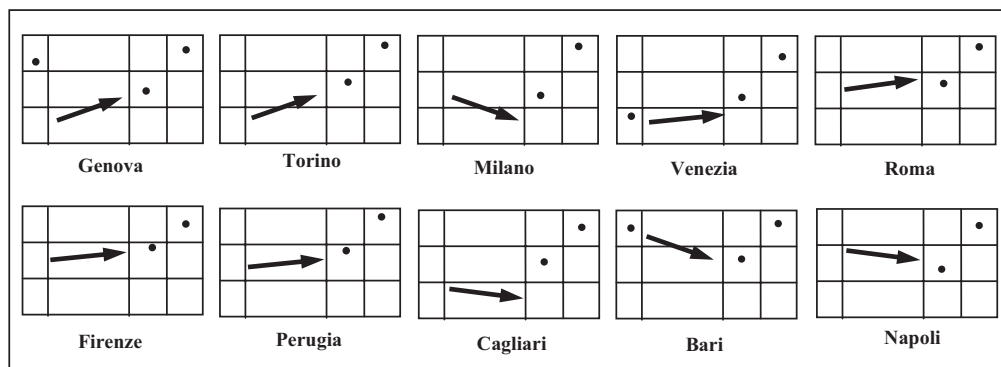


Figure 1 Polar question intonation contours for 10 of the 21 Italian varieties described by Canepari (1980), corresponding to a subset of the Northern, Central, and Southern varieties analysed in the present study. In Canepari's intonation scheme, the three rows indicate the tone levels, whereas the columns refer to the following parts: the large column in the middle to the last stressed syllable, the two to its right to the post-tonic syllables, and the one to its left to the syllable immediately preceding the tonic one. The level of the pre-tonic syllable is specified only when 'marked', i.e. when it is realised as either high or low.

marked: in fact, they were echo questions, or questions with marked focus and/or syntactic structure, which the authors hypothesised might have induced possibly different intonational realisations with respect to the unmarked yes–no question type.

A completely different view with respect to the rest of the literature discussed above is offered by Canepari (1979, 1980, 1985) in his comprehensive study of 21 Italian varieties. In this investigation, he collected and analysed a corpus of isolated sentences (yes–no questions, declaratives and non-final utterances) produced in a reading task by speakers from the following towns: Bolzano, Udine, Trieste, Venice, Trento, Milan, Turin, Genoa and Bologna from the North of Italy; Florence, Perugia, Macerata, Rome, Cagliari and Pescara from the Centre; and Campobasso, Naples, Potenza, Bari, Cosenza and Catania from the South. According to Canepari's analysis, yes–no questions in all of the 21 Italian accents are characterised by a terminal rise as opposed to statements having a final fall. Therefore, all Northern, Central and Southern accents analysed appear to adopt the SAME intonational strategy used by Standard Italian for cueing interrogativity. In fact, in Canepari's description of Italian intonation, the terminal part of the contour plays the most important role for marking sentence modality (Canepari 1980: 35). Figure 1 reproduces the yes–no question tune for 10 of the 21 Italian accents described in Canepari (1980), corresponding to a subset of the Northern, Central, and Southern varieties analysed in the present study: they all have a low/falling nuclear accent followed by a final rise.

4 Materials and method

4.1 Corpus

In the present study, an intonation analysis has been carried out on the Map Task dialogues included in the Corpus of Spoken Italian section (Albano Leoni et al. 1998) of the national corpus CLIPS (Corpora e Lessici di Italiano Parlato e Scritto – Corpora and Lexicons of



Figure 2 Geographic position of the Italian varieties collected in the Corpus of Spoken Italian section of the CLIPS corpus.

Spoken and Written Italian).³ This section collects speech materials of different types and speaking styles relating to a selection of Northern, Central and Southern varieties designated as representative of Italian regional variation according to geolinguistic, sociolinguistic and socioeconomic criteria (Sobrero & Tempesta 2006). The resulting selected 15 varieties are the ones spoken in Turin, Bergamo/Brescia, Milan, Venice, Genoa, Parma, Florence, Perugia, Rome, Cagliari, Naples, Bari, Lecce, Catanzaro and Palermo. Their geographic locations are illustrated in Figure 2.

For each variety, eight Map Task dialogues are available in the corpus, each with an average duration of 25 minutes. Dialogue participants are all undergraduate or graduate students aged 18–30 years, born in and still living in the target town, with parents who were also born and still living in the target town. 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 \times 8 dialogues), with a balanced number of male and female speakers. Table 1 summarises overall duration of dialogue speech materials analysed for each variety.

³ The CLIPS corpus is freely downloadable at www.clips.unina.it. All documentation is in Italian.

Table 1 Overall duration (hours:minutes) of speech materials (Map Task dialogues) for each of the 15 Italian varieties collected in the Corpus of Spoken Italian section of the CLIPS corpus.

Variety	Variety	Variety	Variety	Variety					
Bari	2:19	Catanzaro	2:34	Lecce	2:08	Naples	2:54	Perugia	3:25
Bergamo	3:16	Florence	4:42	Venice	3:25	Palermo	3:11	Rome	3:55
Cagliari	3:13	Genoa	2:20	Milan	3:15	Parma	3:31	Turin	4:06

4.2 The Map Task

In the Map Task (Anderson et al. 1991), pairs of participants (an Instruction Giver and an Instruction Follower) are each given a map. One of the maps has a route drawn on it. The task consists of reproducing as accurately as possible the route on the other map by exchanging information via verbal communication. The task is complicated by the fact that the two maps are not identical in terms of presence and position of the landmarks, thus stimulating possible misunderstandings as in everyday, natural interaction. Given the nature of the task, questions are therefore likely to be produced by participants in the dialogues. In designing the maps, some form of control over speakers' production can be exerted by the experimenter, like selecting the landmark names according to specific research objectives, and eye contact can be inhibited in order to maximise the use of the verbal channel during communication.

The first use of the Map Task for Italian dates back to Grice & Savino (1995, 1997, 2003a, b, 2004) and Savino (1997, 2000) on intonation in Bari Italian. Since these maps were specially designed for intonation analysis, landmark names were controlled for prosodic structure, with names having stress in various positions, and mostly consisting of voiced segments. Moreover, the Bari Italian participants in the Map Task sessions were not informed in advance of the discrepancies between the two maps, thus allowing the authors to make some assumptions on what constituted shared information, and to introduce an element of surprise into the dialogues.

Slight modifications of these maps were also used in two national projects – AVIP (Archivio di Varietà dell'Italiano Parlato – Spoken Italian Varieties Archive) and API (Archivio del Parlato Italiano – Spoken Italian Archive) – to collect and annotate a corpus of spoken Italian dialogues including Bari, Naples and Pisa accents (Refice et al. 2000).

The methodology used for eliciting the dialogues collected in CLIPS presents a number of variants with respect to both the original Map Task and to the Italian maps described above. First of all, in CLIPS each map in a pair has a different route drawn on it, so that each participant plays both the Instruction Giver and Instruction Follower roles within the same session, rather than in two separate ones. Moreover, in the maps no names are attached to the landmarks, consequently reducing control over speakers' productions. These features are visible in Figure 3, which shows one of the map pairs used for the Map Task dialogue sessions collected in the CLIPS corpus. On the other hand, in introducing subjects to the task, the same strategy previously adopted by Grice & Savino (1995, 1997, 2003a, b, 2004) and Savino (1997, 2000) for eliciting Map Task dialogues in Bari Italian was used: crucially, participants were not informed in advance that the two maps were different.

4.3 Pragmatic analysis: Types of yes-no questions analysed

A preliminary step in the investigation was the pragmatic analysis of the polar questions in the dialogues, according to the HCRC⁴ Map Task coding scheme (Carletta et al. 1997), based on both orthographic transcriptions and audio files. In this way, all yes-no questions were identified as the Query-yn, Check and Align conversational moves. According to the above

⁴ Human Communication Research Centre (University of Edinburgh, United Kingdom).

