The encoding of epistemic operations in two Romance languages: The interplay between intonation and discourse markers

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ABSTRACT

For years, linguists have noted that intonation patterns and discourse markers encode similar pragmatic meanings across languages. The present study investigates whether a functional compensatory distribution can be documented across languages by focusing on the expression of epistemic commitment in two Romance languages which have been reported to have either a rich or a very reduced inventory of intonational patterns (e.g., Catalan vs. Friulian). A total of 30 speakers (15 per language) participated in an oral Discourse Completion Task designed to elicit assertions with three degrees of speaker commitment. The results showed that while Catalan used specific intonation patterns for the expression of low and intensified commitment statements, Friulian speakers used only one type of pitch contour to express both types of epistemic commitment. In contrast, Friulian speakers made more frequent use of a more varied set of epistemic discourse markers for the two types of biased statements than their Catalan-speaking peers. This result suggests that a trade-off strategy can be observed between intonation and discourse markers across these two languages. This ultimately shows the need to integrate the study of intonational meaning with other parts of the grammar inside a more unified approach in comparative analyses of language.

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1. Introduction

Human languages use a variety of linguistic strategies for the expression of a speaker’s epistemic commitment towards a proposition (see De Haan, 2006; Nuyts 2001; Palmer 2001, among others). According to De Haan (2006, p. 201) epistemicity refers to “the degree of confidence the speaker has in his or her statement”, e.g., the degree of commitment a speaker has to the truth-value of a proposition. During the past decades, linguists have largely focused on languages that encode epistemicity by means of specific morphological strategies (e.g., verbal morphology) and lexical discourse markers (e.g., modal particles and interjections, sentential adverbs, etc.) (see, among others, Bross 2012 for a review of the literature about modal particles, with special attention to German, and Cornillie, 2010 for epistemic adverbs in Spanish). For example, English and

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many other European languages use epistemic adverbs which can either express strong commitment or conviction (e.g., *admittedly, certainly, decidedly, definitely, indeed, undeniably, undoubtedly, obviously*) or low commitment with some degree of doubt (e.g., *allegedly, arguably, apparently, conceivably, likely, maybe, perhaps*). In other languages such as Manado Malay (Stoel 1995), sentence-final particles encode fine-grained epistemic distinctions, such as a low degree of speaker commitment (see the example in 1a) or a high degree of speaker commitment, both in statements (1b) and questions (1c). In a study of the question particles in three typologically diverse languages (Dutch, Lao and Tzeltal Mayan), Enfield et al. (2012) showed how speakers of these languages use question-final particles to tilt the epistemic gradient into a questioning stance through a lowering or strengthening of their epistemic commitment. They claimed that question-final particles “are more than just question markers, in the sense that they make subtle distinctions in relative strengths of knowledge or commitment to a proposition, of both speaker and addressee, manipulating the local epistemic gradient” (p. 219).

(1) Sentence-final particles expressing degrees of speaker commitment in Manado Malay
   a. so mo ujang sto ‘It is probably going to rain’
   b. so mo ujang no ‘It is definitely going to rain’
   c. so mo ujang klang? ‘It is going to rain, isn’t it?’
   Examples taken from Stoel (1995)

Intonation contours, like discourse markers, can function as epistemic operators that convey commitment spaces set out by discourse participants. Several studies have pointed out that languages use specific intonational contours to signal different gradients of epistemic commitment, in both assertions and questions. For assertions, the falling L% L% tune is used in several languages for the expression of high epistemic commitment or speaker confidence (e.g., Pierrehumbert and Hirschberg, 1990, Asher and Reese 2007, Gunlogson, 2001, Krifka 2017, Heritage 2013 for English; Roseano, González, Borrás-Comes and Prieto 2016 for Catalan). By contrast, in many languages pitch nuclear configurations involving sentence-final high H% or mid-level H% boundary tones signal a lack of epistemic commitment and convey speaker uncertainty (see Heritage 2013 for English): H% in Dutch Swerts and Krahmer, 2005, H% H% in French (Beyssade and Marandin 2006, Portes et al. (2014), and H% H% for Catalan (e.g., Borrás-Comes et al., 2011; Vanrell, Borrás-Comes, Roseano and Prieto, 2011). For questions, intonation has also been shown to encode a distinction between pure information-seeking questions (i.e., questions where the speaker shows no particular commitment to his or her proposition) and confirmation-seeking questions (i.e., questions with a higher level of commitment to the proposition; see Escandell-Vidal 1998 and Armstrong, 2015 for Spanish, Gravano et al., 2008 for English; Savino and Grice 2011 for Italian; Vanrell et al., 2017 and Roseano et al., 2015 for Catalan, among others). Recently, Prieto & Borrás-Comes (2018) showed that question intonation contours in Catalan function as epistemic operators that encode fine-grained distinctions in speaker commitment not only in relation to the speaker’s own propositions but also in relation to those of the addressee. Vanrell et al. (2017) also showed that a specific type of polar question intonation in Majorcan Catalan signals the speaker’s sensory access to direct evidential information, which in turn encodes a high degree of speaker commitment about the proposition expressed. Also Wakefield (2014) distinguishes between two different rising tones in English declaratives (mid-rising and high-rising), with distinct meanings that ultimately differ in the degree of speaker commitment.

Interestingly, linguists have noted for some time that the functions and meanings of discourse markers largely overlap with the functions and meanings expressed by intonation (e.g., Yau 1980, Wakefield 2010, Wu 2009; see Wakefield 2020 for a review). For example, high or low commitment in questions is expressed through the use of sentence-final particles in Cantonese and through intonation in languages such as English (e.g., Wakefield 2010, 2020). Already in the sixties, Schubiger (1965) analysed German modal particles and claimed that there was “a semantic correspondence between German particles and certain English tone patterns” (Schubiger 1965: 66). For example, while the difference between a command and a request is expressed intonationally in English (commands have a falling intonation while requests display a final rise), German uses the particle nur to turn a command into a request. More recently, Wakefield’s (2020) book has reviewed old and new empirical evidence for the claim that specific intonational forms correspond to specific discourse particle forms in the expression of epistemic, speaker-stance notions across languages.

