Dialectal variation at the Prosody-Syntax interface: Evidence from Catalan and Spanish interrogatives

Maria del Mar Vanrell[1], Olga Fernández Soriano[2]

[1] Institut für Romanische Philologie, Freie Universität Berlin, Berlin, Germany
[2] Departamento de Filología Española, Universidad Autónoma de Madrid, Madrid, Spain

mariadelmar.vanrell@fu-berlin.de, olga.fernandez@uam.es

Abstract

In this study we investigate how prosody interacts with word order in the expression of interrogativity in different varieties of two Ibero-Romance languages, Catalan and Spanish. We analyze a corpus obtained by means of the Discourse Completion Task Methodology. The collected data were prosodically and syntactically annotated and show that the absence of syntactic marking (wh-word, subject-verb inversion or subject dislocation) for questions tends to correspond to a more salient intonational marking. Thus, wh-questions favor general falling intonational patterns. By contrast, yes-no questions can be classified depending on the nuclear tone (with preference for low tones in Catalan and high tones in Spanish) and final tone (low for language varieties with subject inversion or dislocation, but optionally high for those that do not present syntactic marking in a mandatory way).

Index Terms: prosody, word order, interrogativity, Catalan, Spanish, dialectal variation.

1. Introduction

The interface between prosody and word order in Ibero-Romance has not been consistently studied. A considerable amount of research has been devoted to languages like Spanish, but other languages such as Catalan are much less known. In addition, most of the work concentrates on declarative modality, particularly on the expression of focus ([1], [2], [3]), as well as on the location of the main prominence (nuclear accent) and the theoretical implications of the location of this prominence. However, somewhat less attention has been devoted to how focus structure can influence pitch accent choice.

Regarding previous studies on Catalan and Spanish questions, although we find exceptions such as the work in [4] and [5] for Catalan and Spanish respectively, there is often a stark division between those studies that emphasize the syntactic perspective (word order in the marking of interrogativity: [6] for Catalan) and those that focus on the prosodic perspective (pitch accent choice in different question types: [7], [8] for Catalan; [9], [10] for Spanish). Moreover, syntactic studies tend to disregard dialectal variation, dealing instead primarily with standard varieties or specific characteristics of particular varieties (e.g., the absence of subject inversion in Caribbean Spanish). It is also necessary to note that, as pointed out by [2], syntactic works and phonological studies tend to use different methodological approaches. Whereas syntactic works make use of introspection and grammaticality judgments, phonological studies have a tendency to use experimental methods. This makes the results from the two linguistic fields very difficult to compare.

This paper makes an attempt to encompass all those aspects and reconcile the two perspectives (prosodic and syntactic), while dealing with dialectal variation and applying a uniform, controlled methodology. We investigate the interaction between nuclear configuration types and word order in the marking of interrogativity in different varieties of Catalan and Spanish.

2. Methodology

2.1. Participants

The participants in our production experiment were 4 men and 10 women aged between 22 and 45 from the following locales of the two languages under study: a) Central Catalan (CCat): 2 female speakers, province of Barcelona; Balearic Catalan (BCat): 1 female speaker and 1 male speaker, island of Majorca; Valencian Catalan (VCat): 1 female speaker and 1 male speaker, province of Alacant and Valencia respectively; and b) Castilian Spanish (CasSpa): 2 female speakers, Madrid; Spanish as spoken in the Basque Country: two female L1-Spanish speakers, province of Biscay (BCSpaL1Spa) and 2 female L1-Basque speakers (BCSpaL1Bas), province of Biscay too; Canarian Spanish (CanSpa): 2 male speakers, island of Gran Canaria.

2.2. Materials

The corpus analyzed in this paper was obtained by means of the Discourse Completion Task methodology or DCT ([11], [12], [13]). It is an inductive method in which the researcher presents the subject with a series of situations and then asks him or her to respond accordingly. The full survey is made up of 130 situations that allowed us to obtain a wide range of interrogative contours controlling for the type of verb, the type of subject and the degree of certainty about the likelihood that the speaker will get a "yes" answer to his/her utterance. We elicited in this fashion a total of 1820 contours (130 contours x 14 speakers). In this paper we will present the results for 779 contours (224 Catalan y/n questions, 118 Catalan wh-questions; 292 Spanish y/n questions, 145 Spanish wh-questions). Indirect questions and y/n questions other than information-seeking y/n questions were not analyzed in this paper.

