

Intonational Grammar in Ibero-Romance

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### **Volume 6**

Intonational Grammar in Ibero-Romance. Approaches across linguistic subfields  
Edited by Meghan E. Armstrong, Nicholas C. Henriksen and Maria del Mar Vanrell

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# Cost of the action and social distance affect the selection of question intonation in Catalan

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This chapter examines how politeness in offers and requests is encoded by intonation in Catalan, a language which uses two distinct intonational pitch contours for unbiased yes-no questions. Fifteen Central Catalan speakers participated in a Discourse Completion Task that elicited offers and requests in scenarios controlled for level of social distance, power, and cost of the action. The data were prosodically and pragmatically analyzed. The results showed that cost of the action and social distance have significant effects on intonation choices: speakers use rising pitch patterns more frequently with high-level cost offers and with high-level cost requests. The rising pattern is also preferred with high-level distance requests. In general, the falling pattern tends to be used more frequently with offers. The study shows that politeness factors need to be taken into account in the description of intonation choices across languages.

**Keywords:** intonation; politeness; offers; requests

## 1. Introduction

Brown and Levinson (1987) proposed a universal model of linguistic politeness that claimed that politeness is realized linguistically by means of various semantic, morpho-syntactic and intonational strategies. Central to this model of politeness is the concept of “face”, derived from Goffman (1967), which Brown and Levinson (1987, p. 61) define as “the public self-image that every member [of a society] wants to claim for himself”, and also the assumption that everyone has similar face needs. Additionally, Brown and Levinson argue that during social interaction a speaker must rationally assess the nature of a face threatening act (e.g., a refusal). This assessment of the seriousness of the act involves three culture-sensitive factors: the level of social distance (D) and of social power (P) between a speaker and a hearer, and the absolute ranking (R) of the imposition that the act involves in a particular culture. Although D and P are claimed to be universal, Brown and Levinson acknowledge that diverse cultures will interpret them differently; as for R, it is necessarily culture-specific since

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the perceived imposition of the act depends on cultural norms. Leech (1983) further narrowed down Brown and Levinson's notion of ranking of the imposition to "effort, trouble, or cost to the hearer" (p. 109). In relation to offers, for instance, Brown and Levinson's notion of ranking of the imposition has a much wider scope than Leech's cost in that it encompasses both the speaker and the hearer. The speaker will have to commit to the offer if this is accepted, and so her freedom of action will be curtailed. For the hearer, offers also carry a series of impositions: the need to reply, the presupposition of a relationship, and the possibility of indebtedness to the speaker if the offer is accepted, among others. Both offers and requests thus carry a threat to both interlocutors' face that can be mitigated using two types of redressing strategies: positive politeness and negative politeness (see Brown & Levinson, 1987, p. 70–73). Positive politeness aims at minimizing social distance and power imbalance, whereas negative politeness aims at maximizing these. Positive politeness strategies rely on the assumption of closeness or in-group membership which results in an alignment of wishes ("I want what you want") and the expectation of reciprocity. Negative politeness aims to avoid coercion and imposition by means of strategies such as conventional indirectness ("Could you do X?"), hedges on illocutionary force ("sort of", "rather"), polite pessimism (e.g., about the success of requests), deference (formal forms of address, titles, etc.), and apologies ("sorry", "I apologize"), among others (see Brown & Levinson, 1987, p. 129ff). According to Brown and Levinson (1987), in Western cultures negative politeness constitutes "the most elaborate and most conventionalized set of linguistic strategies" (p. 129).