One of the questions that arises is whether we find a compensatory distribution between the two kinds of systems (e.g., intonation and morphosyntactic/discourse lexical marking) across languages. Typologically, languages with lexical tone systems (and thus with very restricted sets of intonation patterns) tend to have richly developed sentence-final particle systems. For example, Mandarin Chinese uses a wide set of modal particles such as the modal particle me for assertions of the obvious and disagreement (Chappell 1991). In a recent typological paper, Torreira et al. (2014) quantitatively analysed the grammatical strategies used for marking polar questions across lexical tone languages and intonational (or non-tonal) languages using data from the World Atlas of Language Structures. The results showed that the use of tonal features to mark lexical contrasts leads to a diminished functional load for utterance-level intonation. Thus even though grammatical markings of polar questions (question particles, interrogative verb morphology, interrogative word order) are used both in intonational and lexical tone languages above chance level, lexical tone languages use them significantly more often, revealing a functional trade-off between intonation and other strategies (like the use of particles or of morphosyntactic features) encoding questionhood. Yet, this study did not directly address the question of whether a functional trade-off between intonation and other grammatical marking strategies can also be documented in languages with no lexical tone. Specifically, little is known as yet about the division of labour between discourse markers and intonation in non-tonal languages and whether compensatory effects can be found (Da Mota and Herment, 2016, is one of the few studies that proved evidence for this).
The present study investigates the potential functional trade-off between intonation and discourse marking strategies of epistemic commitment in two Romance languages, Catalan and Friulian. When looking at the size of the inventory of pitch contours, these two languages belong to two ends of the continuum within Romance. While a total of 17 nuclear tonal configurations have been documented in the Catalan intonational phonology system (Aguilar et al., 2009–2011), only nine nuclear tonal configurations are reported in Friulian (Roseano et al., 2015). Regarding epistemic marking, while Catalan has a variety of stance-marking intonation contours that encode fine-grained distinctions in speaker commitment (e.g., Prieto et al., 2015), Friulian is a language which uses the same nuclear configuration for epistemically-biased statements (e.g., H*+L L% is normally used for all types of epistemic bias, including uncertainty, obviousness, or contradiction) (see Roseano et al. 2015; see also Frota and Prieto, 2015).

The present study hypothesizes that speakers of the two languages will show some sensitivity to the functional trade-off between the use of the two types of epistemic systems (e.g., epistemic intonation and epistemic discourse marking). The use of a richer system of intonational epistemic contrasts by Catalan speakers will entail the use of fewer discourse markers in this language. By contrast, due to the more restricted set of epistemic intonational contours, Friulian speakers will be expected to use a greater variety of lexical discourse markers in the responses to the same contextual situations. A total of 30 speakers (15 per language) were asked to participate in an oral Discourse Completion Task (henceforth DCT), an elicitation method commonly used in pragmatics and prosodic studies (see Vanrell et al., 2018 for a review). The DCT is an elicitation method in which the interviewer presents the participant with a discourse situation and then asks him/her to respond accordingly. A specific epistemic dimension will be analysed, namely degrees of epistemic commitment. In order to characterize epistemic commitment, we adopt a version of the theory of speech act dynamics, which has analysed biased epistemic utterances by assessing the conditions that restrict their appearance in discourse (e.g., Asher and Reese 2007; Beyssade and Marandin 2006; Krifka 2017). According to this model, speech acts create commitments by the interlocutors and may also introduce changes in commitments that can be analysed as transitions between commitment spaces in a conversational game. Within this view, intonation, as well as discourse particles, are understood as epistemic operators that can equally encode fine-grained distinctions in speaker commitment to the speaker’s own propositions.

2. Methods

2.1. Participants

A total of 30 speakers were recorded: 15 native speakers of Central Catalan and 15 native speakers of Northern Friulian. Since both in Catalonia and in Friuli most inhabitants are bilingual (Catalan/Spanish and Friulian/Italian), before carrying out the recordings, a short linguistic profile of the speakers was drawn up and only speakers who declared themselves to be dominant in Catalan or Friulian were recorded. The threshold for language dominance was set at 60%; that is, all speakers declared that they spoke the target language on a daily basis above 60% of the time. The Catalan speakers were aged between 19 and 50 (average 31, standard deviation 12). Due to the sociolinguistic situation of Friulian, which is currently highly endangered (Moseley, 2010), the speakers of this language were older (aged between 34 and 81, average 61, standard deviation 15).

2.2. Materials

Table 1 summarizes the three types of target assertions that were assessed. They differ in terms of the level of speaker commitment (or degree of epistemic disposition towards the propositional content of the sentence): that is, low, high, and intensified speaker commitment. This 3-way distinction corresponds to the so-called uncertainty statements (low speaker commitment), broad focus statements (high speaker commitment), and assertions of the obvious (intensified speaker commitment). While uncertainty statements and assertions of the obvious are classified as biased statements, high speaker commitment statements correspond to unbiased broad focus assertions. Finally, though the encoding of the obviousness meaning is characterized in this paper simply as an expression of an intensified commitment operator, we acknowledge the multifunctionality of this operator at the interactional level. In addition to high commitment and speaker involvement with the contents of the proposition, statements of the obvious also imply that the audience should be familiar and engaged with this proposition. In this paper we regard this complementary meaning as a pragmatic extension of the semantics of commitment.

<table>
<thead>
<tr>
<th>Degree of speaker commitment</th>
<th>Classification of speaker bias</th>
<th>Types of assertions</th>
</tr>
</thead>
<tbody>
<tr>
<td>High speaker commitment</td>
<td>Unbiased</td>
<td>Broad focus assertions</td>
</tr>
<tr>
<td>Low speaker commitment</td>
<td>Biased</td>
<td>Low certainty assertions</td>
</tr>
<tr>
<td>Intensified speaker commitment</td>
<td>Biased</td>
<td>Assertions of the obvious</td>
</tr>
</tbody>
</table>

Table 1
Target levels of speaker commitment associated with the assertions that will be analysed in the present study.
Three different discourse contexts were designed to elicit the three levels of speaker commitment in assertions (low, high, and intensified; see Table 1). Table 2 shows the target discourse contexts encoding low, high and intensified speaker commitment in the two languages, showing potential responses from participants in italics. While the two low commitment contexts were designed to elicit low certainty statements (e.g., the speaker is not sure whether another person likes something s/he has bought/cooked for him/her), the high commitment discourse context was the same in the two languages and elicited unbiased broad focus statements, in which the speaker provides information that s/he deems to be true, with no other pragmatic function than providing new information. In addition to the biased uncertainty statements (low commitment), we collected data on another type of biased assertion with a different pragmatic nuance, namely the assertion of the obvious.

Table 2
Target discourse contexts used for the Catalan (CAT) and Friulian (FRI) datasets eliciting assertions at three levels of speaker commitment (low, high, and intensified).