2.3. Procedure

The descriptions of the prompt situations provided in the DCT were read aloud to the participants. After each description, the participant was asked to respond appropriately to the situations as spontaneously as possible. Speakers were recorded on a Zoom H4n digital audio recorder using an AKG C520 condenser microphone. The following example illustrates a situation used to elicit a y/n question in Spanish with nominal subject: 'You have no idea whether Juan bought the car or not.

Ask your friend about this.' Intended target response: 'Did Juan buy the car?'.

2.4. Analysis

Data were annotated in Praat ([14]) for the following fields: (i) orthographic transcription, (ii) position of the subject (postverbal or preverbal, right or left dislocated, dropped), (iii) additional lexical markers such as *que* or *oi?* for Catalan and (iv) prosodic transcription using the latest version of the Cat_ToBI and Spa_ToBI systems ([8] for Catalan and [10] for Spanish). The annotations were compiled automatically in .txt format through a Praat script and then transferred to a SPSS file for purposes of subsequent statistical exploration.

3.   Results

3.1. Word order results

Table 1 reports the frequency of observation (e.g., number of occurrences) of the variable SUBJECT EXPRESSION AND POSITION (dropped, preverbal, postverbal and dislocated) for nominal and pronominal subjects in y/n questions and different language varieties. A clear-cut division emerges between language varieties that can present postverbal subjects and those that cannot. Thus, VCat and Spanish in general can have a postverbal subject, see (1), whereas Eastern Catalan (BCat and CCat) tend to dislocate the subject, as in (2). Interestingly, there are two varieties, VCat and CanSpa,[1] which—although they can resort to subject inversion as a question marker—prefer to have the verb in preverbal position, as in (3). Our data show that the probability of a subject appearing in preverbal position increase in the case of 1st and 2nd person pronominal subjects. That is, sentences like (4) are possible, whereas sentences like (5) are more marginal though still possible. Our results also show that in Spanish the 2nd person formal form *usted*, which agrees in 3rd person with the verb, appears more frequently in postverbal position, as in (6), than 1st and non-formal 2nd personal pronominal subjects, which tend to be dropped, due to the fact that they usually cannot be distinctive in these contexts (hence the contrast with full NPs). The analogous Catalan form *vostè* tends to be dislocated but can also appear in preverbal position.

(1)   *¿Nació el hijo de la vecina en Madrid?* (CasSpa)
      be born.PAST.3SG the son of the neighbor in Madrid
(2)   *Treballa fins tard, el fill de la veïna?* (CCat)
      work.PRES.3SG until late the son of the neighbor
(3)   *¿La mujer de Juan es francesa?* (CanSpa)
      the wife of Juan is French
(4)   *Tu vares comprar un cotxe?* (BCat)
      you buy.PAST.3SG a car
(5)   *Ets francès, tu?* (CCat)
      be.2sg French, you
(6)   *¿Nació usted en Madrid?* (BCSpaL1Spa)
      be born.PAST2SG2SG.FORMAL in Madrid

Table 1. *Frequency of observation of the variable SUBJECT EXPRESSION AND POSITION for nominal and pronominal subjects in y/n questions across different language varieties. The highest numbers or (in some*

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[1] Preverbal nominal subjects are also common in BCSpaL1Spa. However, due to space limitations, this issue cannot be discussed in any greater depth.

cases) the second highest numbers after subject drop in pronominal subjects are indicated in bold.

Language varieties	Nominal subject			Pronominal subject			
	Pr	Po	Di	Dr	Pr	Po	Di
BCat	1	0	**17**	5	7	0	**14**
CCat	0	0	**18**	5	0	0	**14**
VCat	**14**	3	0	12	**7**	1	0
CanSpa	**16**	0	0	7	2	**7**	0
CasSpa	6	**13**	0	11	2	**5**	0
BCSpaL1Spa	**14**	6	0	8	**6**	4	0
BCSpaL1Bas	3	**17**	0	9	3	**5**	0

Table 2 shows the frequency of observation of the variable SUBJECT EXPRESSION AND POSITION (dropped, preverbal, postverbal and dislocated) for nominal and pronominal subjects in wh-questions and different language varieties. Again BCat and CCat tend to dislocate the subject, as in (7), whereas VCat and Spanish clearly do not, as in (8). Like in y/n questions, pronominal subjects tend to be more commonly produced in preverbal position than nominal subjects. Again, it is of interest to single out the behavior of the form *usted*. As was seen for y/n questions, this pronominal form does not behave like other Spanish personal pronouns, nor does it behave like a full DP (see [15]).

