



# Intonational variation in Minorcan Catalan: Towards a prosodic change?



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Received 30 September 2019; received in revised form 6 April 2020; accepted 7 April 2020

Available online

## Abstract

Sound variation and change at the suprasegmental level have been the object of a limited number of studies. Among them, the cases of intonational variation and change that cannot be attributed to language contact are very rare. This paper describes a case of intonational variation (which could possibly be the first stage of an ongoing intonational change) that is not due to language contact and that is observed on Minorca, a Catalan-speaking island in the Western Mediterranean. 158 speakers were recorded in 4 locations (two urban areas, a small town and a village). Speakers were male and female speakers belonging to two age groups (teenagers and adults). The corpus contains 1380 information-seeking yes-no questions collected by means of a Discourse Completion Task. Results show that while adult speakers seem to use only the traditional contour (as documented in several previous studies), teenagers in urban areas mostly use a yes-no question contour that differs from the tune used by adults. Teenage speakers in rural areas, on the other hand, still largely use the traditional yes-no question contour. The innovative contour has not been borrowed by other languages or dialects in contact with Minorcan Catalan, but was already in use in Minorcan Catalan with a different pragmatic function.

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*Keywords:* Intonation; Catalan; Language change; Yes-no questions

## 1. Introduction

While the literature on sound variation and change at the segmental level is abundant, the same phenomena at the suprasegmental level have been the object of a much smaller number of studies. One of the reasons behind such scarcity is the fact that intonation studies have become popular only in the last three decades, making it a relatively recent discipline in comparison with segmental phonetics. Another reason for the limited number of studies on intonational change is that, while orthographic transcriptions of the texts may give us hints about segmental change, there is no written record of intonation that can allow us to determine how intonation has changed in the past.

In addition to being scarce, the literature on intonational variation and change shows another drawback: the majority of studies analyze case studies in which intonational variation and change are the effect of language contact (among them Vella (2003), Elordieta (2003, 2006), McMahon (2004), Mennen (2004), Colantoni and Gurlekian (2004), O'Rourke (2005), Elordieta and Calleja (2005), Parth and Plag (2006), Simonet (2008, 2011), Hickey (2008), Swerts and Zerbian (2010), Fagyal (2010), Meisenburg (2011), Feldhausen et al. (2011), Nokes and Hay (2012), Benet et al. (2012), Boula de

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Mareüil et al. (2012), Pešková et al. (2012, 2013), Sichel-Bazin et al. (2012a, 2012b), Muntendam (2013), Romera and Elordieta (2013), Gabriel and Kireva (2014), Nance (2015), Roseano et al., (2015a), Muntendam and Torreira (2016) and Fernández Rei (2016)). The studies on intonational variation and change in contact situations have allowed the establishment of a typology of the mechanisms according to which intonation can be affected by language contact (Roseano et al., 2015a). The mechanisms in question, which are not mutually exclusive, are: (1) *direct transfer* (i.e., adults who imperfectly learn an L2 involuntarily transfer to it some of the features of the intonation of their L1); (2) *fusion* (bilingual speakers mix the intonational patterns of the two languages and develop intonation systems that differ from those used by monolinguals in each of the languages); and (3) *intonational accommodation* (native speakers of one linguistic variety adopt some of the intonational characteristics of a variety of the same language spoken by another social group).

The documented cases of intonational variation and change that cannot be attributed to contact between languages are scarce. Known cases are essentially limited to the description of an intonational change in Tokyo Japanese (Fumio, 1998) and a few accounts of the spread of *uptalk* or high-rising terminals in several dialects of English (see, i.a., Jarman and Cruttenden, 1976; Ching, 1982; Guy et al., 1986; Allan, 1990; Britain, 1992; Mayo et al., 1997; Daly and Warren, 2001; Fletcher et al., 2005; Warren, 2005, 2015; Sullivan, 2011; Ritchart and Arvaniti, 2014; Armstrong et al., 2015). Due to the limited number of documented cases, scholars have not given a general description of the mechanisms that underlie intonational change in situations where language contact is not the cause of the change. The only generalizations that can be made based on these two case studies are the following: (1) non-contact-induced intonational innovations are defined, in traditional sociolinguistic terms, as “changes from below”<sup>1</sup> and (2) young female speakers lead the change.

The general objective of this paper is to help overcome this limitation by presenting data that increase our knowledge of non-contact-induced intonational variation (which, on the mid/long term, could give rise to intonational change). The core problems that we shall deal with are those that Labov (1963: 273) summarized as “the origin of linguistic variations; the spread and propagation of linguistic changes; and the regularity of linguistic change”. More specifically, this paper describes a situation of intonational variation that is not due to language contact and that is observed on Minorca, a small Catalan-speaking island in the Mediterranean. The main research questions that will be addressed are: (1) where did the variation originate?, (2) which features of the intonational system of Minorcan make the observed variation possible? (3) is there any social group that is promoting variation?, (4) how does the variation spread on the island? In order to tackle these questions, in the following sections we shall describe the sociolinguistic and demographic characteristics of the island of Minorca (section 2), we shall summarize the studies about the intonation of the Catalan dialect spoken on the island (section 3), we shall provide the methodological details (section 4), present the results (section 5) and discuss them (section 6). Finally (section 7), we shall put forward some conclusions.

## 2. Sociolinguistic and demographic characteristics of the island of Minorca

The Mediterranean island of Minorca, with roughly 90 thousand inhabitants, is one of the Balearic Islands to the east of the Iberian Peninsula and 228 km from Barcelona, which is the closest Catalan-speaking city on the continent. Its area is 702 km<sup>2</sup> and its dimensions are, approximately, 47 km from east to west and 17 km from north to south. Interestingly, its size and shape are roughly comparable to Martha’s Vineyard, the island where Labov (1963) collected the data for his foundational work on sound variation and change. Like Martha’s Vineyard, Minorca “has the advantage of being a self-contained unit, separated from the mainland [. . .]. At the same time, [it] has enough social and geographic complexity to provide ample room for differentiation of linguistic behavior” (Labov, 1963: 275).

The territory of Minorca is divided into eight municipalities (Table 1), and there are two urban areas: Maó (which also includes the neighboring municipalities of Sant Lluís i es Castell) on the eastern part of the island, and Ciutadella, on the western part (see map in Fig. 1). The area of influence of each of two urban centers reaches the rural localities in the center of the island. Consequently, Ferreries is within the area of influence of Ciutadella, and es Castell, Sant Lluís, and Alaior are in the area of Maó. Es Mercadal and es Migjorn Gran are in an intermediate position.