<table>
<thead>
<tr>
<th>Expected degree of speaker commitment</th>
<th>DCT target discourse contexts</th>
</tr>
</thead>
</table>
| Low speaker commitment               | CAT: A friend of yours has asked you to buy a gift for someone that you do not know very well and you are afraid that you have not made a good choice. You tell your friend that the other person may not like what you have bought.  
EXPECTED STATEMENT (CATALAN): Potser no li agraça. ‘Maybe s/he doesn’t like it.’  
FRI: You and your partner have invited a couple of friends for dinner. You had prepared cjarsons (Friulian sour dumplings). One of your friends didn’t eat them. When they leave, your partner asks you why your friend did not eat them. You tell your friend that the other person may not have liked it.  
EXPECTED STATEMENT (FRIULIAN): Forsi no i plasin. ‘Maybe s/he doesn’t like them.’ |
| High speaker commitment              | CAT/FRI: Look at the picture [the speaker is shown a picture with a girl eating a tangerine/banana]. The girl in the picture is called Maria. Say what Maria is doing.  
EXPECTED STATEMENT (CATALAN): La Maria menja mandarines. ‘Maria is eating tangerines.’  
EXPECTED STATEMENT (FRIULIAN): Maria a mangja una banana. ‘Maria is eating a banana.’ |
| Intensified speaker commitment       | CAT/FRI: You are with a friend and you tell him/her that Maria, a mutual friend of yours, is pregnant. Your friend asks you who the father is. Are you surprised that s/he doesn’t know because everyone knows that the father is her boyfriend, Jaume/Domeni. What do you tell her?  
EXPECTED STATEMENT (CATALAN): Del Jaume! ‘It’s Jaume’s, of course!’  
EXPECTED STATEMENT (FRIULIAN): Di Domeni, poi! ‘It’s Domeni’s, of course!’ |

2.3. Elicitation procedure

The interviews were performed individually and took approximately 15 min each. Participants were presented with the discourse context orally and were asked to respond freely to the situation. The recordings were made with a Marantz PMD620 digital recorder and Shure SM58 microphone and took place in a quiet room at the home of each participant. In total, the corpus contains 90 utterances (15 speakers x 2 languages x 3 contexts).

Several audio examples of the sentence types discussed in this paper are accessible on the website of the Interactive Atlas of Romance Intonation (Prieto et al., 2010–2014) and of the Interactive Atlas of Catalan Intonation (Prieto & Cabré, 2007–2012).

2.4. Data coding

The 90 target assertions were first transcribed orthographically. Then each assertion was annotated intonationally (section 2.4.1) by the second author of the study. Epistemic discourse markers (section 2.4.2), as well as morphosyntactic epistemic strategies (section 2.4.3) were also coded by the same researcher. In what follows we explain in detail the three levels of coding.

2.4.1. Intonational pitch contours

For the prosodic analysis, the Catalan and Friulian versions of the Tones and Break Indices labelling system—called Cat_ToBI and Fri_ToBI, respectively—were used (Roseano et al., 2015 and Prieto et al., 2015 respectively). We focussed on the transcription of the nuclear pitch configurations, i.e., the final part of the contour that includes the phrase-final pitch accent and the final boundary tones. In Romance languages nuclear pitch configurations constitute the main feature of target pitch contours and also contain the most relevant pragmatic information. The phrasing information was also transcribed by means of break indices (see Figs. 1 and 2 for transcription examples).

The nuclear configurations found in the Catalan and the Friulian datasets are presented in Tables 3 and 4 respectively. Both tables contain the standard label used in Cat_ToBI and Fri_ToBI to transcribe each nuclear configuration, a schematic representation of the F0 contour, a description of the curve and, in addition, a list of sentence-types where each nuclear configuration has been documented in the literature (see Roseano et al., 2015 for Friulian; Prieto et al., 2015 for Catalan). Crucially for this work, previous studies show that the L + H′1 H% contour in Friulian kind of epistemic bias (i.e. both in high
certainty and low certainty statements) (Roseano et al., 2015). In the column containing nuclear pitch accent schematic representations, the dark line represents a stylization of the F0 contour: white rectangles stand for unstressed pretonic syllables, dark grey rectangles represent the stressed syllable, and light grey rectangles represent posttonic syllables.

Figs. 1 and 2 show the spectrogram, F0 contour, orthographic transcription and prosodic annotation of the three types of nuclear configurations found in Catalan (Fig. 1) and the four types of nuclear configuration found in Friulian (Fig. 2).

### Table 3
Nuclear pitch configurations found in the Central Catalan corpus.

<table>
<thead>
<tr>
<th>Cat_ToBI label</th>
<th>Schematic representation of the nuclear configuration</th>
<th>Description</th>
<th>Pragmatic uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>L + H' !H%</td>
<td><img src="image" alt="Diagram" /></td>
<td>F0 rises and reaches its peak at the end of the tonic syllable. Then it falls to a mid-level at the end of the utterance.</td>
<td>Uncertainty statements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Fig. 1 (top panel).</td>
</tr>
<tr>
<td>L' L%</td>
<td><img src="image" alt="Diagram" /></td>
<td>F0 is low in the last stressed syllable and remains low until the end of the utterance.</td>
<td>Broad focus statements and narrow focus statements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Fig. 1 (central panel).</td>
</tr>
<tr>
<td>L + H' !H%</td>
<td><img src="image" alt="Diagram" /></td>
<td>F0 rises and reaches its peak at the end of the tonic syllable. Then it falls and rises again in the final unstressed syllable.</td>
<td>Assertions of the obvious</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Fig. 1 (bottom panel).</td>
</tr>
</tbody>
</table>

### Table 4
Nuclear pitch configurations found in the Friulian corpus.

<table>
<thead>
<tr>
<th>Fri_ToBI label</th>
<th>Schematic representation of the nuclear configuration</th>
<th>Description</th>
<th>Pragmatic uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>H' + L L%</td>
<td><img src="image" alt="Diagram" /></td>
<td>F0 falls well before the end of the last stressed syllable ending in the posttonic syllable.</td>
<td>Epistemically biased statements (uncertainty, obviousness)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Information-seeking wh-questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Fig. 2 (first and third panel).</td>
</tr>
<tr>
<td>H + L' L%</td>
<td><img src="image" alt="Diagram" /></td>
<td>F0 falls between the syllable before the last stressed syllable and the last syllable. Then it remains low until the end of the utterance (a shallow phonetic final rise is possible).</td>
<td>Broad focus statements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Commands</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Imperative wh-questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Final element of an enumeration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Final element of a disjunction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Fig. 2 (second panel).</td>
</tr>
<tr>
<td>L + H' L%</td>
<td><img src="image" alt="Diagram" /></td>
<td>F0 rises and reaches its peak at the end of the tonic syllable. Then it falls until the end of the utterance.</td>
<td>Exclamatives</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Contrastive narrow focus statements</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Information-seeking yes-no questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Confirmation-seeking yes-no questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Requests</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Fig. 2 (bottom panel).</td>
</tr>
</tbody>
</table>
Fig. 1. Spectrogram, F0 contour, orthographic transcription and prosodic annotation of the nuclear configurations of the three types of target assertions in Catalan (low commitment, high commitment, and intensified commitment). In the top panel, the uncertainty statement *Es que potser no li agradarà* ‘Maybe s/he won’t like it’ exemplifying the nuclear configuration $L^+ H^* !H%$. In the central panel, the broad focus statement *La Maria menja mandarines.* ‘Maria is eating tangerines’ exemplifying the nuclear configuration $L^* L^0$. In the bottom panel, the statement of the obvious *D’en Jaume!* ‘It’s Jaume’s!’ exemplifying the nuclear configuration $L + H^* L H^%$. 
Fig. 2. Spectrogram, F0 contour, orthographic transcription and prosodic annotation of the nuclear configurations of the three types of target assertions in Friulian (high commitment, low commitment, and intensified commitment). In the top panel, the uncertainty statement *Eh, forsi no i plasevant* ‘Maybe they didn’t like them’ exemplifying the nuclear configuration $H^*+L\%$. In the second panel, the broad focus statement *Marina a mangiava una banana* ‘Marina was eating a banana’ exemplifying the nuclear configuration $H+L^*\%$. In the third panel, the statement of the obvious *Eh, di Domeni, po!* ‘Oh, it’s Domeni’s, of course!’ exemplifying the nuclear configuration $H^*+L\%$. In the bottom panel, the statement *A è di... al è di Domeni, po!* ‘It’s… it’s Domeni’s, of course!’ exemplifying the nuclear configuration $L+H^*\%$ (which in this case conveys an exclamative meaning) and is accompanied by the modal particle *po*, which expresses obviousness. Note that the nuclear configuration in this last example $L+H^*\%$ appears twice: once at the end of the first intermediate phrase (*ip*), and then at the end of the second *ip* the same configuration with a compressed pitch range and truncated.
2.4.2. Morphosyntactic epistemic marking