(7)   *I quan fa feina, n'Aina?* (BCat)
      and when make.PRES.3SG work, PERS.ART-Aina
(8)   *Què volia el fill de la veïna?* (VCat)
      what want.past.3sg the son of the neighbor
      ¿Dónde nació Ana? (CSpa)
      where be.born.PAST.3SG Ana

The results of a two-way ANOVA test with SUBJECT EXPRESSION AND POSITION as the dependent variable and SUBJECT TYPE, LANGUAGE VARIETY and QUESTION TYPE as independent variables revealed statistically significant effects of SUBJECT TYPE ($F(1,751)=103.320$, $p<.001$), LANGUAGE VARIETY ($F(6,751)=18.581$, $p<.001$) and QUESTION TYPE ($F(1,751)=4.492$, $p<.05$). Post-hoc analyses confirmed that Eastern Catalan (BCat and CCat) differed significantly from the other language varieties (Tukey $p<.001$).

Table 2. *Frequency of observation of the variable SUBJECT EXPRESSION AND POSITION for nominal and pronominal subjects in wh-questions across different language varieties. The highest numbers or (in some cases) the second highest numbers after subject drop in pronominal subjects are indicated in bold.*

Language varieties	Nominal subject			Pronominal subject			
	Pr	Po	Di	Dr	Pr	Po	Di
BCat	3	4	**34**	18	10	0	**11**
CCat	0	0	**42**	2	2	0	**25**
VCat	6	**36**	0	18	4	**5**	0
CanSpa	6	**37**	1	13	7	**8**	1
CasSpa	1	**41**	0	10	4	**14**	1
BCSpaL1Spa	0	**43**	1	15	**7**	7	1
BCSpaL1Bas	0	**42**	0	9	0	**22**	0

3.2. Intonation results

Table 3 shows the frequency of occurrence (as counts) of the variable NUCLEAR PATTERN for two question types (y/n questions and wh-questions) and the different language

varieties under study. In Table 3 only the most common patterns are reported. Regarding question intonation, first we would first like to highlight the crucial role of prosody in marking whether the subject is dislocated or not. Each dislocated element constitutes a tonal unit which is independent of the core sentence. Hence, an intonational contour made of a core sentence and two dislocated elements (e.g., *Vindrà, la Maria, demà?* Will come, Maria, tomorrow) is produced with three different tonal units. Most instances of dislocated subjects in our data are right dislocations. Right dislocated elements reproduce the intonation pattern of the core sentence but with some variation depending on whether the intonational contour is rising or falling (see [16]).

Table 3. *Frequency of observation of the variable* NUCLEAR PATTERN *for y/n and wh-questions across different language varieties.*

Language varieties	Y/n questions		Wh-questions	
	NC	Freq	NC	Freq
BCat	¡H+L* L%	35/43	H+L* H%	37/80
CCat	L* H%	29/37	H* L%	68/71
VCat	L* H%	37/38	H+L* L%	73/73
CanSpa	L+¡H* L% L* H%	14/32 14/32	H* L%	33/73
CasSpa	L+¡H* L%[2]	17/38	L* H% H* L%	22/71 18/71
BCSpaL1Spa	L+¡H* HL%	18/37	L* L%	48/74
BCSpaL1Bas	L+¡H* HL%	17/38	L* L%	65/74

The intonation of yes-no questions in our data can be grouped into two different patterns according to the pitch tonal event associated with the nuclear syllable: falling/low or high. Whereas Catalan follows the first pattern, nuclear accents in Spanish yes-no questions tend to be high. As for the boundary tones, they can also be low (BCat and Spanish) or high (CCat, VCat and CanSpa). These are not absolute tendencies, since for instance CanSpa can also present a rising pattern, that is, a low nuclear accent followed by a high boundary tone (as can be seen in Table 3). These general tendencies regarding the intonational patterns are consistent with the data presented in [7], [8] and [9], [10] for Catalan and Spanish respectively. When putting the results together, one could hypothesize that the tonal variation found in the nuclear syllable reflects language-specific differences (Catalan vs. Spanish), whereas the tonal variation located at the final stretch of the contour is related to the syntactic marking of the interrogative modality. In other words, language varieties that use syntactic means such as subject inversion or dislocation to mark interrogativity tend to use low tones,[3] but language varieties which do not resort to syntactic markers in a compulsory way (such as VCat or CanSpa) have high final boundary tones available in their intonational grammars. Figure 1 shows an instance of the y/n question *És francesa, la dona del Joan?* (Is French, the wife