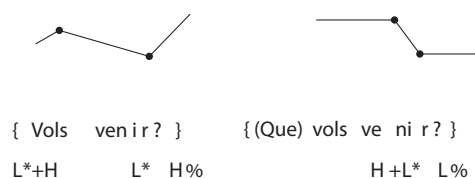
Brown and Levinson's (1987) model also predicts that intonation can be used as a means of "indicating tentativeness or emphasis" to replace or emphasize most verbal hedges (p. 172). Their model does not claim a direct correlation between intonation and social contexts, but rather that the choice of intonation may comply with certain universal principles. For example, high pitch is associated with deference and self-humbling due to its association with the voice quality of children, and consequently is commonly used in negative politeness strategies (Brown & Levinson, 1987, p. 74). A similar claim has been made in the phonology literature: Ohala (1982) claimed that languages tend to use high pitch for questions and low pitch for statements. Gussenhoven (2005) followed Ohala in predicting a high pitch for questions (Gussenhoven, 2005: Chapter 5) and further claimed that this tendency is universal in intonation, a claim that other scholars dispute (for a discussion of different universalist claims, see Ladd, 2001). Polar question intonation in Catalan provides an ideal testing ground for the relation between politeness and intonation because of the choice afforded by the two intonational patterns available in yes-no questions, namely a rising and a falling contour. The present study aims to investigate the relationship between politeness and the choice between the two types of pitch contours used with polar questions in Catalan.

There is some indication in previous research that variations in pitch and in other prosodic features such as speech tempo can be grammaticalised as politeness indicators across languages. Ofuka, McKeown, Waterman, and Roach (2000) found that the degree of politeness correlated negatively with speech rate in Japanese. Orozco (2008, 2010), in Mexican Spanish, found that speakers, especially women, used a higher initial pitch and a locally expanded pitch range for the more polite styles. Ortiz-Lira, Fuentes, and Astruc (2010) similarly identified higher initial pitch and localized lengthening with polite requests in Chilean Spanish (*Tiene ho-o-ra?* ‘Do you have the ti-i-me?’). Labastia, this volume) examines declarative intonation in Buenos Aires Spanish and shows that particularly salient items tend to receive rising-falling accents combined with wider pitch and greater duration. In other cases prosodic features can combine with specific syntactic structures. For instance, in Ecuadorian Andean Spanish, polite requests combine a very high initial pitch and a verbal periphrasis borrowed from Quechua (Estrella-Santos, 2007).

The scant research available on the interaction between phonological intonation and politeness has also shown the potential for politeness to influence the choice of pitch contour. Maekawa (1999) noted that the degree of politeness in Japanese varied as a function of pitch peak alignment and type of final boundary tone. Wichmann (2000) analyzed two falling contours in English, the low fall and the high fall, and concluded that the low fall sounds less polite than the high fall because it is associated with closing the interaction and thus leaves no options open to the hearer. For Italian, Gili Fivela and Bazzanella (2014) showed that the choice and placement of pitch accents play an important role in constructing politeness and its variations of intensity. Henriksen, Armstrong, and García-Amaya (this volume) argue that rising contours signal speaker-attributed thoughts in Manchego Spanish.

For Catalan, some authors have claimed that the choice between the two types of yes-no interrogative pitch contours is sensitive to politeness factors (Astruc, 2008; Payà, 2003; Payrató, 2002: §3.4.3; Prieto & Rigau, 2007). The two main intonation patterns for yes-no questions in Catalan are a pattern with a sharp rising ending and another one with a falling ending (e.g. Prieto, 2002). The diagrams in Figure 1 show a stylized linear representation of each pattern accompanied by a transcription in Cat\_ToBI (Prieto, 2014), where L stands for low, H for high and the diacritic \* signals the association of a tone to the metrically strong syllable (below, *-nir* in *venir*, ‘to come’) and the symbol % indicates tonal movement at the boundary of a prosodic constituent.

The intonation pattern in the left panel begins with a low-rise movement over the first stressed syllable (*vols*) followed by a gradual fall in pitch reaching the lowest point at the last stressed syllable (*-nir*), where the pitch rises abruptly until the end of the sentence. The pattern on the right panel is characterized by a steady high tone from the beginning of the sentence and a descent throughout the last stressed syllable in the sentence.



**Figure 1.** Schematic F0 pitch contours of the falling question intonation pattern (right panel) and the rising intonation pattern (left panel), with their corresponding Cat\_ToBI intonational transcription (Prieto, 2014). Both sentences translate as ‘Do you want to come?’