Morphemic strategies used to convey epistemic information were labelled. Specifically, we labelled the instances of epistemic future indicative in Friulian, a construction which was not found in our Catalan data. In Romance languages like Spanish (Escandell 2010), Italian (Pietrandrea 2004) and Friulian, the future indicative tense is used with an epistemic value and has been named the epistemic future. While in Spanish the epistemic future may only be used to indicate probability or doubt but not obviousness (e.g., Span. Estará lloviendo ‘It must be raining’), in spoken Italian and Friulian future indicative it is used with a general epistemic value. Specifically, it signals that statements are epistemically marked and, depending on the context (and possibly the presence of other markers that disambiguate the epistemic bias, like in the examples 2 discussed below), it can mark both very high or very low commitment. The examples in (2) and (3) show the two types of Friulian constructions, where (2) is a statement of the obvious (and such meaning is conveyed by the reprimand question ‘whose else should it be?’) while (3) is an uncertainty statement. Please note that these examples (and the ones following) have been glossed word-by-word and translated into English:

(2) Fri. Eh, al vorà mangjat massa. ‘Huh, he’s probably eaten too much’.
(3) Fri. Eh, sarà di Meni. ‘Humph, it must be Meni’s, of course, whose else should it be?’.

By contrast, in spoken Catalan, the use of the epistemic future can only indicate low commitment, as in Spanish (e.g., ¿Potser serà en Joan que truca? ‘It must be Joan ringing?’). Nevertheless, although epistemic future is possible in Central Catalan, it is considered a borrowed construction (Pérez Saldanya 2002: 2637) and it seldom occurs (in fact, in our data we have no example of this). The same epistemic function (i.e. low commitment) is usually expressed by means of the auxiliary deur ‘must’, like in (4) (example from Pérez Saldanya, 2002).

(4) Cat. Deu ser a casa. ‘S/he must be at home’.

2.4.3. Epistemic discourse marking

For the analysis of the epistemic discourse markers in Catalan and in Friulian, we relied on four categories commonly used in the Romance literature (see, e.g., Cuena 2002; González 2004; Cuena and Marin 2012; González and Ribas 2008; Gonzalez 2014, i. a.), namely: epistemic adverbs (e.g., Cat. potser, Fri. forist ‘perhaps’), modal particles (e.g., Fri. po ‘of course’), interjections (e.g., Cat. bé ‘well’, Fri. mah ‘hmm’), and phrases (e.g., Cat. No sé ‘I don’t know’).1

Modal particles — also known as discourse particles or Abtönungspartikeln in German — are “non-inflected words marking the speaker’s mood or attitude towards the proposition expressed in the uttered sentence” (Bross 2012, 182). According to Ameka (1992: 107), “a particle is a little word which is syntactically dependent on other elements in the clause and is well integrated into the clause in which it occurs. It cannot occur on their own as utterances [...]”. The difference between particles and adverbs lies on their syntactic and morphological properties. While modal adverbs can form a sentence of their own, particles cannot. In addition, in Romance and Germanic languages modal adverbs are derived from adjectives by means of suffixes — e.g., certain + ly — while particles are not. The difference between particles and interjections is a syntactic and prosodic one. While particles cannot be independent utterances and are fully a part of the utterance, interjections can stand alone and also be preceded by prosodic boundaries, which separate them prosodically from surrounding utterances.

Tables 5 and 6 show the types of epistemic discourse markers found in our dataset of biased statements, low speaker commitment (Table 5) and intensified speaker commitment (Table 6), for both languages. It is interesting to note that Friulian has two specific epistemic particles related to obviousness/intensified speaker commitment that do not have a clear correlate in Catalan, namely po and ve, ‘obviously’.

| Table 5 | Types of epistemic discourse markers found in our dataset of low speaker commitment statements in Catalan (left column) and Friulian (right column). |
| --- | --- | --- |
| **Epistemic discourse markers (low speaker commitment)** | **Catalan** | **Friulian** |
| Adverbs | potser ‘perhaps’ | forist ‘perhaps’ |
| Interjections | bé ‘well’ | mah ‘hmm’ |
| Phrases | no sé ‘I don’t know’ | no sai ‘I don’t know’ |

1 For Friulian the number and the extension of the studies published on the use of epistemic discourse markers so far is limited (basically, only Roseano et al., 2015 devote two pages to the subject).
In the following subsections, we explain in more detail the types of discourse markers found in the two languages. It is important to note that discourse markers can be used in combination and that we will also exemplify some of the most common combinations.

2.4.3.1. Adverbs. Modal adverbs (basically, *maybe* and *probably*) were found in low commitment statements in both languages. In the examples below we exemplify the use of the adverbs *forsi* ‘maybe’ (see 5) and *probabilmente* ‘probably’ (see 6) in Friulian and *potser* ‘maybe’ in Catalan (see 7). In Friulian the adverb *forsi* ‘maybe’ was more frequent (it appeared eight times in 15 sentences) than *probabilmenti* ‘probably’ (as in 6). In Catalan, *potser* ‘maybe’ was the most frequent form (it appeared nine times in the dataset).

(5) Fri. *Forsi* no i plasevant.
   Maybe not him please
   ‘Maybe he didn’t like them’.

(6) Fri. *Mah*, *probabilmenti* no erin di lór
   Hmm probably not were to their
   Hmm, probably hey didn’t like them.

(7) Cat. *Potser* no li agradarà...
   Maybe not him please...
   ‘Maybe he doesn’t like it’.