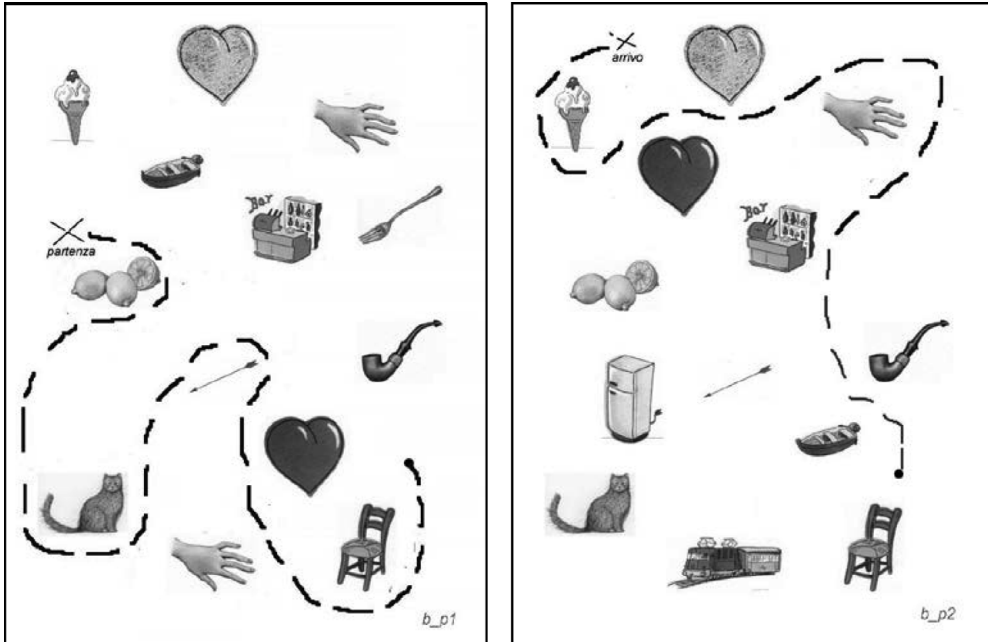


Figure 3 One of the two pairs of maps used in the Map Task dialogues recording sessions of the spontaneous speech materials collected in the CLIPS corpus (originals are colour pictures).

mentioned coding scheme, Query-yn moves ask for new information (typically about the landmarks on the map, e.g. *Do you have a lake?*), whereas Check moves ask for confirmation about transferred or inferred information (typically instructions for drawing the route, e.g. *So I have to go to the right?*), and Align moves typically ask confirmation about participant's understanding or accomplishment of a (sub)task (as for example *Okay?*, *Are you with me?*, *Have you drawn the curve?*). Queries are normally unbiased questions (i.e. they are not biased towards a particular answer type), whereas Checks and Aligns being confirmatory questions can be considered (positively) biased.

In a number of studies on Bari Italian intonational realisations of these three question types also based on Map Task dialogues (Grice & Savino 2003a, b, 2004; see also Grice & Savino 1997; Savino 1997, 2006; Savino & Grice 2007, 2011), it was ascertained that also Check and Align yes–no questions can be either biased or unbiased, according to:

- (i) whether or not accessible information (about which confirmation is requested) is active in the speaker's consciousness (Chafe 1974), and
- (ii) the confidence of the speaker regarding the correctness of the inference made in the question.

Unbiased Checks and Aligns have been called tentative Checks and Aligns in the above-mentioned works. In the present study, all Queries-yn, and tentative Checks and Aligns were extracted for intonation analysis. An example for each category within the related context, excerpted from Grice & Savino (2003a), is shown in Table 2.

4.4 Intonation analysis

The intonation of selected utterances was analysed within an Autosegmental-Metrical (henceforth AM) framework (Ladd 1996). However, since a definitive phonological

Table 2 Examples of Query, and tentative Check and Align yes-no questions in the Bari Italian Map Tasks (from Grice & Savino 2003a). IG = Instruction Giver, IF = Instruction Follower; target utterances are highlighted in bold.

Query	IG: <i>adesso piega verso il basso leggermente</i> IF: <i>sì</i> IG: <i>per due tre centimetri</i> IF: <mm> hai una dimora per animali? IG: <i>sì</i>	IG: 'now turn downwards slightly' IF: 'yes' IG: 'two or three centimeters' IF: '<mm> do you have an animal home?' IG: 'yes' "animal home" never mentioned before in the dialogue = new information
Tentative Check	IG: <i>allora <eeh> dal punto di partenza devi andare praticamente a sinistra del bar <pausa> verso il basso</i> IF: giardino delle visite? IG: <i>no allora devi dirigerti <pausa> in verticale</i>	IG: 'so <er> from the starting point you have to <er> you have to go practically to the left of the bar <pause> towards the bottom' IF: 'visitors' garden?' IG: 'no well you have to go <pause> vertically' "visitors' garden" is the following item on IF's map = accessible information
Tentative Align	IG: <i>e quindi prosegui <eeh> verso il <eeh> un negozio di mobili Elena</i> IF: <i>sì</i> IG: ci sei? IF: <i>sì</i>	IG: 'and therefore continue <eer> towards <er> a furniture shop called Elena' IF: 'yes' IG: 'are you with me?' IF: 'yes'

description implies a more systematic observation of a number of phenomena (such as tonal alignment and association) where hypotheses have to be tested also using controlled speech, the phonological analysis presented in this study has to be considered provisional. The main scope here is describing the nuclear pitch accents and boundary tones as rising or falling, and providing an overall description of the main intonation contours encountered, thus following the same criterion as that adopted by Venditti, Hirschberg & Liscombe (2006).

What we are interested in here is to observe the position of the rise for marking interrogativity (terminal vs. non-terminal), as opposed to the (low) falling movement which is characteristic of unmarked statement intonation in Italian. It is worth noting that an accentual low/fall followed by a low boundary in statements is typical for Italian, independently of the variety considered. Within the AM framework, this contour is generally described with the sequence (H+)L* L-L%, where the pitch range of the falling nuclear accent is normally very compressed (Grice et al. 2005). According to what is generally claimed in the literature, from the analysis of CLIPS data we would expect to find as prototypical yes-no question contours:

- (i) in Northern and Central varieties, a contour with a TERMINAL RISE preceded by an accentual low/fall, i.e. a (H+)L L-H% contour type (rise in terminal position); and
- (ii) in Southern accents, a contour with an ACCENTUAL RISE followed by a terminal fall, i.e. a L+H L-L% contour type (rise in non-terminal position).

In addition, since in some of the Southern varieties a high boundary (H%) instead of a low boundary (L%) has been attested in relation to some paralinguistic meaning (as reported in Section 3), the L+H L-H% contour type, i.e. an accentual rise followed by an extra final rise is also expected to be found at least in Bari, Naples and Palermo dialogues.

Selected utterances were analysed using the Praat software package for speech analysis (Boersma & Weenink 2001).

Table 3 Number of polar questions analysed for each of the 15 Italian accents in the CLIPS corpus (total number 2,368).

Variety	Variety	Variety	Variety	Variety					
Bari	116	Catanzaro	76	Lecce	76	Naples	118	Perugia	151
Bergamo	203	Florence	304	Venice	214	Palermo	200	Rome	151
Cagliari	68	Genoa	110	Milan	114	Parma	222	Turin	245

5 Results

5.1 Distribution of yes–no question contour types in the 15 Italian varieties

The number of yes–no questions included in this study for each variety (a total of 2,368) is shown in Table 3. For the Venetian data, results refer to seven of the eight dialogues available in the corpus, as in the remaining dialogue participants interacted using dialect throughout the recording session. For the Cagliari data, it was impossible to analyse two of the eight dialogues available because of the very low amplitude of the recorded signal characterising those two dialogues.

In this section, an overview of the distribution of the yes–no question contour types encountered in the data is presented. This distribution, variety by variety, is shown in pie-charts in Figure 4. In these charts, black areas indicate the percentage of (H+)L L-H% contour type, i.e. those with a rise in terminal position without an accentual rise ((fall–rise shape), whereas grey areas represent the percentage of cases of an accentual rise with and without a final rise. In particular, dark grey zones refer to L+H L-L% contour cases (rise–fall shape), and light grey to L+H L-H% contour cases (rise–fall–rise shape). Finally, the white zones in the charts represent cases of contours different from the three main ones (these are included in the broad category ‘others’).

By looking at the statistical results, it can be noted that the (H+)L L-H% contour type is the most widespread intonation pattern in only five accents, those spoken in Bergamo (94.6%), Milan (98.3%), Perugia (91.4%), Cagliari (88.2%), and Lecce (85.6%). Note that in Bergamo and Milan the contour is falling–rising (i.e. the pitch accent preceding the final rise is falling), whereas in the remaining three it is rising (i.e. an accentual low precedes the final rise), even though here the two contour types are collapsed into one broad category (for a detailed description and examples of all contours see Section 5.2 below).

For seven other varieties, results clearly show that by far the most prevalent intonation contour is the L+H L-L%, i.e. one characterised by an accentual rise followed by a terminal fall: Turin (80%), Venice (94.4%), Parma (92.9%), Bari (86.2%), Naples (89%), Catanzaro (81.8%), and Palermo (83.6%). It is worth noting that, as expected, cases of an accentual L+H followed by a L-H% boundary have also been found in Bari (12.1%), Naples (10.2%) and Palermo (8.5%). As described in Section 3, it has been shown that the L-H% final rise plays a paralinguistic role in question intonation for these varieties. In the CLIPS data, similar small percentages of L+H L-H% cases have also been found in the remaining four varieties, namely Turin (5.3%), Venice (2.3%), Parma (6.7%), and Catanzaro (10.6%). Such a trend encourages speculation that in these four accents a high boundary might play a similar role as in Bari, Naples and Palermo.

As for the remaining three varieties, namely those spoken in Genoa, Florence and Rome, numbers are not clear-cut enough to allow us to determine which contour type can be considered as prototypical in these regional accents.