of.PERS.ART. Joan) produced by a CCat speaker. The utterance presents a L* nuclear accent associated with the accented syllable of *Joan* followed by a H%. Figure 2 illustrates the y/n question *¿Trabaja Juan hasta tarde?* (work.pres.3SG Juan until late) produced by a speaker of CanSpa. The intonational pattern is characterized by a nuclear L+¡H* accent associated with the accented syllable of *tarde* and a low boundary tone (L%).
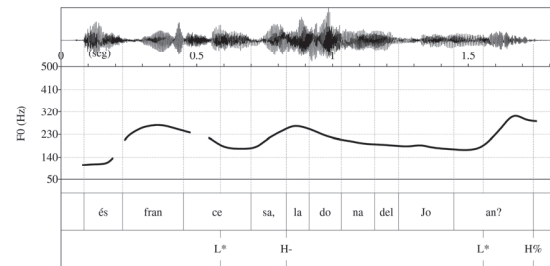

Figure 1: *Waveform and F0 contour of the y/n question with right dislocation of the subject És francesa, la dona del Joan? 'Is she French, Joan's wife?' produced by a speaker of CCat.*
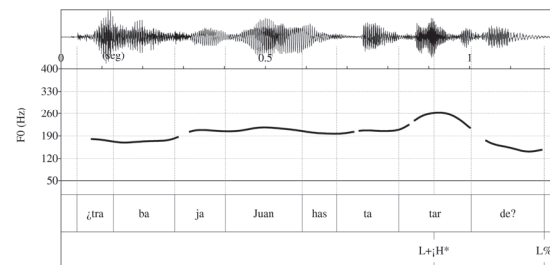

Figure 2: *Waveform and F0 contour of the y/n question ¿Trabaja Juan hasta tarde? 'Does Juan work until late?' produced by a speaker of CasSpa.*

As in the case of y/n questions, wh-questions can be grouped into two categories depending on the tone associated with the nuclear syllable: falling/low or high. Falling/low patterns are common in all the varieties except CCat, CanSpa and CasSpa, which produce high nuclear pitch accents. The final boundary tones tend to be low, although BCat and CasSpa can also present a final rising boundary tone (H%). This H+L* H% pattern in wh-questions has often been regarded as more polite compared to the falling pattern (H+L* L%) (see [17], [5], [7]). The more frequent presence of falling nuclear configurations in wh-questions could be explained by the fact that these questions are formally marked by a preposed wh-word and therefore they do not need to be marked intonationally. Figure 3 displays an example of the wh-question *Quan treballa el fill de la veïna?* 'When does the son of the neighbor work?' produced by a speaker of VCat and characterized by the H+L* L% nuclear configuration. Figure 4 shows the wh-question *¿Dónde nació Ana?* '¿Where was Ana born?' produced by a CanS speaker. The intonational contour includes a H* nuclear accent aligned with the accented syllable of *Ana* and a low final boundary tone.

An inter-transcriber reliability test of the ToBI transcription was conducted with a 10% sample of the data. The subset of data was selected on the basis that all the language varieties and question types were uniformly represented. Four transcribers labeled the subset using the Cat_ToBI and Sp_ToBI systems. Since there were more than two transcribers, the Fleiss' kappa statistic was used. We obtained a moderate agreement for the choice of pitch accents

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[2] It should be noted that this result does not conform to the predictions made by traditional studies such as [17], [18]. However, our results agree with those of [19] in which y/n questions uttered in spontaneous speech are analyzed. A possible explanation for this inconsistency could be that L* H% contours are more restricted to formal speech situations ([20], [19]).

[3] As pointed out by a reviewer, CCat would not follow our generalization, since although y/n questions tend to be marked by subject inversion, 78% of the contours were pronounced by a H% boundary tone. The case of CCat deserves a more fine grained study since the alternation between rising and falling patterns could be related to subdialectal variation (see [7], Map 8.7.).

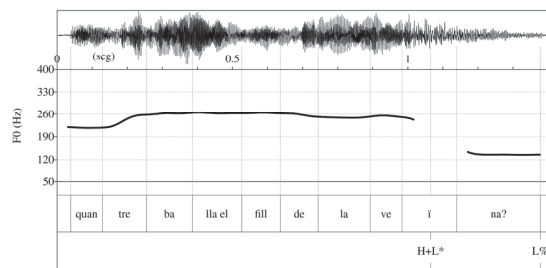(0.62) and an almost perfect agreement for boundary tones (0.85) ([21]).