The majority of the residents of Minorca are, in broad terms, bilingual: 88% speak the local language (i.e., Catalan) and the official language of the State (i.e., Spanish), while the rest are monolingual in Spanish (López Casanovas, 2015). While education is almost entirely in Catalan, TV and radio are either in Catalan or in Spanish. If they are in Spanish, they use standard Peninsular Spanish. Among those in Catalan, the media that are based on the Balearic Islands use Balearic Catalan, while those based on the continent use Central Catalan, the variety spoken in Barcelona and surrounding areas. Minorcans are, thus, active users of their local variety of Catalan and of Spanish, while the media expose them to the same two varieties and, in addition, to Majorcan Catalan and Central Catalan.

<sup>1</sup> The exhaustive definition of the classic sociolinguistic concept of “change from below” (which, in short, can be defined as a change that occurs from below the level of consciousness and is due to pressures from within the system, while a change from above is the result of elements imported from other systems) exceeds the limits of this paper. Readers interested in this subject may refer to Labov (2007) or Ash (2002).

Table 1  
Area (in km<sup>2</sup>) and population of the municipalities of Minorca according to the 2011 census.

Municipality	Area	Population
Ciutadella	186.3	29,510
Maó	117.2	28,789
Alaior	109.9	9,450
es Castell	11.7	7,895
Sant Lluís	34.8	7,275
es Mercadal	138.3	5,292
Ferrerries	66.1	4,667
es Migjorn Gran	31.4	1,520
Total	695.7	94,398

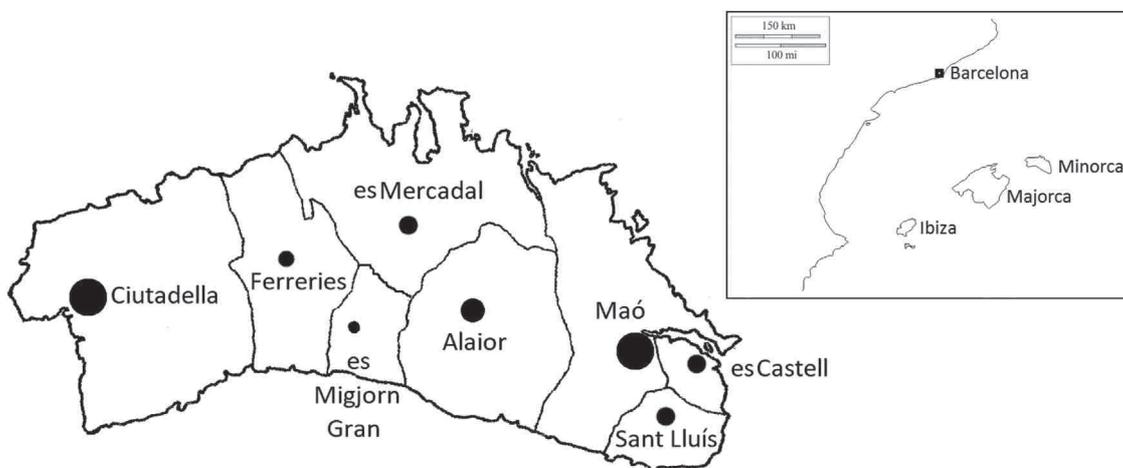


Fig. 1. Map of Minorca with its towns and main villages (in the upper right corner, the Balearic Islands and the Spanish Mediterranean coast).

Both academic and perceptual dialectologies divide *menorquí* into two varieties, which differ in their vowel systems: the eastern variety and the western variety (Veny, 1982). Minorcans are aware of the segmental dissimilarities between the two subdialects. The main difference is that eastern varieties have a stressed [e] where eastern varieties have a stressed [ə] (for example, the word *pagès* ‘farmer’ is pronounced [pəˈzəs] on eastern Minorca and [pəˈzəs] on western Minorca). This difference is due to a sound change that started in the eastern town, Maó, at the end of 19<sup>th</sup> century (Alcover, 1908: 218; Veny, 1978). The change then spread westwards, and reached the municipalities of Alaior and es Mercadal, but did not take place in the western town, Ciutadella, nor in Ferrerries or es Migjorn Gran (see map in Fig. 2). In section 6, we shall compare the spread of this phonetic change with the data collected for this paper.

### 3. Question intonations in Minorcan Catalan and neighboring varieties

In this section, we shall briefly present the intonational patterns that have been described for yes-no questions in Minorcan Catalan and in the varieties in contact with it. The aim of the following paragraphs is to introduce the intonational patterns that will be discussed in sections 5 and 6.

The intonation of the Catalan variety spoken on Minorca has been analyzed extensively in several works that examine adult speech (especially in Mascaró, 1987; Vanrell and Mascaró, 2013; Prieto & Cabré, 2007–2012). Crucially for this paper, these accounts agree in that (1) in Majorcan Catalan sociolects they analyze there is only one contour for information-seeking yes-no questions and (2) such contour is characterized by a sharp F0 fall in the nuclear syllable (i.e., the last stressed syllable of the utterance), followed by rise in the final unstressed syllable(s) (Fig. 3). This final rise is the intonational feature that distinguishes Minorcan intonation from other dialects of the same language (like Majorcan or Central Catalan), which also present falling questions, but without a final rise (Fig. 4). The Minorcan yes-no question

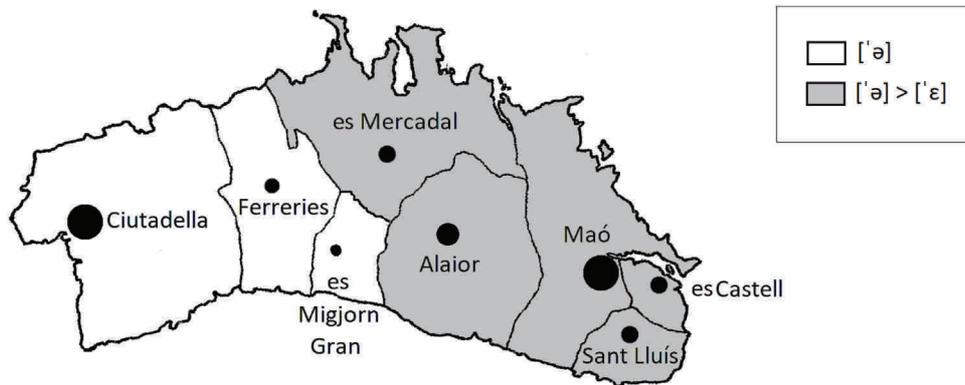


Fig. 2. Areas of Minorca that were affected by the [ə] > [e] change in the 19<sup>th</sup> century.