In Roman questions, there is an almost equal distribution of L+H L-L% (47%) and L+H L-H% (51%) contour types. This indicates that both an accentual rise followed by a final fall, and an accentual rise followed by an extra final rise are equally very common intonational strategies for questioning in this variety.

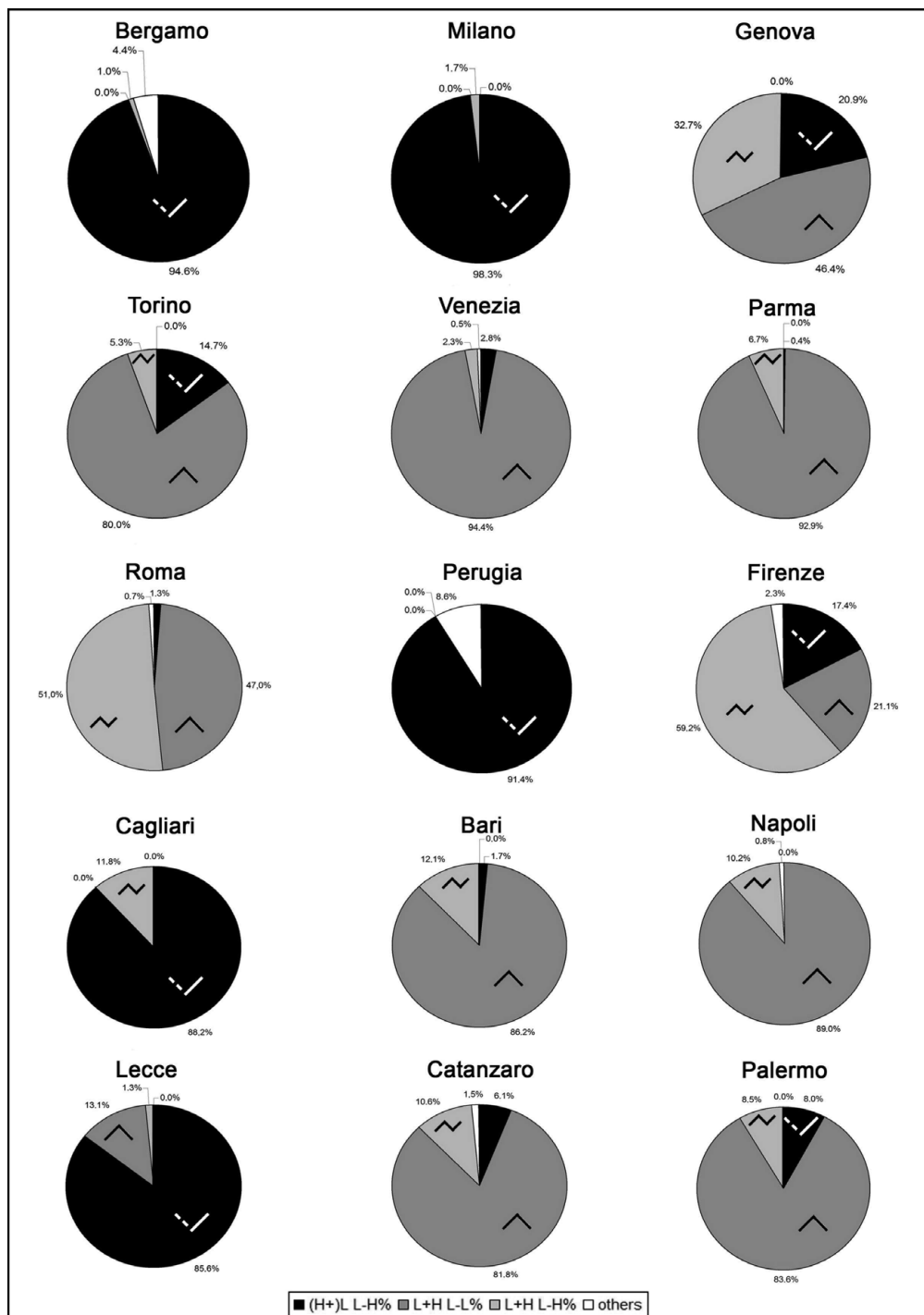


Figure 4 Distribution (in percentage) of yes-no question contour types for each of the 15 Italian varieties analysed.

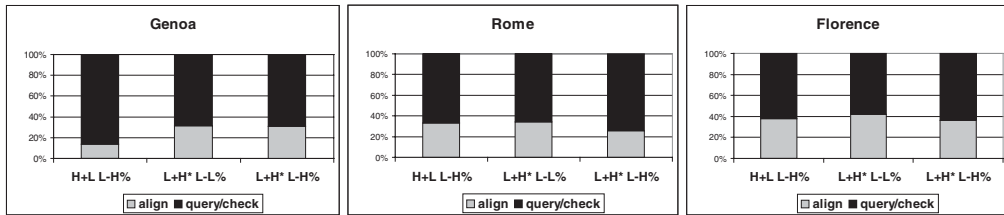


Figure 5 Distribution (in percentage) of the unbiased Align (grey bars) and Query/Check (black bars) polar questions realised as H+L L-H%, L+H L-L% and L+H L-H% in Genoese, Roman and Florentine data.

Also in Genoa, percentages do not show a clear trend: L+H L-L% has 46.4%, L+H L-H% has 32.7%, and H+L L-H% has 20.9%. Note that the great majority of the questions realised with a fall-rise contour (H+L L-H%) are utterances with a marked information structure, where the last pitch accent is post-focal.

In Florence, the L+H L-H% contour prevails over the others, even though 59.2% of distribution cannot be considered as the prototypical one in absolute terms, whereas the L+H L-L% tune has a percentage of 21.1%, and H+L L-H% has a percentage of 17.4%. Also here the H+L L-H% contour is the intonational strategy mostly found in questions with a marked information structure.

However, an observable trend in these three varieties is that an accentual rise – followed by either a falling or a rising boundary – is a more common intonational strategy in questions than a terminal rise preceded by an accentual low/fall. This is particularly clear in Roman questions, where the H+L L-H% accounts for very few cases (1.3%), whereas in Genoa and Florence it seems confined to some marked type of the unbiased polar questions analysed.

The distribution of L+H L-L% and L+H L-H% tunes in these three varieties might suggest an association of a contour type with one specific pragmatic use of the questions. Yet this does not appear to be the case, as can be seen in Figure 5, which shows the distribution (in percentage) of the pragmatic categories within each of the two contour types for the three Italian accents mentioned. In terms of pragmatic use, Queries and tentative Checks are collapsed here into one category, as they both are unbiased polar questions asking for information, whereas tentative Aligns are unbiased yes–no questions asking for feedback about discourse status. Results indicate that the hypothesis of attributing one contour type to one specific pragmatic use of questions is not sustainable, since both Query and Check (black) and Align (grey) questions are realised with either L+H L-L% or L+H L-H%, where the incidence of the pragmatic types is similar in the two contour type sets. For the sake of completeness, Figure 5 also shows the same distribution for the H+L L-H% contour (recall that for Rome we found very few cases of questions with this contour).

Results for these three varieties do not point to assigning a specific linguistic or pragmatic function to the boundary tone in unbiased question contours where the accentual rise is followed by either a falling or a rising boundary. Further research is needed for shedding light on this issue.

5.2 Prototypical yes–no question contours in the 15 Italian varieties

The following sections provide discussion of the most commonly occurring question intonation contour for each of the 15 Italian accents. These can be subdivided into two broad groups: (i) those with a rising terminal and no accentual rise, and (ii) those with an accentual rise with or without a terminal rise.

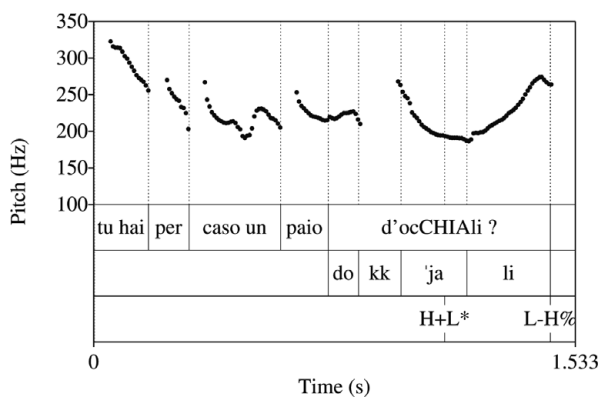


Figure 6 Bergamo yes-no question (Query) *Tu hai per caso un paio di ocCHIAli?* 'Do you have by chance glasses?' with falling-rising contour (H+L* L-H%).

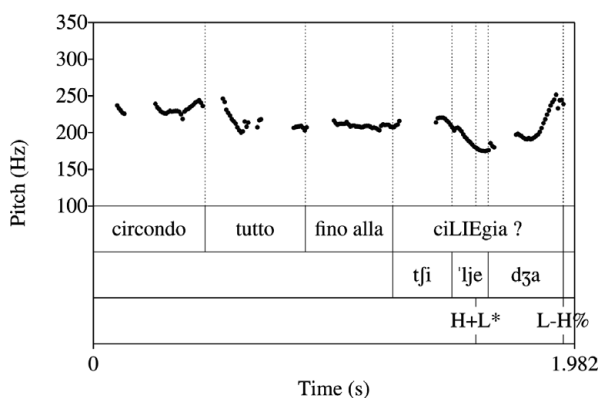


Figure 7 Milan yes-no question (Check) *Cirondo tutto fino alla ciLIEgia?* 'Shall I go round everything until the cherry?' with falling-rising contour (H+L* L-H%).