The Catalan literature offers partially conflicting views of the politeness value of the falling and rising patterns. One view maintains that the falling pattern (optionally headed by the question particle *que*) is more polite in general than the rising pattern (Astruc, 2008; Payà, 2003; Payrató, 2002: §3.4.3; Prieto, 2002; Prieto & Rigau, 2007). Payrató (2002) and Prieto and Rigau (2007) follow Leech’s notion of cost (see Leech 1983: 107ff) and claim that the selection of the falling intonation pattern in Central Catalan is sensitive to the pragmatic cost-benefit scale, to the effect that the rising pattern is preferred when there is a high benefit for the speaker and/or a high cost for the hearer (Payrató, 2002; Prieto & Rigau, 2007). Two examples are given in (1).

- (1) a. # *(Que) em deixes el teu apartament de la platja, aquest cap de setmana?* (falling pattern)  
*Em deixes el teu apartament de la platja, aquest cap de setmana?* (rising pattern)  
 ‘Would you mind lending me your apartment in the beach this weekend?’
- b. # *(Que) et puc deixar els nens, aquest cap de setmana?* (falling pattern)  
*Et puc deixar els nens, aquest cap de setmana?* (rising pattern)  
 ‘Would you mind taking care of the children this weekend?’  
 (Prieto & Rigau, 2007, p. 7).

According to Prieto and Rigau (2007), the falling questions with *que* in (1) will only be felicitous in the discourse if the hearer has previously offered his or her apartment, or his or her help with the children. Evidence from perception studies, however, is less clear-cut. Nadeu and Prieto (2011) manipulated the final pitch of each pattern in two perception experiments in regular steps and concluded that both intonation patterns were equally polite.

The majority of studies investigating the relationship between intonation and politeness have been based on qualitative observations about pitch contours in naturally occurring discourse extracted from oral corpora (Couper-Kuhlen & Selting, 1996; Wennerstrom, 2001; Wichmann, 2000). An exception to this trend is the work of the group Val.es.co on a corpus of colloquial Spanish conversations (e.g., Albelda & Estellés, 2014; Hidalgo & Cabedo, 2014), whose recent work has focused on the analysis of



several quantitative variables (including F0, intensity, duration, presence of pauses, and speech rate), as well as qualitative variables such as politeness category, utterance typology, and their associated pragmatic expressions (e.g., humour and sarcasm; a sample of their work can be found at [www.fonocortesia.es/corpus](http://www.fonocortesia.es/corpus)).

Even though these studies have shown a tendency for intonational patterns to be associated with specific discourse situations, their claims have not been substantiated by quantitative data, and in some cases there have been partially contradictory results (see the Catalan case above). Moreover, by their very nature, corpus studies present limitations regarding the type of data available and the inconsistent covering of the relevant contextual variables. The failure of descriptive corpus studies to find consistent correspondences between intonational patterns and specific contextual situations is also partly due to the fact that intonational patterns can have general meanings that adapt well to the pragmatic meaning inferred by discourse context. Regarding question intonation, for Peninsular Spanish, Escandell-Vidal (1998) claimed that there is a “default” pitch contour that encodes a general meaning of interrogativity (the low-rise pitch contour L\* H%) and two other contours (a high rise and a rising-falling contour) that impose more restrictions and specialized meanings on the inferential process. Armstrong (2010) found a similar situation for question intonation patterns in Puerto Rican Spanish: in this dialect, a rising-falling pitch contour ( $\uparrow$ H\* L%) has a default meaning, i.e., it encodes interrogativity, while H+L\* L% and L\* HL% encode two types of epistemic bias (namely, H+L\* L% encodes a positive bias and L\* HL% is a strong cue to disbelief). Indeed, one of the main challenges faced by intonationalists today is trying to pin down the pragmatic meanings associated with different pitch contour types and how they interact with contextual meaning. Given the strong influence of contextual factors on pitch contour selection, it is clear that investigations focusing on this line of research need to control for contextual influence.

One of the few authors who has used quantitative methods to analyze intonation and politeness is Orozco (2008, 2010). In two studies examining the intonational pattern of requests, Orozco drew upon a corpus of sentences read by 12 speakers in two different styles, neutral and polite. The stimuli comprised eight requests written without punctuation to elicit a free choice of speech acts, such as *Podrías apagar tu cigarro* (‘You could put out your cigarette’, which can be read as a request or a command). The study did not obtain clear results because the analyses did not take into account that speech acts are not isomorphic with sentence types (e.g., requests can be realized with a question, a statement, a command, etc.) and that each sentence type in turn receives a specific intonation pattern (that is, questions receive interrogative intonation, and so forth).