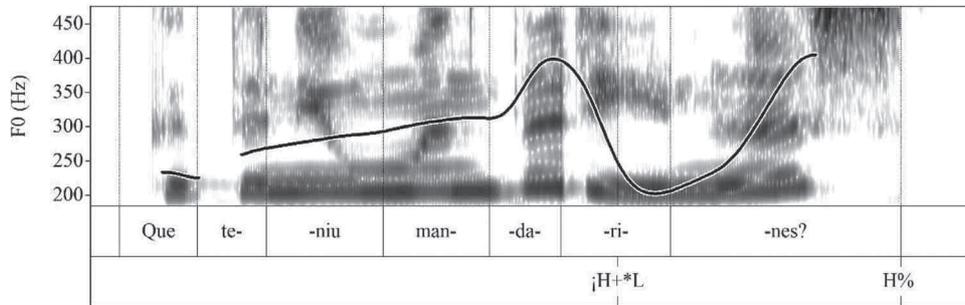


Fig. 3. F0 contour, orthographic transcription and intonational annotation of the information-seeking yes-no question *Que teniu mandarines?* 'Do you have any tangerines?' uttered by a speaker of Minorcan Catalan from es Migjorn Gran (audio file retrieved from Prieto and Cabré, 2007–2012; picture created with Elvira-García, 2017).

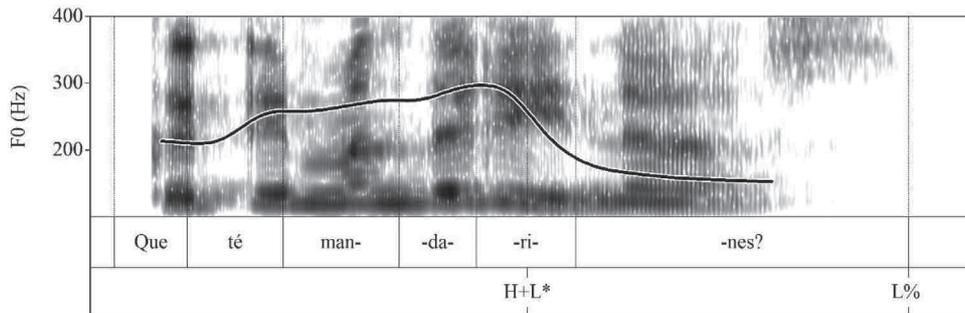


Fig. 4. F0 contour, orthographic transcription and intonational annotation of the information-seeking yes-no question *Teniu mandarines?* 'Do you have any tangerines?' uttered by a speaker of Central Catalan from Valls (audio file retrieved from Prieto and Cabré, 2007–2012; picture created with Elvira-García, 2017).

pattern can be transcribed as ¡H + L\* H% using the Cat-ToBI labelling system,<sup>2</sup> while the Central Catalan pattern is H + L\* L% (Prieto et al., 2009) and the Majorcan Catalan pattern is ¡H + L\* L% (Vanrell, 2006).

Central Catalan (and, to a lesser extent, Majorcan Catalan) in addition to the falling H + L\* L% contour, use a rising L\* H% pattern for information-seeking yes-no questions (Prieto, 2013; Carrera Sabaté et al., 2010; Simonet, 2008, 2011) (Fig. 5). This pattern is also the default pattern for yes-no questions in Peninsular Spanish (Estebas-Vilaplana and Prieto, 2010).

<sup>2</sup> For a description of Cat-ToBI labelling system, see Prieto (2014) and Prieto et al., (2009, 2015).

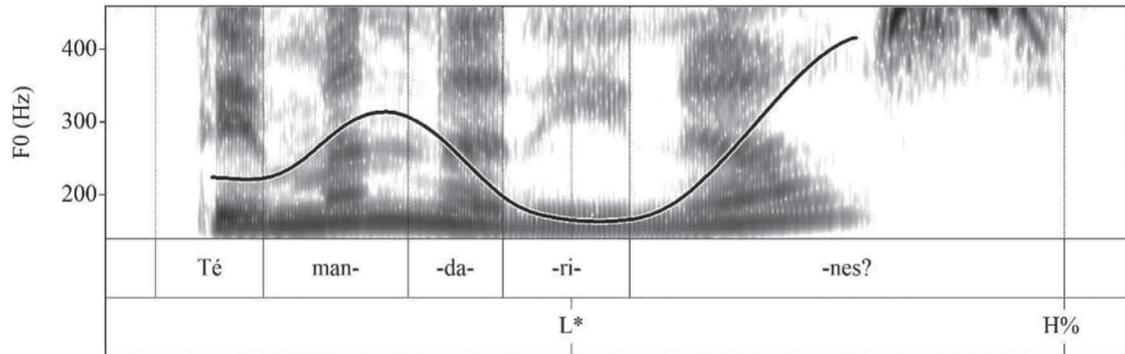


Fig. 5. F0 contour, orthographic transcription and intonational annotation of the information-seeking yes-no question *Té mandarines?* 'Do you have any tangerines?' uttered by a speaker of Central Catalan from Mataró (audio file retrieved from Prieto and Cabré, 2007–2012; picture created with Elvira-García, 2017).

Both Central and Balearic Catalan dialects, as well as Peninsular Spanish, have another yes-no question contour, that is not found in information-seeking questions but in echo questions (i.e., questions that repeat part or all of something which someone else has just said), especially in those with a nuance of surprise (Estebas Vilaplana and Prieto, 2010; Borràs-Comes et al., 2014). This contour is characterized by a sharp rise in the nuclear syllable, followed by a fall in the following unstressed syllable(s) (Fig. 6). The Cat-ToBI label for this contour is L +  $\uparrow$ H\* L%.

This research has its origin in an observation made by the first author of this paper, who is a native speaker of Minorcan Catalan from Ciutadella. During a conversation with a high school student in 2012, he first noticed that teenagers from the town were using the intonational contour of surprise echo-questions (L +  $\uparrow$ H\* L%) to convey neutral information-seeking yes-no questions (Fig. 7 contains an example of an information-seeking yes-no question uttered with this contour), which is something that had not been documented in previous studies about Minorcan intonation that were based on adult speech (Mascaró, 1987; Vanrell and Mascaró, 2013; Prieto and Cabré, 2007–2012).