Figure 3: *Waveform and F0 contour of the wh-question Quan treballa el fill de la veïna? 'When does the son of the neighbor work?' produced by a speaker of VCat.*
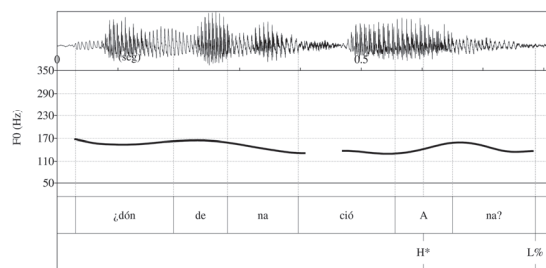

Figure 4: *Waveform and F0 contour of the wh-question ¿Dónde nació Ana? 'Where was Ana born?' produced by a speaker of CanSpa.*

4. Discussion and conclusions

This study represents a first step in exploring how prosody interacts with word order in the expression of interrogativity in Ibero-Romance. To this end, a production study was designed using the DCT methodology to elicit different question types. In addition, we controlled for verb and subject type, and degree of certainty about the response—here only subject type was included in the analysis. The data were annotated prosodically and syntactically with Praat ([14]). After performing a quantitative analysis using the dependent variable SUBJECT EXPRESSION AND POSITION, we conclude that there are three factors that play an important role in the expression of interrogativity by means of word order: question type (y/n question and wh-question), language variety and subject type (nominal, pronominal or *usted*). One of the most crucial differences obtained is between languages that can invert the subject to mark questions (VCat and Spanish) and language varieties that cannot (Eastern Catalan, i.e., BCat and CCat). The latter resorts to subject right/left dislocation. The exception to this general behavior concerns pronominal subjects (1st and 2nd person singular), which tend to occur in preverbal position. The formal pronoun *usted* behaves like a nominal subject in this respect. Our explanation for this particular behavior is based on the lack of a match between the features of the form *usted* (a second person, formal) and the features in INFL, inflection (third person). Our data advocates for the existence of a particular position for this form inside IP (inflectional phrase). VCat and CanSpa show a preference for preverbal subjects in yes-no questions including nominal subjects. These results for VCat and CanSpa should be related to the results obtained in a recent study we carried out (see [16]) which focused on the role of word order and prosody in the expression of not solely interrogativity but also different focus structures. The results revealed that especially CanSpa but also VCat, compared to other Catalan varieties such as BCat and CCat, are [+ plastic] (see [22], [23]) language varieties in the marking of focus, that is, the interaction between focus and prominence is achieved by means of prominence shift rather than changes in word order. This comes as no surprise since Caribbean varieties have been reported to have many commonalities with CanSpa (e.g., the use of the circumflex intonational pattern, possibility of lacking subject inversion in wh-questions, deletion of final *-s*) and they are known to be especially [+plastic] ([24] for Puerto Rican Spanish) and to exhibit a particular preference for SVO order in questions ([22] for Puerto Rican Spanish).

With respect to intonation, we interpret the absence of syntactic marking (wh-word, subject-verb inversion or subject dislocation) for questions as corresponding to a more salient (in terms of pitch height) intonational marking. Hence, wh-questions are mainly characterized by falling patterns, even though the nuclear accent can be low/falling or high. As for yes-no questions, they can be classified by the nuclear tone, low/falling for Catalan and high for Spanish, but also by the final boundary tone. Regarding the final boundary tone, the general tendency points to low tones for language varieties with subject inversion or dislocation, and to optionally high tones for those varieties that do not present syntactic marking in a mandatory way.

As some researchers have suggested, the lack of subject inversion in direct questions may be the syntactic manifestation of a larger shift towards languages becoming more rigid with respect to word order ([26], [27], [22]) with French being the most drastic case among Romance languages. Finally, we would like to highlight that together with syntactic characteristics such as the absence of subject drop, the presence of subject pronouns with infinitival forms (i.e., *para yo hacer esto* 'for me to do this', see [25], [26]) or the lack of subject inversion in questions, the use of a more salient intonational marking can offer insights into the dynamics of language change.

5. Acknowledgments

6. References

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