By contrast, no modal adverbs were used in intensified commitment statements. Although both languages have epistemic adverbs expressing obviousness (e.g., *obviament* ‘obviously’ in Catalan, *clarament* ‘clearly’ in Friulian, as shown by Roseano et al., 2015), they were not found in our data.

2.4.3.2. Modal particles. While modal particles have been described in depth for some non-Romance languages like German (see i. a. Weydt 1969; König 1997; Helbig 1988; Diewald 2007; Bross 2012), less is known about their presence and use in Romance languages (see, e.g., Weydt 1969 for French, Coniglio 2008 for Italian, Torrent 2011 for Catalan, Roseano et al., 2015 for Friulian). Interestingly, while Friulian assertions of the obvious contain several occurrences of modal particles, they were totally absent in the Catalan data. The modal particles found in our Friulian data are *po* (see 8), *ma* (see 9), *be* (see 10) and *ve* (see 11), and all of them were used in the context of intensified commitment statements. The most common modal particle in our corpus is *po* (which appears eight times in 15 utterances), followed by *ma* and *be* (two cases each), and *ve* (which appears only once).

(8) Fri. *Al é* di Meni, po.
   scl is of Meni mp
   ‘It’s Meni’s, of course!’.
(9) Fri. *Ma* Paolo, *ducj a* san.
   mp Paolo all scl know.
   ‘Paolo, everybody knows!’.
(10) Fri. *Al sarà* be di Marco!
    scl be beTur mp of Marco
    ‘It must be Marco’s!’.
(11) Fri. *Di Toni, ve.*
    of Toni mp
    ‘It’s Toni’s, of course!’.

The Friulian particles *po* and *ve* share many grammatical features. They are stressed and they appear in an autonomous prosodic phrase that is separated from the phrase containing the body of the utterance. They tend to appear at the end of the utterance (though not mandatorily) and may not appear in the initial position of an intonational phrase (IP). As far as their meaning is concerned, while *po* expresses obviousness with no further connotation, the particle *ve* adds a nuance of reproach, in the sense that the speaker is reproaching the hearer for his/her ignorance (Roseano et al., 2015). Because of this semantic connotation they cannot appear in statements together with adverbs expressing uncertainty (e.g., *Forsi al é* di Meni, *po*).

The particle *ma* (pronounced as [ma]) is different from the interjection *mah* described in Section 2.4.3.3 and it also differs from the particles *po* and *ve* in several aspects. It is unstressed and it may appear only in phrase-initial position and it can be found in virtually all sentence-types. It has the same form as the unstressed adversative conjunction *ma* ‘but’ from which it

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**Table 6**

Types of epistemic discourse markers found in our dataset of intensified speaker commitment statements in Catalan (left column) and Friulian (right column).

<table>
<thead>
<tr>
<th></th>
<th>Catalan</th>
<th>Friulian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interjections</td>
<td><em>home</em> ‘man’</td>
<td><em>Signor benedet</em> ‘Good Lord’</td>
</tr>
<tr>
<td></td>
<td><em>coi</em> ‘gosh’</td>
<td></td>
</tr>
<tr>
<td>Phrases</td>
<td><em>es clar</em> ‘it’s clear’</td>
<td><em>ducj a san</em> ‘everybody knows’</td>
</tr>
</tbody>
</table>
derivs and it expresses surprise and a certain opposition to an idea that the speaker has presented. It is interesting that several Romance languages use the equivalent of ‘but’ with the same function (see, among many others, Ferrer and Hang, 2000 review of the use of pero ‘but’ in Spanish, not to mention the classic studies —beginning with Weydt, 1969— about the same role of aber as a modal particle in German). In the situational context used to elicit the statements of the obvious, the presence of ma clearly shows that the speaker is surprised by the fact that the interlocutor does not know who the father is.

The unstressed particle be can alternate with the form ben, which clearly suggests its derivation from the stressed modal adverb ben ‘well’. It can only appear immediately after the verb and after the auxiliary in case of compound tenses, suggesting that this particle is more grammaticalized than the other three particles mentioned so far. It can appear in affirmative statements but not in negative statements. While be may be used in combination with po and ve (e.g., our dataset contains the combination be + po), it cannot combine with adverbs indicating doubt (e.g., *Forsi al è be di Meni). As far as its meaning is concerned, it expresses some opposition to the interlocutor’s expectations. In the context we used to elicit the statements of the obvious, the use of be in the response is expressing the speaker’s disagreement with the interlocutor, who might be implying that the father of the child is not the woman’s partner.2

2.4.3.3. Interjections. Interjections appeared frequently in both our Catalan and Friulian datasets. First, interjections were coded as either non-epistemic or epistemic. While the former do not encode any information about the epistemic stance of statements of the obvious, the use of the generic epistemic interjection bem (phonetically realized as [ˈmaː] or [ˈmaʔ]) three times, which also expresses doubt (see 14).

In intensified commitment statements, Catalan speakers used two instances of an interjection expressing uncertainty: bè ‘well’ (see 13) and its corresponding Spanish bueno, a common borrowing in Central Catalan (see Cuenca 2002: 3227). Friulian speakers used the interjection mah ‘hmm’ (phonetically realized as [ˈmaː] or [ˈmaʔ]) three times, which also expresses doubt (see 14).

In addition to epistemic interjections with a specific meaning like those mentioned above, Friulian speakers used several occurrences of the generic epistemic interjection eh, which appears both in uncertainty statements (like in 17) and in statements of the obvious (like in 18).

2 It is important to point out that in traditional societies the fact that a child is conceived outside a consolidated relationship is considered negatively. In this sense, the speaker who uses be wants to state that, in case the interlocutor was implicitly suggesting that the child’s father was not the woman’s partner, s/he would not approve of such a situation.
2.4.3.4. Phrases. The assertions in (19) and (20) show examples of a phrase expressing doubt in an uncertainty statement in Friulian (no sai ‘I don’t know’; see 19) and in Catalan (no sé ‘I don’t know’; see 20). Other examples of phrases acting as low commitment epistemic discourse markers in the Friulian data are no ai idea, ‘I have no idea’ and po dasi ‘it may be the case’. In the Catalan data, in addition to the form no sé si ‘I don’t know whether’ exemplified in (20), we also have the variant no ho sé ‘I don’t know it’.

(19) Fri. Mah, no sai, forsi no i plasevin.
   Hmm not know maybe not him please
   ‘Hm, I don’t know, maybe he didn’t like them’.

(20) Cat. Bueno, no sé si li agradará.
   Well not know whether him please
   ‘Well, I don’t know whether he’ll like it’.