To our knowledge, the only study that has made use of tightly controlled contexts in the investigation of prosody and politeness while also taking into account the lack of isomorphism between speech acts and intonation patterns is that of Astruc and Vanrell

(submitted). They investigated the relationship between intonation and politeness in the speech of native Spanish speakers and English learners of Spanish and found that native participants combined the use of intonation with the use of different lexical and morpho-syntactic strategies, and that certain situations (for instance, those involving high cost) triggered a preference for a specific intonational pattern, such as the high rise (L+H\* H%, which is also the pattern preferred with offers). Most language learners correctly used a restricted range of morpho-syntactic and lexical strategies, but had a tendency to transfer the intonational patterns of their native language.

In the present study, we make use of the Discourse Completion Task methodology (henceforth DCT), a method which has been used with success in pragmatics (Billmyer & Varghese, 2000; Blum-Kulka, House, & Kasper, 1989; Félix-Brasdefer, 2010) and which has the advantage of allowing specific contextual factors to be controlled for in the target discourse contexts. For the design of our DCT discourse contexts, we took as a point of departure Brown and Levinson's (1987) classical version of politeness theory, which together with Leech's politeness principle, remains the most influential model of politeness.

In sum, the present study sets out to carry out a tightly controlled production experiment examining the encoding of politeness in offers and requests in Catalan. This will allow us to investigate the influence of each variable (power, social distance, and cost) in the choice of politeness strategy (positive or negative politeness) and intonational pattern employed by the speakers. We investigate both offers and requests because these represent extreme positions in the cost scale: while offers represent actions with an estimated minimal cost, requests lie at the other end of the cost scale, that is, they represent actions with a high estimated cost. Moreover, requests have been widely studied, especially from a cross-linguistic perspective (e.g. Blum-Kulka & House, 1989; Félix-Brasdefer, 2005; Koike, 1986), whereas offers have received scant attention in the literature (e.g., Barros García, 2010; Chodorowska-Pilch, 2002, 2003; Ruiz de Zarobe, 2001). To our knowledge, there is no previous empirical work on offers or requests in Catalan from any perspective, pragmatic or intonational.

The choice of intonational contour is presumably one of several linguistic means that participants can deploy to mitigate the force of face threatening acts. Other means include the form of address and the choice of verbal tense and aspect. Romance languages such as Catalan allow the choice of the formal pronoun (*vostè*) versus the informal pronoun (*tu*). The use of the formal pronoun is associated with negative politeness, since it emphasizes the inter-personal distance between speaker and hearer, while the choice of an informal form of address reflects the use of positive politeness strategies in that it presupposes familiarity in the relationship between hearer and listener. This is explicitly formulated as part of Brown and Levinson's strategy 7 (1987, p. 123). Conventional indirectness is thus central to the classical version of politeness theory (Brown & Levinson, 1987), where emphasis is placed on diminishing the force of the

imposition and also on leaving options open. More recently, Félix-Brasdefer (2005) analyzed indirectness in requests in Mexican Spanish in line with the classical version of politeness theory and found that indirectness is conveyed in this language variety by the choice of verbal form, with the conditional, imperfect, and subjunctive forms used in the more face-threatening situations.

The intonation of offering and requesting questions in Catalan provides an ideal testing ground for the relation between politeness and intonation because it presents at least two different contextually-related intonational choices which can be associated with different social variables and different degrees of politeness. Since the politeness value of each pattern is still undecided in the literature, we ask the following research questions:

1. Do speakers use different morpho-syntactic and intonational patterns when making offers and when making requests?
2. What is the influence of each factor (power, social distance, cost) on the choice of intonational pattern?