5.2.1 Terminal rise preceded by accentual low/fall: (H+)L L-H% contour type

A terminal rise preceded by an accentual low/fall is the prototypical question contour in Bergamo, Milan, Perugia, Cagliari and Lecce.

The intonational sequence proposed for describing the falling-rising pattern which is most typical of Bergamo and Milan yes-no questions is H+L*L-H%; an example for Bergamo is shown in Figure 6, and one for Milan in Figure 7. In these and all of the subsequent figures, the F0 trace is shown along with the word-by-word orthographic annotation (upper tier), the syllable-by-syllable broad phonetic transcription of the pre-nuclear, nuclear, and post-nuclear segmental portion of the utterance (mid tier), and the intonation analysis (bottom tier). The nuclear syllable is capitalised in the orthographic tier (as well as in the figure caption), and it is also identifiable in the segmental broad phonetic transcription tier as the one marked with lexical stress.

For Cagliari, the (falling)-rising contour is described with (H+)L* L-H% (Figure 8), where parentheses indicate uncertainty about the phonological role of the H tone preceding the valley.

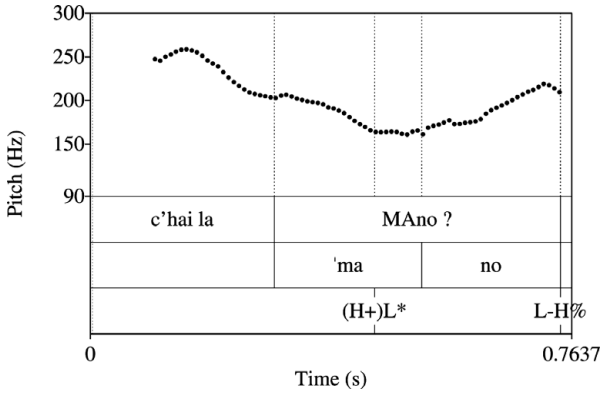


Figure 8 Cagliari yes-no question (Query) *C'hai la MA'no?* 'Do you have the hand?' with (falling-)rising contour ((H+)L* L-H%).

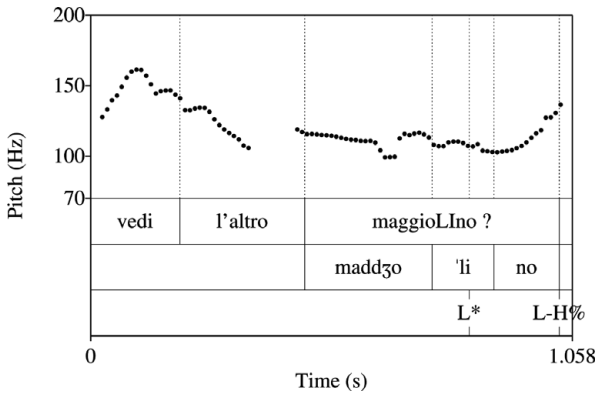


Figure 9 Perugia yes-no question (Align) *Vedi l'altro maggioL'no?* 'See the other Maggiolino car?' with rising contour (L* L-H%).

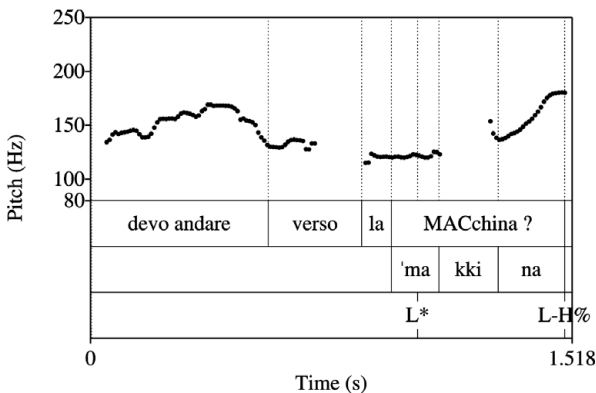


Figure 10 Lecce yes-no question (Check) *Devo andare verso la MACchina?* 'Shall I go towards the car?' with rising contour (L* L-H%).

A question intonation contour typical of Perugia and Lecce is a valley followed by a gradual rising movement, described with the sequence L* L-H% for both Italian accents. An example for each of them is shown in Figures 9 and 10, respectively.

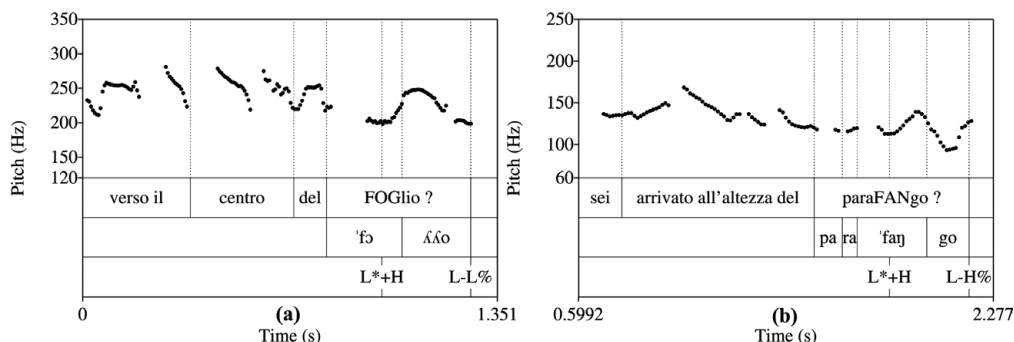


Figure 11 Turin yes–no questions: (a) (Check) 'Verso il centro del FOGlio?' 'Towards the centre of the sheet?' with rising–falling contour (L*+H L-L%); (b) (Align) *Sei arrivato all'altezza del paraFANgo?* 'Have you arrived at the mudguard?' with an extra H% to the rising–falling contour (L*+H L-H%).

Interestingly, in their account of Lecce yes–no question intonation, Endo & Bertinetto (1997) found a rising–falling contour to be the most dominant instead. At the same time, however, authors admit that results on this variety should be treated with particular caution, as some native speakers of Lecce had perceptually judged Lecce yes–no questions elicited by the researchers as not typical of that variety. In fact, Endo & Bertinetto (1997) specify that the Lecce accent recordings were carried out with speakers from Miggiano, a small town 40 km from Lecce. This indicates the magnitude of possible variability among Italian accents even within a relatively small geographical area, implying that considerable attention needs to be paid to the geolinguistic background when selecting speakers.

5.2.2 Accentual rise with or without a terminal rise: L+H L-L% and L+H L-H% contour types

In this group of 10 Italian accents, seven varieties show a highly predominant occurrence of the rise–fall F0 shape, i.e. a rise on the nuclear syllable followed by a low boundary: Turin, Venice, Parma, Bari, Naples, Catanzaro and Palermo. In Turin, Venice, Parma, Naples and Palermo the peak of the rise appears to be aligned late in the nuclear syllable. The analysis for this type of contour proposed by Interlandi (2003) and Interlandi & Romano (2003) for Turin, and by Grice (1995) for Palermo is L*+H L-L%, and it is confirmed here. For Naples, D'Imperio (2001a, b among others) proposes an HL- phrase accent instead of L- (see Grice et al. 2005 for discussion), that is L*+H HL-L%. The latter analysis is retained for Neapolitan in this paper.

Examples of prototypical rise–fall contours in Turin, Parma, Venice, Palermo and Naples yes–no questions are shown in Figures 11a, 12, 13, 14, and 15, respectively.

In Bari (Figure 16) and Catanzaro (Figure 17), the peak of the rise is reached around the middle of the accented syllable. The different alignment with respect to the previous case is reflected in the phonological sequence which describes this rise–fall contour: L+H* L-L%. This analysis has been already proposed for Bari Italian in a number of previous studies also based on Map Task dialogues (Grice & Savino 1995, 1997, 2003a, b, 2004; Savino 1997, 2000; Savino & Grice 2007, 2011).

As described above, in all of these seven varieties a rising movement after the fall (L-H%) has been encountered in small percentages in yes–no questions. This was expected for Bari (see e.g. Grice & Savino 1997, Refice, Savino & Grice 1997, Savino 1997, 2000), Palermo (Grice 1995) and Naples (Maturi 1988), where this feature has already been attested in the previous studies mentioned in this paper, and associated with some paralinguistic meaning in

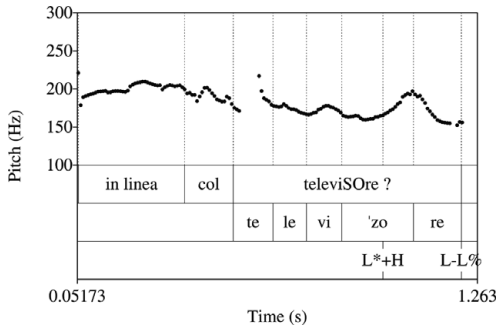


Figure 12 Parma yes-no question (Check) *In linea con il televiSore?* 'In line with the television set?' with rising-falling contour (L*+H L-L%).