In addition to purely epistemic phrases like the ones mentioned above, our data also contain a set of phrases which are of a more evidential nature and which also contribute to express the overall epistemic stance of the speaker. This is in line with the fact that most researchers nowadays support an approach in which the epistemic and evidential categories are interrelated and overlap to a certain extent in the construction of the speakers’ epistemic stance, yet are neither completely conflated nor may be treated totally separately (see Roseano et al., 2015 for a review). As one can see in (21), a marker of this kind in Friulian is the phrase a si jöt che ‘it is seen that’, which has the same origin and semantics as similar expressions found in most Romance languages, like the Spanish se ve que ‘it is seen that’, and of the Catalan es veu que ‘it is seen that’, described by several authors (like Cuenca and Marín, 2000; González 2004; Marín 2005; González 2011; Albelda Marco, 2016, i. a.). Since it marks indirect evidentiality (specifically an inference) it also conveys a relatively low degree of commitment to the truth-content of the statement.

(21) Fri. A si jöt ch’ a no i ân plasûts.
   scl self sees that scl not him have pleased
   ‘Apparently he did not like them’.

In our Catalan data the phrase és clar ‘it is clear’ functions as a high commitment epistemic discourse. According to Cuenca and Marín (2012), és clar can indicate at the same time certainty and shared knowledge. According to the same authors, its basic modal meaning is ‘it is obvious that’, and therefore it is no surprise that it often appears in statements of the obvious like the one in (22). A similar epistemic-evidential phrase found in Friulian is ducj a san ‘everybody knows’ (23), which refers to shared knowledge and goes hand in hand with a high commitment to the truth-content of the propositional content.

(22) Cat. Es clar! Yes, de qui és, del Jaume!
   Is clear go of who is of the Jaume
   ‘It’s clear whose child it is, it’s Jaume’s’!

(23) Fri. Ma Paolo, ducj a san.
   MP Paolo all scl know.
   ‘Paolo, everybody knows!’.

3. Results

3.1. Intonational marking of epistemic stance in Catalan and Friulian

Table 7 shows the results of the intonational analysis of the two languages. The table shows the Catalan and Friulian nuclear pitch configurations used most frequently (in %) across the three commitment types. Our results show first of all that unbiased broad focus statements (high speaker commitment) were systematically produced with the nuclear configuration L∗L% in Catalan and H + L∗L% in Friulian. As for the biased assertions, Catalan speakers distinguished intonationally between low speaker commitment (produced with a L + H !H% nuclear configuration) and intensified speaker commitment (produced with L + H !H% nuclear configuration; see Prieto et al., 2015 for a description of the two intonational pitch contours). By contrast, Friulian speakers produced the two types of biased assertions with the same nuclear configuration (H∗+L%), which expresses the existence of a more general epistemic bias (Roseano et al., 2015). In the case of intensified commitment assertions (or assertions of the obvious), Friulian speakers produced the H∗+L% nuclear configuration 67% of the times, while the remaining 33% of the data showed the L + H∗L% pitch contour, which is generally used for exclamatives (Roseano et al., 2015).

<table>
<thead>
<tr>
<th>Degree of commitment</th>
<th>Catalan nuclear pitch configurations (Cat_ToBI)</th>
<th>Friulian nuclear pitch configurations (Fri_ToBI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low speaker commitment</td>
<td>L + H!H% (100%)</td>
<td>H∗+L% (100%)</td>
</tr>
<tr>
<td>High speaker commitment</td>
<td>L∗L% (100%)</td>
<td>H + L∗L% (100%)</td>
</tr>
<tr>
<td>Intensified speaker commitment</td>
<td>L + H∗L!H% (100%)</td>
<td>H∗+L% (67%)</td>
</tr>
</tbody>
</table>
In sum, whereas Catalan made systematic use of specific intonation contours for each of the three levels of epistemic commitment, Friulian speakers only differentiated between a tune used for broad focus statement (H + L° L%) and another tune (H° + L L°) used for epistemically biased statements, without specifying whether such bias consisted of an intensification or a weakening of the commitment.

Importantly, while the high speaker commitment assertions (e.g., broad focus statements) in both languages made no use of lexical epistemic markers such as particles, adverbs, interjections, or phrases, this was not the case for the two types of biased assertions (e.g., low and intensified commitment assertions), which used a wide variety of lexical epistemic markers, as well as some morphological markers. In the next two sections we present the results of the morphological strategies and discourse markers used in the data.

3.2. Morphological marking of epistemic bias in Catalan and Friulian

Fig. 3 shows the frequency of appearance (in %) of the epistemic future in the Friulian and Catalan corpus. The results show that while Friulian speakers used the epistemic future as a morphological marking strategy of the epistemically biased assertions (low speaker commitment and intensified speaker commitment), Catalan speakers did not use any morphological marking strategies of epistemicity. In Friulian, instances of the epistemic future appeared in 27% of the intensified commitment statements and in 13% of the low commitment statements.

![Fig. 3. Frequency of appearance (in %) of the epistemic future found in Catalan and in Friulian assertions, separated by degree of commitment. Percentages were calculated as the number of instances divided by the number of target utterances * 100.](image)

It is worth pointing out that the Friulian epistemic future works in the same way as epistemic intonation in this language, in the sense that both morphology and intonation only signal the presence of an epistemic bias; they do not specify whether this bias expresses low commitment or intensified commitment.

3.3. Epistemic discourse marking in Catalan and Friulian

The underlying hypothesis of the present analysis is that given the fact that intonational (and morphological) marking of epistemic bias in Friulian marks general bias (see sections 3.1 and 3.2), speakers of this language will use discourse markers more frequently to be able to specify the type of bias.

First, the analysis of the discourse marking strategies in both languages confirmed that broad focus statements (i.e., high commitment statements) did not make use of any kind of discourse marking of the epistemic stance. Second, discourse markers were present in both kinds of statements with an epistemic bias in both languages. Fig. 4 shows the frequency of appearance (in %) of the epistemic discourse markers (e.g., adverbs, phrases, particles and interjections) found in biased assertions in Catalan and in Friulian. An important difference between the two languages is clear, which is that Friulian uses a higher proportion of discourse markers (e.g., 180%) in comparison with Catalan (100%). A total of 54 discourse markers are used in the Friulian dataset, while in Catalan data we find only 30.

![Fig. 4. Frequency of appearance (in %) of the epistemic discourse markers (e.g., adverbs, phrases, particles and interjections) found in biased assertions in Catalan and in Friulian. Percentages were calculated as the number of instances divided by the number of utterances * 100.](image)
The results displayed in Fig. 4 show an essential difference between the two languages, namely that Friulian sentences usually contain between one and two epistemic discourse markers (a mean of 1.6), whereas Catalan utterances do so to a more limited extent (a mean of one discourse marker per utterance). In fact, a sentence like *Eh, Signor benedet, di Marco, po!* ‘Good Lord, it’s Marco’s, of course!’, with three discourse markers, would be highly unusual in Catalan. Moreover, while every utterance in our Friulian dataset contains at least one epistemic marker, almost a third of the Catalan utterances were uttered without any epistemic adverb, phrase or interjection.