This new linguistic variable was optimal for a sociolinguistic study, as it fulfilled Labov's (1963: 289) criteria of being *frequent* and *structural*. In addition, informal conversations that were conducted by one of the authors of the present study with native speakers of Minorcan Catalan confirmed that speakers were not aware of the ongoing change, which meant that the variable had the great advantage of "immunity from conscious distortion, which greatly simplifies the problem of reliability of the data" (Labov, 1963: 289). Following this observation, a systematic data collection took place in two stages: in 2014–2015 and in 2017.

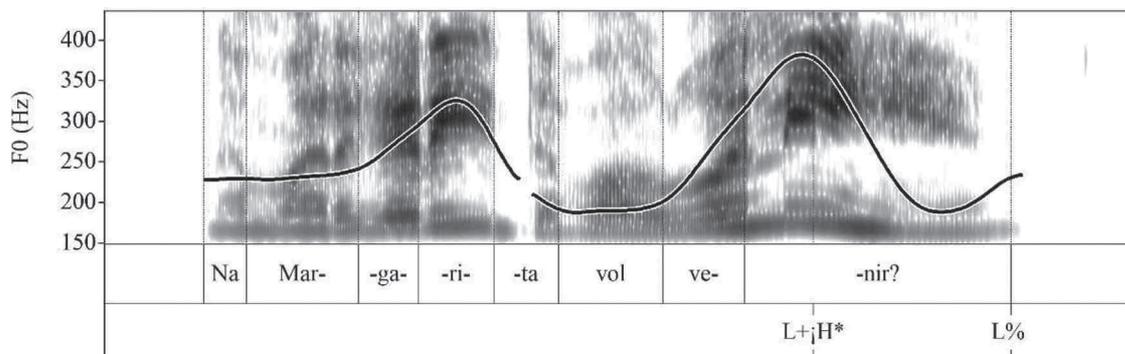


Fig. 6. F0 contour, orthographic transcription and intonational annotation of the echo question *Na Margarita vol venir?* 'Margaret wants to join us?' uttered by a speaker of Minorcan Catalan from Maó (audio file retrieved from Prieto and Cabré, 2007–2012; picture created with Elvira-García, 2017).

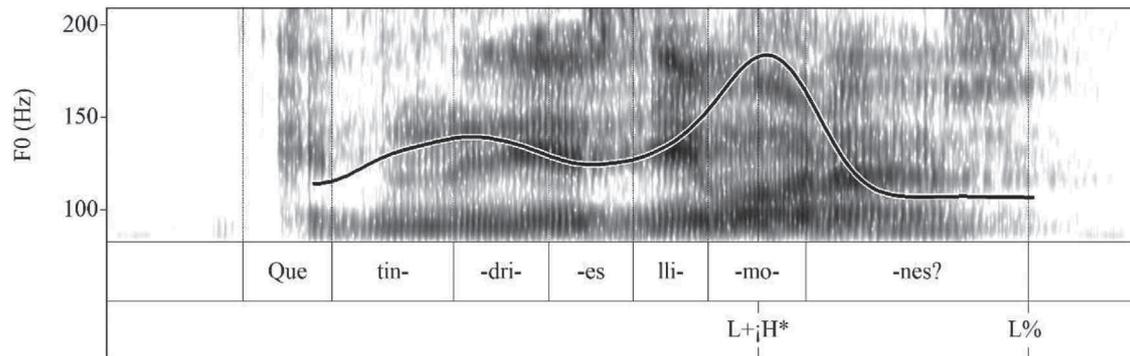


Fig. 7. F0 contour, orthographic transcription and intonational annotation of the information-seeking yes-no question *Que tindries llimones?* 'Would you have any tangerines?' uttered by a speaker of Minorcan Catalan from Ferreries (picture created with [Elvira-García, 2017](#)).

## 4. Methodology

### 4.1. Locations and stages

Data were collected in four locations and in two stages. Each location has sociological features that are relevant for the discussion of data carried out in section 6.1. Recordings began in Ciutadella in 2014 and were carried out by the first author of this article ([Mascaró, & Roseano, 2015](#)). A few months later, in 2015, data were collected in another western location (Ferreries) by another native speaker of Minorcan ([Sintes Carreras, 2016](#)). During the second stage of the research, in 2017, the first author of this paper recorded the speakers in Maó and Alaior. The four above-mentioned locations were chosen because they represent the two urban areas of the island (Ciutadella and Maó), a small town (Alaior), and a village (Ferreries). Ciutadella was the capital of the island until the 18<sup>th</sup> century and is still the see of the Catholic diocese; it has approximately 30,000 inhabitants and its economy is largely based on services, which account for approximately three quarters of enterprises ([Conselleria de Treball and Comereç i Indústria, 2017](#)). Ferreries, 17 km from Ciutadella, is a rather small location, with about 5000 inhabitants, with a deep rural history and, nowadays, some shoe factories. Alaior, 10 km from Maó, is a small town of about 8000 inhabitants with some shoe factories. Maó (in Spanish Mahón), the capital of the island, was founded in the 7<sup>th</sup> century BC and was under British rule in the 18<sup>th</sup> century. Maó is now a modern town of about 30,000 inhabitants, with an important harbor. In the past, the economy of Maó was based on jewelry factories and exportation, but now it is mainly based on services and tourism.

### 4.2. Speakers

We recorded 158 subjects, all of them middle-class native speakers of both Minorcan Catalan and Spanish. The number of speakers is comparable in the four locations: 48 in Ciutadella, 32 in Ferreries, 30 in Alaior and 48 in Maó. In the first stage of the research we recorded both teenagers (students of public secondary schools) and adults. In the second stage of the research, however, we decided not to record adults, because the literature ([Mascaró, 1987](#); [Vanrell and Mascaró, 2013](#); [Prieto and Cabré, 2007–2012](#)) and the data collected in the first stage of the research (see section 5) showed that they overwhelmingly use the traditional intonational pattern. On the other hand, in the second stage we recorded a greater number of teenagers, in order to have more robust information about the possible effect of gender on intonational change. [Table 2](#) contains the number of speakers of each location, by age group and gender.

The age of teenage speakers is from 12 to 19 in all locations. For adults, it ranges from 36 to 48 in Ciutadella and from 29 to 60 in Ferreries.

### 4.3. Tasks and procedures

Recordings took place in quiet rooms at the speakers' schools or homes. A digital recorder Marantz 660 and a microphone Shure SM58 were used. Data were elicited by means of Discourse Completion Task, a common method in intonation studies ([Vanrell et al., 2018](#)) which consists of a kind of role-play. The interviewer presents the speaker with a situation from daily life where a speaker is expected to use a yes-no question, and asks him/her to utter the sentence he/

Table 2  
Number of speakers by location, age group and gender.