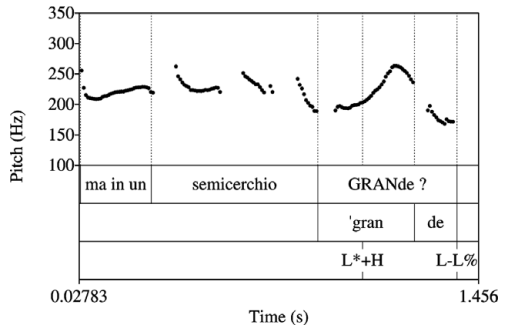


Figure 13 Venice yes-no question (Check) *Ma in un semicerchio GRANde?* 'But in a large semi-circle?' with rising-falling contour (L*+H L-L%).

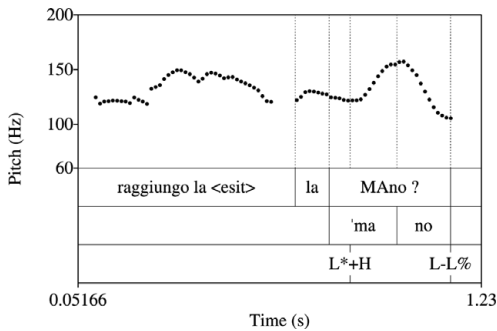


Figure 14 Palermo yes-no question (Check) *Raggiungo la <esit> la MAno?* 'Shall I reach the <esit> the hand?' with rising-falling contour (L*+H L-L%).

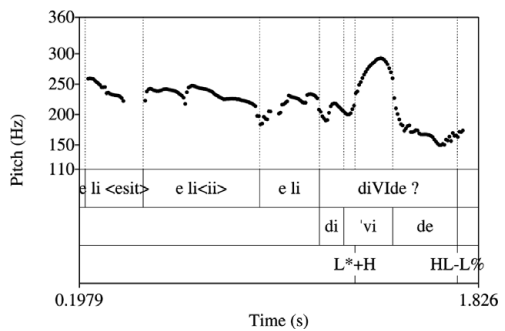


Figure 15 Naples yes-no question (Check) *E li <esit> e li <ii> e li diVide?* 'And it <eer> and it divides them?' with rising-falling contour (L+H* HL-L%).

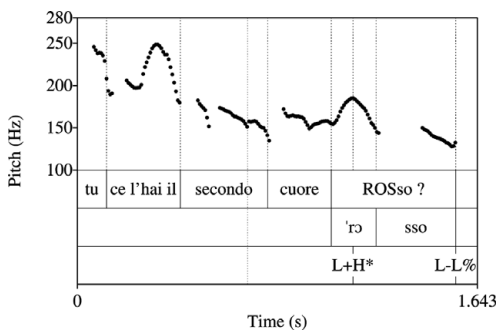


Figure 16 Bari yes-no question (Query) *Tu ce l'hai il secondo cuore ROSso?* 'Do you have the second red heart?' with rising-falling contour (L+H* L-L%).

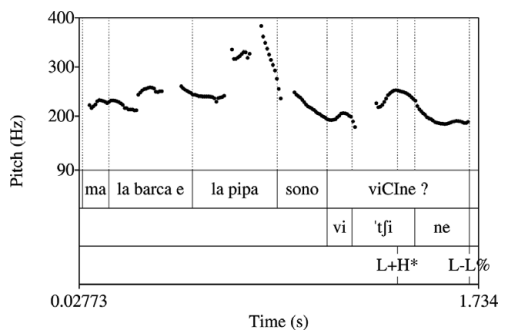


Figure 17 Catanzaro yes-no question (Check) *Ma la barca e la pipa sono viCine?* 'But the boat and the pipe are close to each other?' with rising-falling contour (L+H* L-L%).

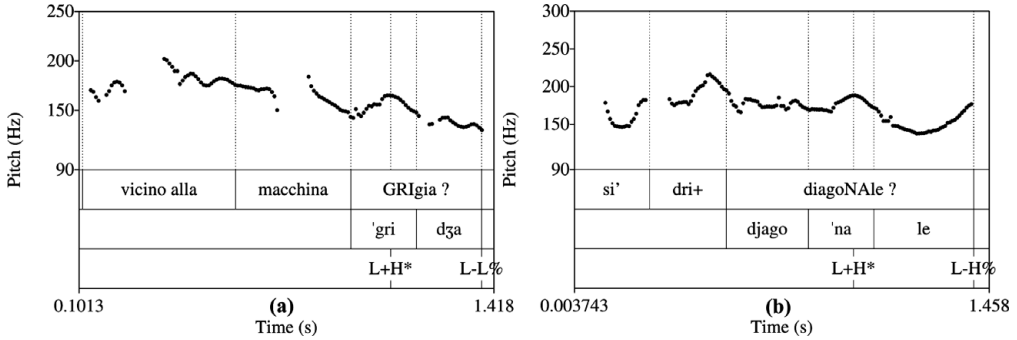


Figure 18 Genoa yes-no questions: (a) (Check) *Vicino alla macchina GRIGia?* 'Close to the grey car?' with rising-falling contour (L+H* L-L%); (b) (Check) *DiagoNAle?* 'Diagonal?' with rising-falling-rising contour (L+H* L-H%).

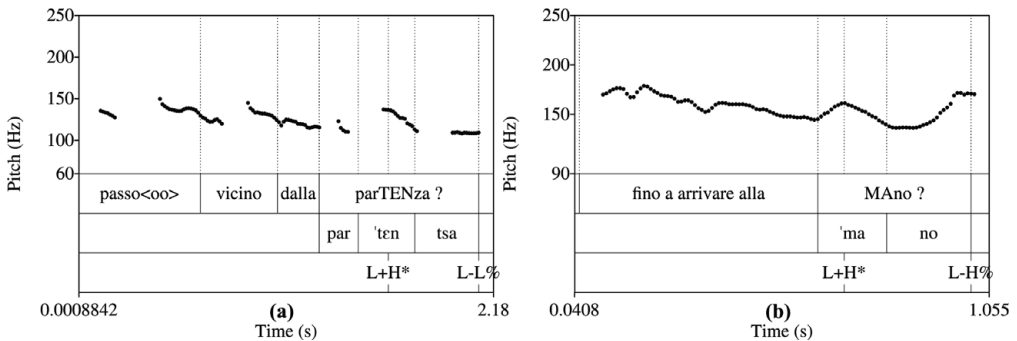


Figure 19 Florence yes-no questions: (a) (Check) *Passo<oo> vicino dalla parTENza?* 'Shall I go <eer> close to the start?' with rising-falling contour (L+H* L-L%); (b) (Check) *Fino a arrivare alla MANo?* 'Till getting to the hand?' with rising-falling-rising contour (L+H* L-H%).

spontaneous speech (but also with 'reading style' effect in read speech, for further discussion on this issue see Section 6 below).

As mentioned in Section 5.1, at this stage, it can only be speculated that a similar paralinguistic role is played by H% also in Turin, Venice, Parma and Catanzaro questions.

An example of this rise-fall-rise contour type is shown for the Turin variety in Figure 11b.

As for the remaining three varieties, i.e. those spoken in Genoa, Rome and Florence, statistical analysis has clearly shown that an accentual rise followed by either a fall or a rise is the most common intonational feature in polar questions, even though numbers are not sharp enough to indicate unambiguously which of the two contour types can be considered as the prototypical one in each of the three accents.

Genoese, Florentine and Roman yes-no question rise-fall contours can be described with the sequence L+H* L-L% (an example for each variety is shown in Figures 18a, 19a and 20a, respectively), and rise-fall-rise with L+H* L-H% (an example for each is shown in Figures 18b, 19b and 20b, respectively). In this latter contour type, it is observed that the size of the F0 excursion in the final rise can vary significantly, ranging from a large to a very reduced one.