In order to assess the potential differences between the discourse marking according to commitment type, the next two subsections present in detail the results for low commitment statements (Section 3.3.1) and for intensified commitment statements (Section 3.3.2). The comparison will be made both from a quantitative and from a qualitative perspective.

### 3.3.1. Discourse marking of low commitment statements

Fig. 5 shows the frequency of appearance (in %) of epistemic discourse marker types (e.g., adverbs, phrases, and interjections) found in low commitment statements for the two languages. First, both languages show a comparable number of occurrences of epistemic adverbs (87% in Catalan and 60% in Friulian). They differ radically, however, in the use of epistemic interjections and phrases. While Catalan speakers used interjections only in 20% of the target utterances, Friulian speakers used them in 73% of utterances. A similar situation is found for phrases, which appear more often in Friulian (40%) than in Catalan (13%).

![Fig. 5. Frequency of appearance (in %) of different types of epistemic discourse markers (e.g., adverbs, phrases, and interjections) in low commitment statements for the two languages. Percentages were calculated as the number of instances/number of target utterances * 100.](image)

### 3.3.2. Discourse marking of intensified commitment statements

Fig. 6 shows the frequency of appearance (in %) of epistemic discourse marker types (e.g., phrases, interjections, and modal particles) found in intensified commitment statements for the two languages. As we have already seen for the low commitment statements, the two languages differ considerably in terms of how they mark intensified commitment by means of discourse markers. While both languages show a similar number of phrases and interjections, in Friulian we find occurrences of modal particles in 87% of the utterances, and none in Catalan.

![Fig. 6. Frequency of appearance (in %) of different types of epistemic discourse markers (e.g., adverbs, phrases, and interjections) in intensified commitment statements for the two languages. Percentages were calculated as the number of instances/number of target utterances * 100.](image)
3.4. Testing our hypothesis quantitatively

As we mentioned above, our initial hypothesis was that there would be substantial differences between how Catalan and Friulian encoded epistemic commitment. Given that in Friulian intonational marking of epistemicity is encoded through a general-purpose intonational pitch contour and is thus ambiguous, our specific hypothesis was that speakers of this language would use epistemic discourse markers more frequently than Catalan speakers, who would use the specific epistemic commitment pitch contours for the same purpose. In other words, we expected a trade-off between intonation on one side and discourse marking strategies on the other. In sections 3.1, 3.2 and 3.3 we have provided frequency data that support our claim and show that Catalan speakers systematically employ intonation, while speakers of Friulian make a larger use of discourse markers. In this section, we check whether such quantitative differences between the two languages is statistically significant.

In order to do so, we run two Mann–Whitney U tests with the dataset involving low and intensified commitment statements. The independent variable was language (two levels, e.g. Friulian and Catalan), and the two dependent variables were 1) the sum of specific epistemic intonation contours in each statement and 2) the sum of specific epistemic morpho-lexical markers in each statement (i.e. all specific epistemic markers other than intonation). The two tests revealed that the difference between Catalan and Friulian is very strong both for the use of epistemic intonation (Mann–Whitney $U = 0.000$, $p < 0.001$) and for the use of epistemic morpholexical markers (Mann–Whitney $U = 232.000$, $p < 0.001$). One can therefore conclude that our data support the hypothesis of a functional trade-off between intonation and other epistemic markers.

4. Discussion and conclusions

Though the general tradition within prosodic and pragmatic studies has regarded tunes as important indicators of epistemic commitment, little work has been devoted to jointly assessing the epistemic functions encoded by intonation with the functions encoded by other grammatical components like discourse markers or morphosyntactic marking, and the relationship between the two. This paper has focused on how intonation interplays with other grammatical strategies (specifically, morphological and discourse marking) in the conveyance of epistemic commitment in two Romance languages, Catalan and Friulian. In particular, the study has assessed whether there is any functional trade-off between the two systems (e.g., intonation and discourse markers). By considering data from 15 speakers from each language, the study has addressed the issue of whether a reduced inventory of intonational pitch contours like the one in Friulian entails a more frequent use of different types of modal epistemic discourse markers. To our knowledge, this is the first systematic and quantitative comparison of how two intonational languages express epistemic meanings through the use of complementary grammatical markings involving morphosyntactic patterns, discourse marking, and intonation. The results of our analyses will help to broaden our knowledge of the typological tendencies found across languages in the use of intonation and discourse markers for the expression of epistemic meanings.

The results of the study first showed that intonation and morphological and lexical discourse markers act as important semantic-pragmatic resources that encode parallel epistemic meanings in both languages. Intonational pitch contours closely parallel the function of some specific types of discourse markers in their encoding of speaker commitment operators in statements. For example, the uncertainty pitch contour in Catalan $L + H^*$ !H% is functionally equivalent to the discourse markers of uncertainty, and the obviousness rise-fall-rise pitch contour in Catalan $L + H^* L!H% is functionally equivalent to modal particles of obviousness po, ve in Friulian. Our results thus extend our knowledge about how two languages use a complementary set of strategies for the marking of epistemic commitment in assertions.

The present study further tested whether two languages belonging to the same language family (e.g., Catalan and Friulian) show a compensatory relationship between the use of intonation and discourse markers in the expression of epistemic commitment. In contrast with Friulian, Catalan has a variety of stance-marking intonation contours that encode fine-grained distinctions in speaker commitment (e.g., Prieto et al., 2015). Given that Friulian uses the same nuclear configuration for epistemically-biased statements (e.g., $H^*+L L% is normally used for all types of epistemic bias, including uncertainty, obviousness, or contradiction) (see Roseano et al. 2015; see also Frota and Prieto, 2015; see sections 3.1 and 3.2), our hypothesis was that speakers of this language will use epistemic discourse markers more frequently to be able to specify the type of bias more clearly. Crucially, the results of the analysis comparing the two languages support a functional trade-off hypothesis. Specifically, the rich system of modal epistemic pitch contours found in Catalan has entailed the use of fewer lexical and morphological epistemic markers by Catalan speakers than by Friulian speakers. On the other hand, Friulian speakers used a more frequent and a more varied combination of discourse markers and morphological markers than Catalan speakers. Specifically, Friulian speakers used discourse markers extensively (54 markers in 30 sentences, i.e., an average of 1.6 markers per sentence) compared to the Catalan speakers (30 markers, i.e., an average of one marker per sentence) (see chart in Fig. 4).

Importantly, if we compare the types of discourse markers used in both languages, the use of epistemic markers in general is higher in Friulian than in Catalan. While the use of interjections is comparable in the two languages, Friulian displays a large use of modal particles and Catalan prefers intonational patterns with specific epistemic meanings.