	Teenagers		Adults		Total
	Female	Male	Female	Male	
Ciutadella (2014)	25	8	12	3	48
Ferrerries (2015)	8	8	7	9	32
Alaior (2017)	16	14	–	–	30
Maó (2017)	28	20	–	–	48
Total	77	50	19	12	158

she would use in that situation. The example in (1), adapted from Prieto and Cabré (2007–2012), is the English translation of one of the prompts used in the questionnaire:

- (1) INTERVIEWER: Imagine that you enter a store you have never been in before and ask if they have lemons.  
SPEAKER: Do you have any lemons? / Do you sell lemons? / etc.

The speakers were not given any instruction about the sentence type that they were expected to use, meaning that a minority of them used statements (like “I would like to know whether you sell lemons”) or wh- questions (like “Where are the lemons?”) instead of yes-no questions. All utterances that were not yes-no questions were excluded from the database when analyzing the data. For this reason, in the different parts of section 6 the number of items analyzed for each location is slightly lower than one might expect.

Finally, it should be noted that while in Ferrerries, Alaior and Maó we used a standard version of the questionnaire that allowed us to record 9 yes-no questions per speaker, in Ciutadella (the location where the first stage of the research was carried out) we used an extended version of the questionnaire that included four extra yes-no questions, as well as nine wh- questions and one echo question that had been included in order to gather more data about the phonetic implementation of the contours and the phonological contrasts. In later stages, we concluded that a questionnaire other than the standard one was not necessary.

#### 4.4. Corpus

The corpus contains 1614 items. Of these, 523 had to be excluded from analysis because they did not belong to the target sentence type (e.g. they were imperatives like “Give me some tangerines” or statements like “I’d like some tangerines”) or because they showed other atypical features. In total, 1091 yes-no questions were analyzed.

#### 4.5. Intonational and statistical analysis

Using Praat’s TextGrid annotation tool (Boersma and Weenink, 2018), we transcribed the intonation of the nuclear configuration of yes-no questions, according to the Cat\_ToBI labelling system (Prieto et al., 2009). The main intonational patterns that were found in the corpus were basically two: a traditional falling-rising pattern (see Fig. 2), and a rising-falling pattern that had not been described before for information-seeking yes-no questions in Minorcan (i.e., the pattern exemplified in Fig. 7). From now on, we shall refer to the second contour as *innovative*, insofar as the exhaustive data collected before the second decade of the 20<sup>th</sup> century on Minorcan intonation (Mascaró, 1987; Vanrell and Mascaró, 2013; Prieto and Cabré, 2007–2012) show that it is not used in information-seeking yes-no questions.

Such contours are represented in a simplified way in Fig. 8 (every rectangle in the picture represents a syllable; the white rectangle represents the unstressed pretonic syllable; the dark grey rectangle represents the last stressed syllable of the sentence; the light grey rectangles represent the final unstressed syllable(s)).

Statistical analysis was carried out by means of two statistical packages available online: *Social Science Statistics* (Stangroom, 2018) and *Statistics Calculators and Solvers* (MathCracker, 2018). Where variables were nominal, we used the Chi-square test and Cramér’s V. In the only case where variables were not nominal, we used Spearman’s Rho test.

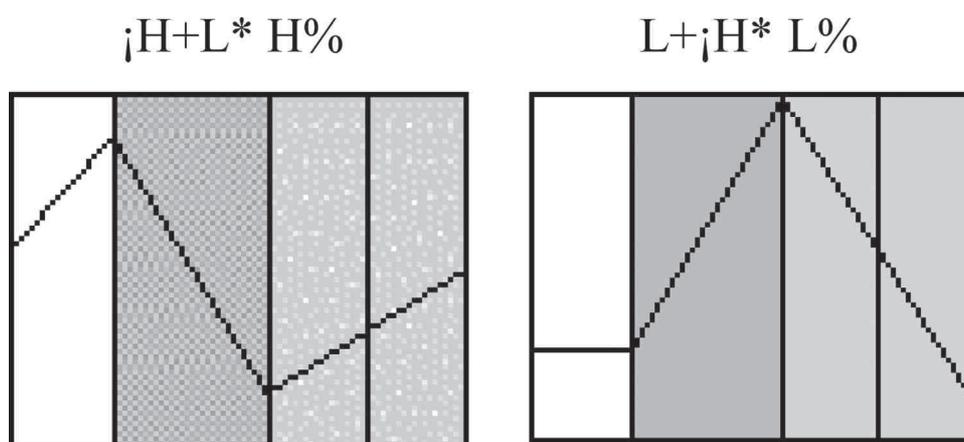


Fig. 8. Schematic representations of the traditional Minorcan yes-no question contour (left) and of the innovative Minorcan yes-no question contour (right).

## 5. Results

In the following pages, we shall summarize the results of the intonational analysis of the data from the four locations. Table 3 contains the data (in absolute and percentage) about the presence of the traditional and the innovative contours in the different locations. Table 4 contains the results of the statistical analyses that have been carried out.

Table 3  
Appearance of the traditional and innovative contours s by location, age group and gender.

Location	Age	Gender	Patterns (n)		Patterns (%)	
			Traditional	Innovative	Traditional	Innovative
Ciutadella	Adults		148	1	99.3	0.7
	Teenagers		76	240	24.1	75.9
		Male	40	50	44.4	55.6
		Female	35	188	15.7	84.3
Ferrerries	Adults		131	0	100.0	0.0
	Teenagers		112	13	89.6	10.4
		Male	58	10	85.3	14.7
		Female	54	3	94.7	5.3
Alaior	Teenagers		150	95	61.2	38.8
		Male	79	45	63.7	36.3
		Female	71	50	58.7	41.3
	Adults		–	–	–	–
Maó	Teenagers		114	225	33.6	66.4
		Male	54	65	45.4	54.6
		Female	65	160	28.9	71.1
	Adults		–	–	–	–

Table 4  
Results of statistical tests.