It is worth pointing out that our results on Florence Italian are not in line with those presented by Magno Caldognetto et al. (1978) (discussed in Section 3 above), according to which the terminal rise alone is responsible for marking interrogativity in this variety, and are partially in line with those reported in Grice et al. (2005), where the combination of a

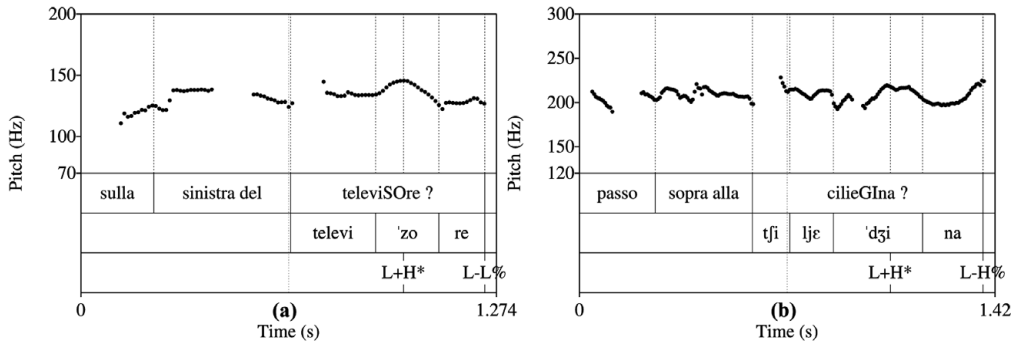


Figure 20 Rome yes-no questions: (a) (Check) *Sulla sinistra del televisore?* 'To the left of the television set?' with rising-falling contour (L+H* L-L%); (b) (Check) *Passo sopra la ciliegina?* 'Shall I go above the little cherry?' with rising-falling-rising contour (L+H* L-H%).

nuclear peak and a high boundary is responsible for marking such a distinction. Our analysis of CLIPS data shows that Florentine questions can be characterised by either a high or a low boundary tone after the accentual rise, with a prevailing use of the former. Our findings confirm the important role played by a high boundary in cueing questions in this variety, as reported in Grice et al. (2005). At the same time, they call for further research on the specific role of the boundary tone in marking interrogativity in the Florentine variety, since in our data we found that both high and low edge tones can be used after the L+H accent. Similar results obtained in our data for Genoa and Rome raise the same issue also for these two varieties.

6 Discussion

According to what is generally claimed in the literature, the following distribution of the prototypical contour types for yes-no questions should be expected from our analysis:

- (i) a terminal rise preceded by an accentual low/fall ((H+)L L-H% contour) in 10 of the 15 varieties: Bergamo, Milan, Genoa, Turin, Venice and Parma from the North; Rome, Perugia, Florence and Cagliari from the Centre;
- (ii) an accentual rise followed by a final fall (L+H L-L%) in the remaining five accents: Bari, Naples, Lecce, Catanzaro and Palermo, all from the South.

Our results (summarised in Table 4) show a different picture. First of all, only five (two from the North, two from the Centre, and one from the South) of the 15 Italian varieties analysed have the (H+)L L-H% contour type as the prototypical intonation contour for questions, i.e. a terminal rise preceded by an accentual low/fall.

The remaining 10 varieties (four from the North, two from the Centre, and four from the South) have a rise on the nuclear pitch accent (L+H) as the most common intonational feature. Among those, in seven accents (Turin, Venice, Parma, Bari, Naples, Catanzaro and Palermo – three from the North and four from the South) the accentual rise is prototypically followed by a low boundary, and occasionally followed by an extra final rise.

For the remaining three accents, namely Genoa, Florence and Rome, the accentual L+H can be followed by either a falling (L-L%) or a rising (L-H%) boundary. In this case, percentages of their distribution do not indicate clearly which tune type can be considered as prototypical. Neither can the rise-fall and the rise-fall-rise contours be associated with a specific pragmatic use (Query and tentative Check or tentative Align) of the unbiased polar questions analysed, as shown in Section 5.1 above. Further research is needed to shed more

Table 4 Distribution of most commonly occurring polar question FO contours across the 15 Italian regional accents as resulting from the analysis of the Map Task dialogues in the CLIPS corpus. A provisional phonological description of melodic contour for each variety is also presented. Note that for Genoa, Rome and Florence both the rise-fall and the rise-fall-rise contours are included, as both contour types are almost equally distributed in these three varieties. For the remaining varieties characterised by an accentual rise (L+H) followed by a fall (L-L%), an H% in parentheses indicates that an extra final rise has been found in small percentages in the CLIPS dialogues.

YES-NO QUESTIONS			
	Italian variety	Intonation pattern	Phonological description
North	Bergamo		H+L* L-H%
	Milan		H+L* L-H%
	Genoa		L+H* L-L%
			L+H* L-H%
	Turin		L*+H L-L% (H%)
	Venice		L*+H L-L% (H%)
Parma		L*+H L-L% (H%)	
Centre	Rome		L+H* L-L%
			L+H* L-H%
	Perugia		L* L-H%
	Florence		L+H* L-L%
		L+H* L-H%	
Cagliari		(H+)L* L-H%	
South	Bari		L+H* L-L% (H%)
	Naples		L*+H HL-L% (H%)
	Lecce		L* L-H%
	Catanzaro		L+H* L-L% (H%)
	Palermo		L*+H L-L% (H%)

light on the specific contribution of the boundary tone in marking yes–no questions in these three varieties.

To summarise, in our results two main trends can be identified:

1. An accentual rise (GENERALLY followed by a final fall) is a more common intonational strategy for marking questioning than a terminal rise preceded by an accentual low/fall, the latter being claimed in the literature as by far the most prevalent in Italian (Standard, Northern and Central accents).
2. The distribution of the contour types is not geographically related.

It can be hypothesised that the different picture offered by our results of CLIPS data with respect to what is generally described in the literature can be due to the different speech type analysed – spontaneous speech (task-oriented dialogues) in the present study, read speech in the majority of previous works on Italian varieties (including Standard Italian).

As mentioned in Section 3 above, it has already been observed in some varieties that a terminal rise in questions is the most typical intonational feature in read speech. Past investigations on Bari Italian have demonstrated that speakers tend to produce yes–no questions with an extra terminal rise after the accentual rise (L+H L-H%) in reading tasks (Savino & Refice 1996, Grice, Savino & Refice 1997, Refice, Savino & Grice 1997). Maturi

(1988) observes the same tendency in his Neapolitan speakers, whereas Sieneese speakers tend to use two completely different intonational strategies: an accentual rise followed by a fall in spontaneous speech, and a terminal rise preceded by an accentual fall in read speech (Marotta & Sorianello 1999).

Recall also that Endo & Bertinetto (1997), in their analysis of yes–no questions in nine Italian accents elicited through a reading task (as reported in Section 3 above), warn the readers about the reliability of their results, as the influence of the reading speaking style has to be taken into account. All these authors hypothesise that Italian speakers tend to produce terminal rises in read questions because they unconsciously assume that a more ‘formal’ and ‘Standard-like’ speaking style has to be used in a reading task, where ‘Standard-like’ speaking style is associated with ‘ending the contour with a rise’ in questions.

Apparently, this can be realised by speakers when reading texts aloud by either adding an extra rise after a rising pitch accent (as demonstrated in Bari and Naples by Grice, Savino & Refice 1997 and Refice, Savino & Grice 1997), or by producing the typical terminal rise after a low/falling pitch accent (as shown for Sieneese speakers in Marotta & Sorianello 1999, or for Turin, Venice, Bari, Naples readers in Canepari 1980, see discussion below).

The influence of the ‘reading task effect’ can also explain why results of the present study contrast with those obtained by Canepari (1980) in his analysis of yes–no questions in 21 Northern, Central and Southern varieties, where all of them are described as being characterised by a functional terminal rise preceded by an accentual low/fall (as reported in Section 3). In fact, Canepari’s analysis is also based on read speech: the author explains that in order to analyse comparable speech materials, all speakers from the 21 varieties were asked to read aloud the same set of isolated sentences. If we compare our results with those obtained by Canepari as reproduced in Figure 1 above, it can be noted that only for Milan, Perugia and Cagliari do both analyses agree in reporting a falling–rising F0 contour, whereas for the remaining ones (Genoa, Turin, Venice, Rome, Florence, Bari and Naples) in the CLIPS dialogues we found the accentual rise followed by a final fall (to which an extra final rise can be added, especially in Genoa, Florence and Rome) to be the most typical contour, whereas Canepari indicates a low/falling nuclear accent followed by a terminal rise for all of them.

The use of the two different speech types (spontaneous vs. read) can also help to explain why our results for Florentine present some dissimilarities with those obtained by Magno Caldognetto et al. (1978) and by Grice et al. (2005) (as already explained in Section 5.2.2). In fact, examples of Florentine yes–no questions described by Grice et al. (2005) refer to read speech only; this might explain why cases of terminal falls were probably not found in their data.

In the Magno Caldognetto et al.’s (1978) study, the authors explicitly declare that it was based on analysis of isolated sentences read aloud. Recall that in this case they systematically found a rise on the final part of the contour in all questions analysed, as opposed to a fall in their declarative counterparts. Since they did not take into account the F0 movement on the nuclear syllable in their analysis, their conclusion is even more restrictive than that in Grice et al. (2005). Magno Caldognetto et al. attribute to the terminal contour alone the role of distinguishing between questions and statements in Florentine Italian, i.e. the same property as that described for Standard Italian in the literature. In fact, the authors claim that ‘[J]UST AS IT WAS EXPECTED, the terminal contour of the last syllable is the most important phonetic feature in distinguishing statements from yes–no questions; in fact, statements have a final contour slightly falling or stationary, while yes–no questions have a final contour sharply rising’ (Magno Caldognetto et al. 1978: 64–65; emphasis added – MS). In this case, it appears that Magno Caldognetto et al.’s analysis of the Florence variety has been strongly influenced also by expectations of similarities between Florentine and Standard Italian, as the latter is said to be derived from the former.