Interestingly, the same trade-off compensation tendencies between intonation and discourse markers can be observed in the marking of other speech acts in Catalan and Friulian. For example, if we focus on the distinction between two types of imperatives (i.e., commands and requests), the two languages have different strategies. On the one hand, Friulian speakers do not use a specific intonational pitch contour for imperatives (i.e., commands have the same intonation as broad focus
statements, and requests have the same intonation as exclamatives) but rather rely on morphosyntax and discourse markers to express the difference (i.e., imperatives do not have subject clitics, while statements do). For example, Friulian speakers make frequent use of modal particles like mo (which has an exhortative value and has no direct translation in English) or interjections like sù ‘(lit.) up’ and dai ‘(lit.) give’ (which do not appear in orders but are present in requests). The example in (24) shows a Friulian request containing multiple discourse markers (the reader can hear the example online in the Interactive Atlas of Romance Intonation by Prieto et al., 2010–2014). Catalan, on the other hand, has a specific intonation for requests (L’ H% L), but it may also use interjections like va ‘(lit.) goes’ or vinga ‘(lit.) come’ to a lesser extent than Friulian. Presumably, a comparative analysis of the use of discourse markers used for imperative speech acts in Catalan and Friulian would again reveal that Friulian speakers use a more frequent and varied set of discourse markers in these pragmatic contexts than Catalan speakers.

(24) Fri. Sù mo, sù, dai, anín al cine!

Come on, come on, come to the movies!

Despite the trade–off relationship reported between intonation and discourse markers, it is important to point out that neither Catalan nor Friulian are examples of typologically pure languages, as both use all the epistemic resources at hand to mark epistemic commitment, namely intonation, morphological marking, and discourse marking. Moreover, the relationship between the three systems can be quite complex, as Catalan also makes extensive use of lexical epistemic markers in combination with intonation patterns, and both languages place restrictions on how epistemic interjections and intonation are paired (e.g., home in these contexts was predominantly produced with the obviousness intonation L + H’ L). The results reported here expand on the findings of previous typological work demonstrating similar types of trade-off compensation strategies between question intonation and question particles and morphology. As mentioned above, Torreira et al. (2014) showed that lexical tone languages use particle and morphological strategies significantly more often to encode questionhood than non-tonal languages, revealing a functional trade-off between the two subsystems. Given that tonal languages have more difficulties in using fundamental frequency for functional purposes (as this phonetic feature is already used for contrastive tone marking), intonation is rarely used to mark questionhood in these languages. This restriction presumably explains why tonal languages use more particle and morphological strategies to encode questionhood than intonational languages. In order to further assess whether the functional trade-off observed by Torreira et al. (2014) is also active in intonational languages, the present study has focused on another pragmatic dimension (e.g., epistemic commitment) and has compared two intonational languages, e.g., a language with a reduced intonational inventory (Friulian) with a language with a rich intonational inventory (Catalan). The results have revealed a similar trade–off relationship between the two systems. As in the case of tonal languages, having a reduced intonational inventory for epistemic meanings triggered an increase in the use of other grammatical strategies. In order to test the validity of these results cross-linguistically, future research will need to carry out a large-scale typological study. However, since the World Atlas of Language Structures does not provide information about whether specific intonational strategies for marking questionhood in a given language go hand in hand with discourse or morphosyntactic markings, it is not possible to assess their co-occurrence patterns by analysing this database.

Interestingly, the trade-off compensation strategies reported here between discourse markers and intonation can also be found internally within a given language. For example, in French and in some varieties of Occitan spoken in France, information-seeking yes–no questions may start with an interrogative marker (respectively, est-ce que and es que; see Delais-Roussarie et al., 2015; Sichel-Bazin et al., 2015; Aboh 2016). Typically, the absence of sentence-initial interrogative markers correlates with a more frequent use of the interrogative rising pitch patterns in both languages. And conversely, in French when the sentence-initial interrogative marker is present the nuclear intonational patterns are less consistent, and they can differ from the H* H% configurations that signal yes–no questions without the interrogative particle. Similarly, in Occitan while the presence of an interrogative marker triggers the falling nuclear pattern used in broad focus statements (L’ L%), the absence of an interrogative marker triggers the use of a rising interrogative configuration L + H’ H%.

From a methodological perspective, the present study has shown the adequacy and effectiveness of the oral Discourse Completion Task (DCT) to assess the interaction between grammatical components from a cross-linguistic perspective (see Vanrell et al., 2018 for a review). To obtain comparable epistemic utterances from spontaneous oral corpora in two languages would not have been an easy task.

More generally, our results revealed that grammatical descriptions should jointly assess the use of intonation patterns, discourse markers, and other kinds of morphosyntactic markers. For example, for the expression of questionhood Romance languages use rising intonation patterns, together with word-order patterns, negation, and discourse particles (e.g., sentence-initial particles like que ‘that’), and they work together to constrain pragmatic interpretation in interrogative utterances (Escandell-Vidal 1998). Even though most Romance languages use a variety of strategies to mark speech act and modality differences, very few studies have assessed the different strategies in an integrated way. Despite this, it is also clear that some languages like Sardinian and Friulian use more discourse and morphosyntactic markers (see, e.g., Vanrell et al., 2017 and Roseano et al., 2015 respectively; see Frota and Prieto, 2015 for a review). In Sardinian, as well as in Friulian, epistemically biased statements are distinguished through the use of a variety of discourse markers, and at the same time tend to show the same nuclear pitch configuration which is used for all types of epistemic bias, including contradiction, certainty, uncertainty, and obviousness. For example, Sardinian uses syntactic strategies such as...
constituent fronting to mark questions, and Friulian has morphosyntactic markers such as the presence and position of subject clitics that differ according to sentence type (e.g., subject clitics that appear before the verb in declaratives and after the verb in questions, as in (25) and (26) respectively). Crucially, both languages have a very restricted set of distinct intonational pitch contours (Sardinian has seven nuclear pitch configurations and Friulian nine) compared with the 15 nuclear pitch configurations of Catalan.

(25) Fri. tu¼fevel-is
     scl.2sg¼speak.2sg
     ‘You sing’.

(26) Fri. fevelis¼tu
     sing.2sg¼scl.2sg
     ‘Do you sing?’.

In sum, intonation contours, like discourse markers and morphological marking, can function as epistemic operators that strongly interact with commitment spaces set out by discourse participants in normal conversation. We claim that promising frameworks within semantics, like dynamic semantic models, can enable us to integrate the study of intonational meaning with other parts of the grammar into a unified approach. In our view, the trade-off strategy that has been documented here between two modules of language (e.g., prosody and lexicopragmatic discourse marking) derives from a dynamic conception of language in which all subsystems are interconnected. All in all, intonation constitutes an important part of grammar that encodes multidimensional pragmatic meanings and should be studied in combination with morphosyntactic and lexicopragmatic discourse marking.

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List of abbreviations

P propositional content
euph. euphemism
INTJ interjection
ip intermediate phrase
IP intonational phrase
lit. literally
MP modal particle
FUT future
SCL subject clitic
2SG second person singular

References


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