Location	Analysis	Chi-square test		Cramér's V $\psi_c$
		$\chi^2(1)$	$p$	
Ciutadella	Adults vs. teenagers	226.82	<.001	.703
	Male vs. female teenagers	27.531	<.001	.305
Ferrerries	Adults vs. teenagers	12.276	<.001	.237
	Male vs. female teenagers	2.0402	.153	.154
Alaior	Male vs. female teenagers	0.4584	.498	.052
Maó	Male vs. female teenagers	8.6386	.003	.165

In Ciutadella, the town on the western coast of the island, the speakers produced 624 utterances, 465 of which were yes-no questions, while the rest (i.e., 159 utterances) belonged to other sentence types that are not relevant for our purposes. The intonational analysis of such utterances shows that, overall, 48.2% of questions displayed the traditional pattern, while 51.8% used the innovative pattern. If we analyze the data by age group, we see that the distribution of the two contours is radically different: while adults used the traditional contour in 99.3% of cases (i.e., in 148 out of 149), teenagers used the innovative contour in 75.9% of the utterances (240/316). Chi-square test confirms that the differences observed in the data are significant ( $\chi^2(1) = 226.82, p < .001$ ), and Cramér's V ( $\varphi_c = 0.703$ ) suggests that the correlation is strong. If we consider only data from teenagers from Ciutadella, we see that female speakers tend to be more innovative, whereas male speakers seem to be more conservative. In fact, while the first use the innovative contour in 84.3% of cases, the latter do so less often (55.6% of cases). Chi-square test confirms that the differences observed in the data are significant ( $\chi^2(1) = 27.531, p < .001$ ). However, Cramér's V ( $\varphi_c = 0.305$ ) reveals that the correlation is not strong. The interim conclusion that can be drawn from the data collected in Ciutadella is that, while adults use the traditional yes-no intonation, teenagers (especially if female) prefer the innovative pattern.

In Ferreries, a village in the western part of the island, the speakers produced 288 utterances, 256 of which were analyzed. The majority of them show mainly traditional patterns (on the whole, 94.9%, i.e., 243/256), while the presence of the innovative pattern L + jH\* L% is very limited (5.1%, i.e., 13/256). If we look at the distribution by age group, we do not find the same clear generational difference we detected in Ciutadella. In fact, both adults and teenagers use mostly the traditional contour. Nevertheless, there is a difference between them: while adults use the traditional pattern in 100% of cases (i.e., 131/131), in teenage speakers this percentage drops to 89.6% (i.e., 112/125). Chi-square test confirms that the differences observed in the data are significant ( $\chi^2(1) = 12.276, p < .001$ ), and Cramér's V ( $\varphi_c = 0.237$ ) suggests that the correlation is strong. If one focuses only on the questions uttered by teenagers, it might seem that male speakers are slightly less prone to using the traditional pattern (85.3% among male, 94.7% among female). Nevertheless, this difference is not statistically significant ( $\chi^2(1) = 2.0402, p = .153$ ), which is also confirmed by Cramér's V ( $\varphi_c = 0.154$ ). The interim conclusion one can draw from the data collected in the village of Ferreries is that both adults and teenagers use mostly the traditional yes-no intonation, although the innovative contour is used occasionally by teenage speakers, both male and female.

The 30 teenage speakers recorded in Alaior uttered 270 sentences, 245 of which were analyzed acoustically. The questions were uttered mostly using the traditional pattern (61.2%, i.e., 150/245), while the innovative contour was present in less than half of the questions (38.8%, i.e., 95/245). As mentioned in the methodology (section 4.2), in the location where data were recorded in the second stage of the research, we decided to interview a higher number of teenage speakers, in order to get more robust results about the possible differences between male and female speakers. The 14 male and 16 female speakers from Alaior show no major differences, insofar as they both prefer the traditional contour and the percentages are similar (63.7% among male speakers, 58.7% in female speakers), although female speakers are slightly more innovative. As one would expect, this difference is not statistically significant ( $\chi^2(1) = 0.4584, p = .498$ ), which is also confirmed by Cramér's V ( $\varphi_c = 0.052$ ). As an interim conclusion, one can point out that in the small town of Alaior teenagers use mostly the traditional contour, but not as much as their peers in the village of Ferreries. In addition, there is no significant difference between male and female speakers.

In Maó we recorded 48 teenage speakers (28 female and 20 male), who produced 432 utterances, 339 of which were analyzed. The results of intonational analysis show that the innovative contour is predominant (66.4% of the cases, i.e., 225/339), although not as much as in Ciutadella (a Chi-square test shows that there is a statistically significant difference between the rate among teenagers in Ciutadella and Maó:  $\chi^2(1) = 7.2852, p < .01$ ). When data are divided by gender, we notice a difference between male and female speakers. The latter are more innovative, since they use the innovative contour in 71.1% of cases (i.e., 160/220), while male speakers do so only in 45.4% of cases (i.e., 65/119). This difference is statistically significant ( $\chi^2(1) = 8.6386, p < .001$ ), although Cramér's V suggests that the association is definitely not strong ( $\varphi_c = 0.16$ ). As an interim conclusion, one can point out that teenagers in Maó, the town on the eastern coast, prefer the innovative contour, although not as much as their peers in Ciutadella, the other main town on the island. In addition, female speakers tend to be more innovative than male speakers.

## 6. Discussion

In this section, we draw some first conclusions, but we shall also put forward and discuss some hypotheses that one may build basing on the results of the research and will need to be tested in the future. We shall deal first with the questions that have to do with the origin and spreading of the variation, both across social groups and across the island (section 6.1). After that, we shall discuss the possible origin and impact of this variation from a phonological point of view (section 6.2).

### 6.1. Hypotheses about the social and geographic aspects of the origin and spreading of the variation

As one could reasonably expect based on the descriptions of the intonation of the Minorcan dialect published in the last 30 years (Mascaró, 1987; Vanrell and Mascaró, 2013; Prieto and Cabré, 2007–2012), the data collected in the eastern Minorca show that adults use the traditional falling-rising contour for information-seeking yes-no questions. Among teenagers, on the other hand, two main intonational contours have been documented in our study: the traditional falling-rising contour and an innovative rising-falling contour. It seems, thus, that this situation of intonational variation started among teenagers and that the innovative rising-falling contour is “deviant” from the norm accepted by older speakers described in the literature. The psychological reason behind this intergenerational difference can thus probably be Labov’s *nonconformity principle* (Labov, 2001: 516), which pushes teenagers to defy the (linguistic) norms in order to differentiate themselves from older members of their community.

If we consider how gender affects intonation among teenagers, the picture we obtain is not completely clear. In small centers (Ferrerries, Alaior), there is no significant difference between male and female teenage speakers. In the two urban areas (Ciutadella and Maó), our data show that female teenage speakers use the innovative contour more often than male speakers of the same age, but this difference is, statistically speaking, not very strong.