It is our hypothesis that the choice of intonation is one of the linguistic means that participants can deploy to mitigate the force of face threatening acts. In languages such as Catalan, the combined effect of the choice of verbal mood and tense, pronominal form, and intonation will determine the extent to which an offer or a request is perceived as more deferential and/or indirect, or more intimate/familiar. In relation to intonation, and following Payrató (2002) and Prieto and Rigau (2007), we hypothesize that the most face-threatening situations, i.e., those representing a high calculated cost and those which imply a high level of social distance and contact with high-power interlocutors, will tend to elicit L\* H%. At the same time, we expect that speakers will use the rising pitch pattern L\* H% more frequently when making requests than when making offers, since requests represent a strong face-threatening situation.

## 2. Methods

### 2.1 Participants

Fifteen native speakers of Central Catalan (3 males, 12 females) between 18 and 23 years (mean age = 21) participated in this experimental task. They were all undergraduate students at the Universitat Pompeu Fabra (Barcelona) with little or no prior training in phonology or phonetics. All participants in the study were selected on the basis of being dominant in the Catalan language. Most participants reported using Catalan over 70% of the time, except for four participants who reported using Catalan 60% to 65% of the time.

## 2.2 Materials

We employed a DCT (Billmyer & Varghese, 2000; Blum-Kulka et al., 1989; Félix-Brasdefer, 2010) to obtain target offers and requests. The DCT provides participants with a situational prompt designed to elicit a response while controlling for a set of contextual factors, and has been used successfully in intercultural pragmatics research. The design of our DCT questionnaire (see Appendix) controlled for the following social variables:

- a. Social distance between participants (D). This factor had two levels, minimum (- D, relationship with sibling) and maximum social distance (+ D, a stranger or acquaintance).
- b. Power of Hearer over Speaker (P). The degree of Power that the Hearer holds over the Speaker also had two levels, namely equal Power between Hearer and Speaker (- P, a colleague) vs. Hearer holding Power over the Speaker (+ P, Speaker's boss).
- c. Cost of the face threatening act (C). This factor also had two levels: very low cost (- C, passing over small items) vs. high cost (+ C, a car lift).

The variables Social Distance and Power were paired with Cost to obtain 8 offering and 8 requesting questions, 16 situations in total. In each situation, either Social Distance or Power was kept constant (at a low level) and the other variables were varied. The design was as follows:

**Table 1.** Design of the DCT, showing the description of each situation, the fixed factors, and the variable factors

Situation	Fixed factors	Variable factors
1 offering/requesting to pass some lemons	low Power	low Social Distance (sibling) low Cost (small items: lemons)
2 offering/requesting a car lift	low Power	low Social Distance (sibling) high Cost (car lift)
3 offering/requesting to pass over the oil and vinegar	low Power	high Social Distance (stranger) low Cost (small items: oil and vinegar)
4 offering/requesting a car lift	low Power	high Social Distance (stranger) high Cost (car lift)
5 offering/requesting to pass over the salad	low Distance	high Power (boss) low Cost (small items: salad)
6 offering/requesting a car lift	low Distance	high Power (boss) high Cost (car lift)
7 offering/requesting to pass over the jam.	low Distance	low Power (colleague) low Cost (small items: jam)
8 offering/requesting a car lift	low Distance	low Power (colleague) high Cost (car lift)

We illustrate two combinations of the three factors in the following discourse settings:

- (2) a. *Offer, High Power with low Cost (Social Distance is low)*

*Imagina't que ets a un dinar d'empresa. El Director General acostuma a venir al dinar una o dues vegades a l'any i avui s'asseu al teu davant. De primer, serveixen tapes i amanides per compartir. El plat d'amanida més proper és just al davant teu. Veus que el Director General s'espera per posar-se amanida i tu li ofereixes el plat.*

'Imagine that you are attending a work lunch. The company's Director joins the lunch once or twice a year and today he is sitting in front of you. As a starter, there are "tapas" and salads for sharing. The salad dish is in front of you. You see that the Director is waiting for the salad and you offer him the dish.'