Our results for Florentine also call into question the assumption according to which Standard Italian derives from the Florentine or, more generally, from the ‘Tuscan’ variety. It appears that it does not hold true for intonation. On the other hand, a rising–falling and

NOT a falling-rising contour is the typical intonation pattern described also for other varieties spoken in Tuscany when spontaneous speech is analysed (Pisa, Lucca, Siena; see Section 3).⁵

Where does Standard Italian yes–no question intonation analysis come from, then? It can be speculated that since in traditional studies the speech materials analysed (mainly via auditory analysis only) consisted of read speech, yes–no questions were systematically produced with a final rise, regardless of the specific geolinguistic origin of the speakers (i.e. whether that terminal rise could be preceded or not by an accentual rise). The systematic realisation of this final rise might have resulted in the intonational description of Standard Italian polar questions as being characterised by a functional terminal rise. Such an interpretation has probably gained ground also because a terminal rise as the primary feature marking interrogativity has been generally accounted for as the most common feature across languages (Bolinger 1978).

7 Concluding remarks

Results presented in this paper have shown that a rise on the nuclear syllable generally followed by a fall is a very common intonational feature for signalling questions across Northern, Central and Southern Italian varieties, and not an exception confined to a number of Southern accents. These results call into question the general claim that a terminal rise preceded by an accentual low/fall is the most typical intonational strategy in Italian questions.

The reason for such a discrepancy in results seems to be attributable to the nature of the data analysed: mainly read speech in previous investigations, and spontaneous speech in the present study. The influence of speaking style along the spontaneous–read dimension in the realisation of the F0 contour in questions has been attested also for other languages, for example, American English (Hirschberg 1995, 2000), German (Kügler 2003), and Bulgarian (Andreeva, Koreman & Barry 2003). In these languages, it has been found that spontaneous yes–no questions are characterised by a low boundary tone, whereas a high boundary is more typical of read questions. Our findings in Italian lend further support to this claim, pointing out the importance of controlling such a parameter when analysing intonation, especially when questions are involved. In fact, the predominance of the terminal rise reported in the literature as the most widespread feature of question intonation across Italian varieties, including the Standard variety, is possibly attributable to an ‘underestimation’ of the role of the ‘reading style effect’ in the intonation contours produced.

Our analysis has also ascertained that the distribution of the contours for questions is NOT geographical, as has been claimed in the literature. Therefore, references to overall Northern, Central and Southern Italian intonation systems are inaccurate, with methodological implications for a number of research fields, including second language acquisition research and speech technology localisation projects.

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⁵ These studies on Tuscan varieties also corroborate findings of the present analysis, in that it is the rise-fall contour which is the most widespread melodic pattern for yes–no questions across Italian regional accents, not the fall-rise.

References

- Agard, Frederick B. & Robert J. Di Pietro. 1965. *The sounds of English and Italian*. Chicago: University of Chicago Press.
- Albano Leoni, Federico, Andrea Paoloni, Mario Refice, Paolo Rinaldo, Michelina Savino & Alberto Sobrero. 1998. CLIP: Corpus della Lingua Italiana Parlata [Corpus of Spoken Italian]. *The 1st International Conference on Language Resources & Evaluation (LREC 1998)*, vol. 1, 503–506.
- Anderson, Anne, Miles Bader, Ellen Gurman Bard, Elizabeth Boyle, Gwyneth Doherty, Steve Garrod, Stephen Isard, Jacqueline Kowtko, Jan McAllister, Jim Miller, Catherine Sotillo, Henry Thompson & Regina Weinert. 1991. The HCRC Map Task Corpus. *Language and Speech* 34(4), 351–366.
- Andreeva, Bistra, Jacques Koreman & William J. Barry. 2003. Phonatory demarcations of intonation phrases in Bulgarian. *The 15th International Congress of Phonetic Sciences (ICPhS 15)*, 611–614.
- Avesani, Cinzia. 1990. A contribution to the synthesis of Italian intonation. *The International Conference of Spoken Language Processing (ICLSP '90)*, 833–836.
- Avesani, Cinzia. 1995. ToBI: un sistema di trascrizione per l'intonazione italiana. *Atti delle V Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 85–98.
- Bartels, Christine. 1999. *The intonation of English statements and questions: A compositional interpretation*. New York: Garland.
- Bertinetto, Pier Marco & Michele Loporcaro. 2005. The sound pattern of Standard Italian, as compared with the varieties spoken in Florence, Milan and Rome. *Journal of the International Phonetic Association* 35(2), 131–151.
- Boersma, Paul & David Weenink. 2001. Praat, a system for doing phonetics by computer. *Glott International* 5(9/10), 341–345.
- Bolinger, Dwight. 1978. Intonation across languages. In Joseph H. Greenberg (ed.), *Universals of human languages*, 471–524. Stanford, CA: Stanford University Press.
- Bolinger, Dwight. 1989. *Intonation and its uses: Melody in grammar and discourse*. London: Edward Arnold.
- Canepari, Luciano. 1979. *Introduzione alla fonetica*. Torino: Einaudi.
- Canepari, Luciano. 1980. *Italiano standard e pronunce regionali*. Padova: Cleup.
- Canepari, Luciano. 1985. *L'intonazione. Linguistica e paralinguistica*. Napoli: Liguori.
- Caputo, Maria Rosaria. 1994. L'intonazione delle domande sì/no in un campione di italiano parlato. *Atti delle IV Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 9–18.
- Carletta, Jean, Amy Isard, Stephen Isard, Jacqueline Kowtko, Gwyneth Doherty-Sneddon & Anne Anderson. 1997. The reliability of a dialogue structure coding scheme. *Computational Linguistics* 23(1), 13–32.
- Chafe, Wallace. 1974. Language and consciousness. *Language* 50, 111–133.
- Chapallaz, Marguerite. 1979. *The pronunciation of Italian: A practical introduction*. London: Bell and Hyman.
- Crocco, Claudia. 2006. Prosodic and informational aspects of polar questions in Neapolitan Italian. *The 3rd International Conference on Speech Prosody 2006 (CD-ROM)*.
- Cruttenden, Alan. 1981. Falls and rises: Meanings and universals. *Journal of Linguistics* 17, 1–178.
- Crystal, David. 1969. *Prosodic systems and intonation in English*. Cambridge: Cambridge University Press.
- De Dominicis, Amedeo. 2002. Assertive e interrogative a Bologna e a Roma. *Atti delle XII Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 129–136.
- De Mauro, Tullio. 1963. *Storia linguistica dell'Italia unita*. Bari: Laterza.
- D'Eugenio, Antonio. 1982. *Major problems of English phonology: With special reference to Italian-speaking learners*. Foggia: Atlantica.
- D'Imperio, Mariapaola. 1999. Tonal structure and pitch targets in Italian focus constituents. *The 14th International Congress of Phonetic Sciences (ICPhS 14)*, vol. 3, 1757–1760.
- D'Imperio, Mariapaola. 2000. *The role of perception in defining tonal targets and their alignment*. Ph.D. dissertation, The Ohio State University.