While gender does not seem to play a major role, if we observe the intonational preferences of teenagers in the four locations, we detect important differences. The innovative contour is used in 75.9% of cases by teenage speakers in Ciutadella, 66.4% in Maó, 38.8% in Alaior, and only 10.4% in Ferrerries. It seems, thus, that teenagers in bigger towns (Ciutadella and Maó) are more innovative than in small towns (Alaior), while in villages (Ferrerries) they are definitely more conservative. In order to give some statistical support to this conclusion, we created a numeric variable capable of reflecting the demographic size of locations: the percentage of inhabitants of each location in comparison with the most populated town, i.e., Ciutadella. Fig. 9 shows that the percentage of innovative contours among teenage speakers and the normalized number of inhabitants of each location show a similar trend. Spearman’s Rho test confirms that the association between these two variables is strong ( $r_s = 1$ ,  $p > 0.1$ ).

The first conclusion one can draw from the data is, thus, that there is a correlation between the degree of intonational innovation and the size of the location (or, in other terms, with the “degree of urbanity” of a community). This geographic distribution is similar to what Trudgill (1974) observed on the Brunlanes peninsula (Norway) or Callary (1975) described in Northern Illinois (USA): both authors found higher levels of innovation in the urban centers than in the intervening rural areas. As stated by Britain (2009: 146), such authors posit “an urban hierarchy model of linguistic innovation diffusion, whereby innovations descend down an urban hierarchy of large city to city to large town, to town, village and country”.

By studying the frequency and geographic distribution of the two contours, it is possible to reconstruct—tentatively, of course—the recent history of the intonational innovation we are dealing with. Specifically, it seems probable that the presence of variation started in Ciutadella, where we observed the highest percentage of innovative contours, and then spread to the rest of the island. One interesting aspect of this process is the fact that the innovation does not seem to have expanded from its point of origin like a wave that reaches closer locations first and farther locations later, as one would expect according to the classical *Wellentheorie* (Schmidt, 1872), which is the model that may explain the diffusion across Minorca of the [‘ə] > [‘e] change in the 19<sup>th</sup> century (see section 2). Unlike that segmental change, the intonational innovation described in this paper seems to have arrived first (or developed more quickly) in Maó, on the other side of the

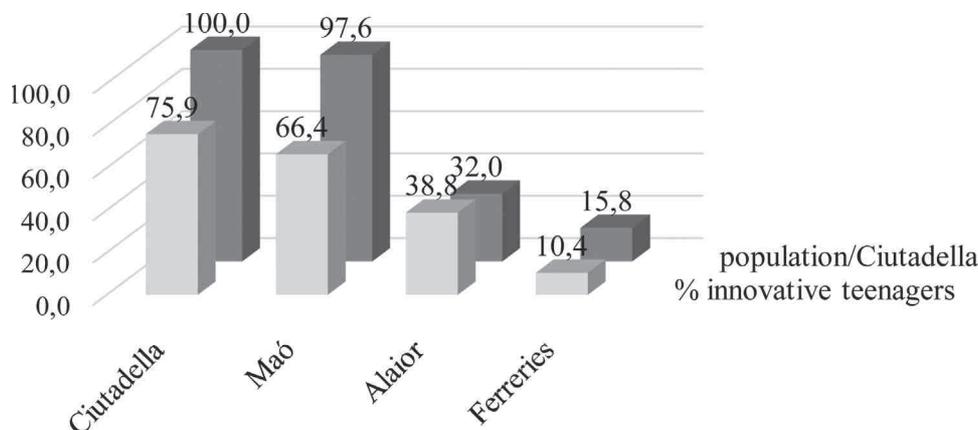


Fig. 9. Percentages of innovative contours among teenage speakers by location and inhabitants of each location compared to Ciutadella.

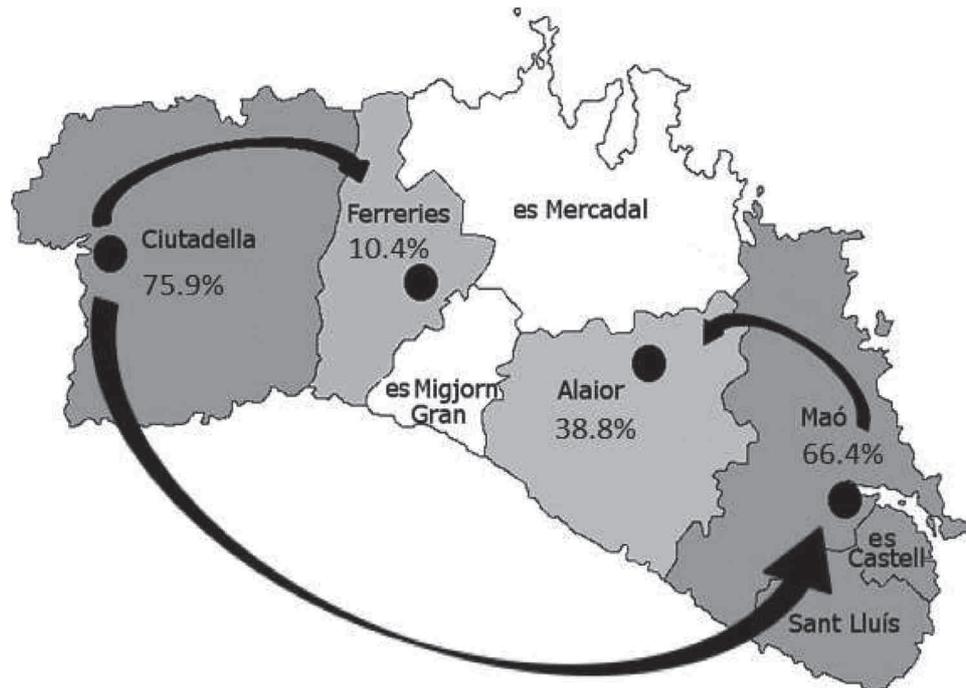


Fig. 10. Possible directions of the spread of the intonational innovation.

island, and probably only later has it moved towards the inner locations (Alaior and Ferreries), as represented schematically in Fig. 10.<sup>3</sup>

The spreading of the innovation from the teenagers of Ciutadella to their peers living in a town 45 km away must have taken place thanks to face-to-face interactions (i.e., in the interactions made possible by the teenagers' social networks). This discontinuous spreading pattern raises some interesting questions, for which there are not yet any answers in our data. The questions that need to be answered are, among others, the following: What social networks do Minorcan teenagers have? Can the substantial lack of intonational innovation in Ferreries be due to the fact that there is a strong network between teenagers in Ciutadella and Maó, but not between Ciutadella and Ferreries? If there is a strong network between Ciutadella and Ferreries,<sup>4</sup> why do teenagers in Ferreries resist the innovation? Is it because they perceive the innovation as "too urban"? Is their resistance to urban linguistic innovation a kind of identity claim? Further research is needed to answer these questions.

## 6.2. Hypotheses about the phonological origins and implications of the innovation

In this subsection we shall address the issue of the presence of a structural/internal factor that makes possible the observed intonational variation. Trying to find such a factor is a main concern. To put it in Labov's (1963: 274) words, "the contribution of internal, structural forces to the effective spread of linguistic changes [...] must naturally be of primary concern to any linguist who is investigating these processes [...]".

What one can be reasonably sure about is that the fact that teenagers in Minorca use the  $L + \text{¡H}^* L\%$  contour in information-seeking yes-no questions is not due to language contact. In fact, none of the varieties they are in contact with (Majorcan Catalan, Central Catalan, Peninsular Spanish) use this contour with the same pragmatic function. Therefore, it is impossible that Minorcan Catalan has borrowed it from any of them. Nevertheless, as stated in section 3,  $L + \text{¡H}^* L\%$  is

<sup>3</sup> As we saw in Fig. 2, the vowel change from the east stopped in the center of the island, and remains unchanged more than one century after it started. We cannot expand on the issue here. However, it is very interesting, in phonological terms, that the segmental change did not occur across the island, whereas this suprasegmental innovation seems to be doing so.

<sup>4</sup> This seems to be the case. In fact, Ciutadella and Maó are shopping and leisure destinations for teenagers from Ferreries, so there are face-to-face interactions between the teenage speakers of the two locations.

not a new contour in Minorcan intonation. As a matter of fact, it exists in Minorcan and in the other above-mentioned varieties (Estebas Vilaplana and Prieto, 2010; Borràs-Comes et al., 2014; Prieto and Cabré, 2007–2012), where it has a very narrow pragmatic meaning: it can be found only in echo questions with a nuance of surprise (which are not as common as other questions in spontaneous speech). In other words, the semantics of the contour is very specific. In addition, it should be noted that in all of the above-mentioned varieties L + jH\* L% is not the only contour found in echo questions: it occurs along with the default pattern for yes-no questions (which, depending on the variety, may be rising or falling).<sup>5</sup> In Minorcan Catalan, as revealed by the data of the *Interactive Atlas of Catalan Intonation* (Prieto and Cabré, 2007–2012), echo questions may display either the falling default jH + L\* H% pattern or the specific rising-falling L + jH\* L % tune. If the two patterns coexist in echo questions, Minorcan speakers perceive them as equivalent in that conversational context. Our hypothesis is that teenage speakers might have gone further and generalized the equivalence between these two contours, and might have considered them as perfectly equivalent in all conversational contexts, not only in the echo question context. The coexistence of two patterns for echo questions seems therefore to be “the origin of linguistic variation” that, according to Labov (1963: 273), is one of the necessary conditions for change.

In the above-mentioned process, the L + jH\* L% contour undergoes a change in its pragmatic meaning/semantics that can be described as follows: while in the traditional sociolect its meaning can be represented as [+question, +echo], in the innovative sociolect it is reduced merely to [+question]; in other words, it loses the specific [+echo] feature and retains only the more general [+question] feature. In general terms, this process matches the definition of semantic bleaching that, in Haiman's words (1991: 154), can be seen as the mechanism of language change where a linguistic item “loses its intention: from describing a narrow set of ideas, it comes to describe an ever broader range of them”. Since it first appeared in a clear way in modern linguistics (Meillet, 1912), the idea of semantic bleaching has been applied to different modules of grammar: it has been used to study the birth of morphemes, constructions, modal particles, modal verbs, interjections and several other phenomena belonging to different linguistic domains. Nevertheless, to the best of our knowledge, the concept of semantic bleaching has not yet been used explicitly to describe intonational changes. At the same time, in the last decades there has been an intense discussion about the status of intonation within grammar (see Wakefield, 2020, i.a.). One of the aims of phoneticians and phonologists has been to show that intonation is a fully-fledged part of the grammar of intonational languages, and that its status is equal to the status of other modules of grammar such as morphology or syntax (see Wakefield, 2020 for some updated reviews). To this aim, the majority of studies looking to demonstrate the grammatical status of intonation provide evidence that, crosslinguistically, intonation may encode grammatical information that in other languages is encoded by means of lexicon, morphology or syntax. The case study discussed in this paper contributes to the theoretical discussion about the status of intonation within grammar insofar as it shows that intonation does not only encode the same type of grammatical information that can be encoded by means of other modules of grammar, but can also undergo the same kind of changes that affect the other modules of grammar, such as semantic bleaching in this case.

Further research will need to focus on several aspects. On one hand, it will need to focus on the possible consequences of the intonational variation we observe on the intonational system of Minorcan as a whole. Over the next few years/decades, one will need to collect more data from both adult and teenage sociolects in order to check whether the intonational variation has given way to an intonational change or has reverted. Finally, it could be promising to investigate whether the case we have presented has occurred, or is perhaps underway, in other languages or dialects, that is, an echo question contour widening its meaning to include yes-no questions, or vice versa. The results of such research could be of interest for phonology, pragmatics and intonational typology.

## 7. Conclusions

This case study sheds some light on how non-contact-induced intonational innovations can take place. Our data show that in this kind of phenomena there are some elements in common with contact-induced intonational change, while others differ. Elements in common have to do with the role of *age* and *urbanity* in the origin and spread of the innovation, insofar as younger urban speakers lead this process. On the other hand, rural speakers resist change.

What non-contact-induced changes do not share with contact-induced intonational innovations is the *origin of the innovative contour*. While in language-contact situations (like those mentioned in section 1) the innovative tune is copied from another language (and, thus, we have either *direct transfer* or *intonational accommodation*, see section 1) or is the result of a *fusion* between the contours of two languages, in the case of Minorca, the innovative tune has another origin. In fact, it was already present in the tonal inventory of the local variety of Catalan before the beginning of the innovation. In this sense, as mentioned in section 6.2, the rise of variation has gone hand in hand with an endogenous reorganization

<sup>5</sup> This coexistence of two different patterns for echo questions is not generalizable to all Romance languages. In Friulian, for example, using the yes-no question's default yes-no question tune for echo questions is not possible (Roseano et al., 2015b).

of the pragmatic meaning of tunes in young urban speech, which has led one of the existing contours to acquire an intonational meaning that it did not have. Whether this *pragmatic shift* of one contour is a mechanism commonly found in non-contact-induced intonational changes is a question that we will be able to answer only when more cases of this kind are analyzed.

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