- D'Imperio, Mariapaola. 2001a. Tonal alignment, scaling and slope in Italian question and statement tunes. *Eurospeech 2001*, vol. 1, 99–102.
- D'Imperio, Mariapaola. 2001b. Focus and tonal structure in Neapolitan Italian. *Speech Communication* 33, 339–356.
- D'Imperio, Mariapaola. 2002. Italian intonation: An overview and some questions. *Probus* 14, 37–49.
- D'Imperio, Mariapaola & David House. 1997. Perception of question and statement in Neapolitan Italian. *Eurospeech 1997*, vol. 1, 1251–1254.
- Endo, Reiko & Pier Marco Bertinetto. 1997. Aspetti dell'intonazione in alcune varietà dell'italiano. *Atti delle VII Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 27–49.
- Geluykens, Ronald. 1988. On the myth of rising intonation in polar questions. *Journal of Pragmatics* 12, 467–485.
- Gili Fivela, Barbara. 2002. L'intonazione nella varietà pisana di italiano: analisi delle caratteristiche principali. *Atti delle XII Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 103–111.
- Gili Fivela, Barbara. 2004. *The phonetics and phonology of intonation: The case of Pisa Italian*. Ph.D. dissertation, Scuola Normale Superiore di Pisa.
- Gili Fivela, Barbara. 2008. *Intonation in production and perception: The case of Pisa Italian*. Alessandria: Edizioni dell'Orso.
- Giordano, Rosa. 2006. The intonation of polar questions in two central varieties of Italian. *The 3rd International Conference on Speech Prosody 2006 (CD-ROM)*.
- Grice, Martine. 1991. The intonation of interrogation of two varieties of Sicilian Italian. *The 12th International Congress of Phonetic Sciences (ICPhS 12)*, vol. 5, 210–213.
- Grice, Martine. 1995. *The intonation of interrogation in Palermo Italian: Implication for intonation theory*. Tübingen: Niemeyer.
- Grice, Martine, Mariapaola D'Imperio, Micheline Savino & Cinzia Avesani. 2005. Strategies for intonation labelling across varieties of Italian. In Sun-Ah Jun (ed.), *Prosodic typology: The phonology of intonation and phrasing*, 362–389. New York: Oxford University Press.
- Grice, Martine & Micheline Savino. 1995. Low tone versus 'sag' in Bari Italian intonation: A perceptual experiment. *The 13th International Congress of Phonetic Sciences (ICPhS 13)*, vol. 3, 648–651.
- Grice, Martine & Micheline Savino. 1997. Can pitch accent type convey information status in yes–no questions? *Workshop sponsored by the ACL, Concept-to-Speech Generation Systems*, 29–38.
- Grice, Martine & Micheline Savino. 2003a. Map Tasks in Italian: Asking questions about given, accessible and new information. *Catalan Journal of Linguistics* 2, 153–180.
- Grice, Martine & Micheline Savino. 2003b. Question type and information structure in Italian. *International Workshop Prosodic Interfaces*, 117–122.
- Grice, Martine & Micheline Savino. 2004. Information structure and questions: Evidence from task-oriented dialogues in a variety of Italian. In Peter Gilles & Jörg Peters (eds.), *Regional variation in intonation*, 161–187. Tübingen: Niemeyer.
- Grice, Martine, Micheline Savino & Mario Refice. 1997. The intonation of questions in Bari Italian: Do speakers replicate their spontaneous speech when reading? *PHONUS* 3, 1–7. [Institut für Phonetik, Universität des Saarlandes, Saarbrücken.]
- Gussenhoven, Carlos. 2004. *The phonology of tone and intonation*. Cambridge: Cambridge University Press.
- Hirschberg, Julia. 1995. Prosodic and other acoustic cues to speaking style in spontaneous and read speech. *The 13th International Congress of Phonetic Sciences (ICPhS 13)*, 36–43.
- Hirschberg, Julia. 2000. A corpus-based approach to the study of speaking styles. In Merle Horne (ed.), *Prosody: Theory and experiment*, 335–350. Dordrecht: Kluwer.
- Hirschberg, Julia. 2006. Pragmatics and intonation. In Laurence Horn & Gregory Ward (eds.), *Handbook of pragmatics*, 515–537. Oxford: Blackwell.
- Interlandi, Grazia. 2003. *L'intonazione delle interrogative polari nell'italiano parlato a Torino: tra varietà regionale e nuova koiné*. Ph.D. dissertation, University of Pavia.

- Interlandi, Grazia & Antonio Romano. 2003. Quale intonazione per il torinese? *Atti delle XII Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 117–122.
- Kügler, Frank. 2003. Do we know the answer? Variation in yes–no question intonation. In Susanne Fisher, Ruben van den Vijver & Ralf Vogel (eds.), *Experimental studies in linguistics I* (Linguistics in Potsdam 21), 9–29.
- Ladd, D. Robert. 1978. *The structure of intonational meaning*. Bloomington, IN: Indiana University Press.
- Ladd, D. Robert. 1996. *Intonational phonology*. Cambridge: Cambridge University Press.
- Lepschy, Laura & Giulio Lepschy. 1993. *La lingua italiana. Storia, varietà dell'uso, grammatica*. Milano: Bompiani.
- Magno Caldognetto, Emanuela, Franco Ferrero, C. Lavagnoli & Kyriaki Vaggas. 1978. F0 contours of statements, yes–no questions and *wh*-questions of two regional varieties of Italian. *Journal of Italian Linguistics* 3, 57–68.
- Marotta, Giovanna & Elena Sardelli. 2009. Prosodiatopia: Parametri prosodici per un modello di riconoscimento diatopico. *Atti del XL Congresso Internazionale di Studi della Società di Linguistica Italiana*, 411–435.
- Marotta, Giovanna & Patrizia Soriano. 1999. Question intonation in Siene Italian. *The 14th International Congress of Phonetic Sciences* (ICPhS 14), vol. 2, 1161–1164.
- Marotta, Giovanna & Patrizia Soriano. 2001. La teoria autosegmentale nell'analisi dell'intonazione interrogativa di due varietà di italiano toscano (Lucca e Pisa). *Atti del XXXIII Congresso Internazionale di Studi della Società di Linguistica Italiana*, 177–204.
- Maturi, Pietro. 1988. L'intonazione delle frasi dichiarative ed interrogative nella varietà napoletana dell'italiano. *Rivista Italiana di Acustica* XII(1), 13–30.
- Ohala, John J. 1983. Cross-language use of pitch: An ethological view. *Phonetica* 40, 1–18.
- Ohala, John J. 1984. An ethological perspective on common cross-language utilization of F₀ of voice. *Phonetica* 41, 1–16.
- Pierrehumbert, Janet & Julia Hirschberg. 1990. The meaning of intonational contours in the interpretation of discourse. In Philip R. Cohen, Jerry Morgan & Martha E. Pollack (eds.), *Intentions in communication*, 271–309. Cambridge MA: MIT Press.
- Quazza, Silvia, Pier Luigi Salza, Stefano Sandri & Alberto Spini. 1993. Prosodic control in a text-to-speech system for Italian. *ESCA Workshop on Prosody*, 78–81.
- Refice, Mario, Michelina Savino, Marco Altieri & Roberto Altieri. 2000. SegWin: A tool for segmenting, annotating and controlling the creation of a database of spoken Italian varieties. *The 2nd International Conference on Language Resources and Evaluation (LREC 2000)*, vol. 3, 1531–1536.
- Refice, Mario, Michelina Savino & Martine Grice. 1997. A contribution to the estimation of naturalness in the intonation of Italian spontaneous speech. *Eurospeech 1997*, vol. 2, 783–786.
- Sardelli, Elena & Giovanna Marotta. 2007. Prosodic parameters for the detection of regional varieties in Italian. *The 16th International Congress of Phonetic Sciences* (ICPhS 16), 1281–1284.
- Savino, Michelina. 1997. *Il ruolo dell'intonazione nell'interazione comunicativa. Analisi strumentale delle domande polari in un corpus di dialoghi spontanei (varietà di Bari)*. Ph.D. dissertation, University of Bari & Polytechnics of Bari.
- Savino, Michelina. 2000. Descrizione autosegmentale-metrica di alcune tipologie intonative dell'italiano di Bari. In Elizabeth Burr (ed.), 2006, *Tradizione & Innovazione. Linguistica e Filologia Italiana alle soglie del nuovo millennio, Atti del VI Convegno Internazionale della SILFI (Società Internazionale di Linguistica e Filologia Italiana)*, 163–178. Firenze: Cesati. [Original 2000 conference presentation published in the conference proceedings in 2006.]
- Savino, Michelina. 2006. Strategie prosodiche di turnazione in dialoghi italiani Map Task. *Atti del VI Convegno Nazionale dell'AITLA (Associazione Italiana di Linguistica Applicata)*, 303–330.
- Savino, Michelina. 2007. Intonation, accent and personal traits. In Anna Esposito, Maja Bratanić, Eric Keller & Maria Marinaro (eds.), *Fundamentals of verbal and nonverbal communication and the biometric issue* (NATO Security through Science Series), 149–160. Amsterdam: IOS Press.
- Savino, Michelina. 2009. Intonational features for identifying regional accents of Italian. *Interspeech 2009*, 2423–2426.

- Savino, Michelina & Martine Grice. 2007. The role of pitch range in realising pragmatic contrasts: The case of two question types in Italian. *The 16th International Congress of Phonetic Sciences (ICPhS 16)*, 1037–1040.
- Savino, Michelina & Martine Grice. 2011. The perception of negative bias in Bari Italian questions. In Sonia Frota, Gorka Elodiarta & Pilar Prieto (eds.), *Prosodic categories: Production, perception and comprehension* (Studies in Natural Language and Linguistic Theory 82), 187–206. Dordrecht: Springer.
- Savino, Michelina & Mario Refice. 1996. L'intonazione dell'italiano di Bari nel parlato letto e in quello spontaneo. *Atti delle VII Giornate di Studio del Gruppo di Fonetica Sperimentale dell'A.I.A. (Associazione Italiana di Acustica)*, 79–88.
- Sobrero, Alberto & Immacolata Tempesta. 2006. Definizione delle caratteristiche formali del corpus: informatori, località. CLIPS document CLIPS/W1ai/DCC/001/v003, www.clips.unina.it (retrieved 10 November 2008).
- Sorianello, Patrizia. 2001. Modelli intonativi dell'interrogazione in una varietà di italiano meridionale (Cosenza). *Rivista Italiana di Dialettologia* 25, 85–108.
- Tosi, Arturo. 2001. *Language and society in a changing Italy*. Clevedon: Multilingual Matters.
- Venditti, Jennifer, Julia Hirschberg & Jackson Liscombe. 2006. Intonational cues to student questions in tutoring dialogues. *Interspeech 2006*, 549–552.