- b. *Request, Low Power with high Cost (Social Distance is low)*

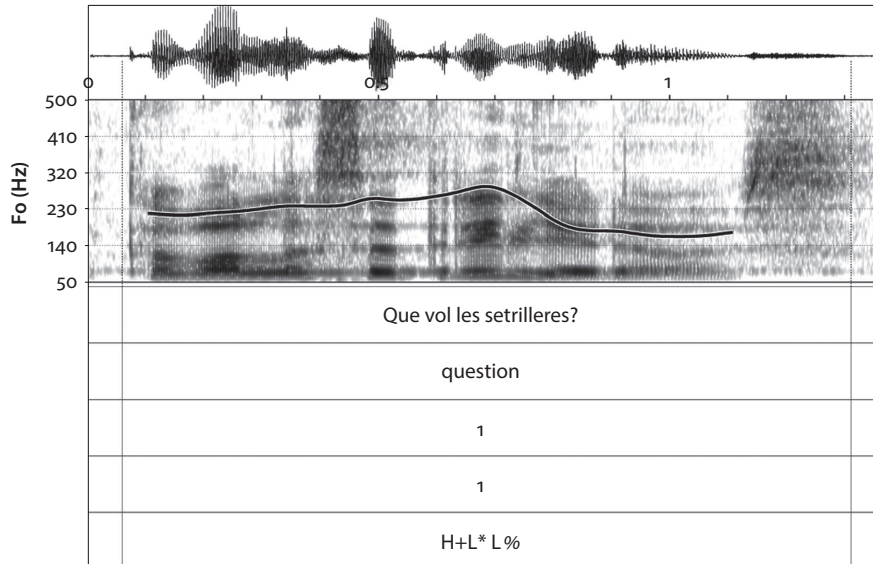
*Imagina't que ets a un dinar de tècnics de l'Ajuntament. Com que és a prop del teu despatx, hi has anat a peu. Després de dinar, tens una reunió a l'edifici de Medi Ambient, que et queda molt lluny. Saps que el tècnic de Medi Ambient ha de tornar a l'oficina i que porta cotxe. Penses que seria una bona idea que hi poguessis anar amb cotxe amb ell.*

'Imagine that you attend a work lunch for City Council staff. Since it is close to your office, you have walked there. After the lunch, you have a meeting at the Environment offices, which are very far. You know that the Environment expert has to go there and he came by car. You think that it would be good if you could get a lift with him in his car.'

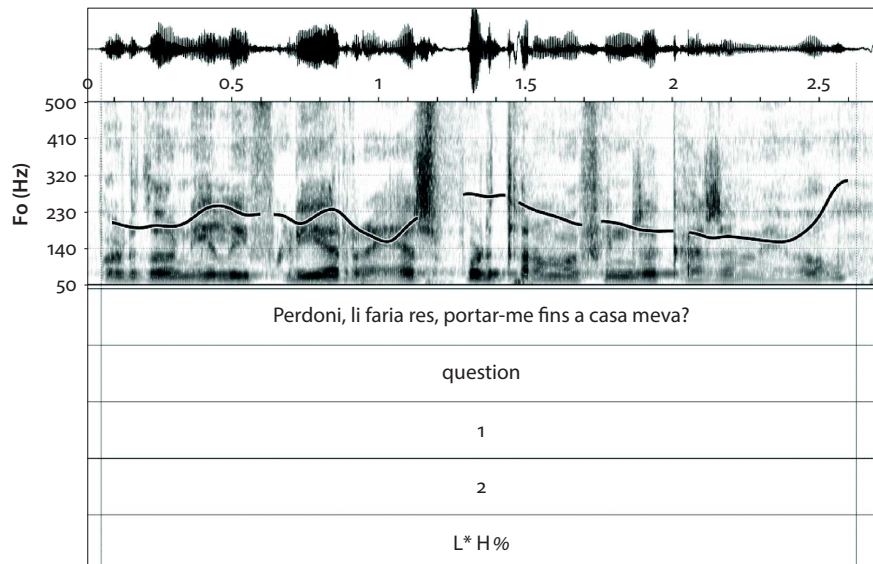
As is the standard practice in intonational research, we included as many sonorant sounds as possible in the target words (*llimones*, 'lemons'; *mermelada*, 'jam', etc.), although at times we had to sacrifice segmental control for naturalness (*portar en cotxe*, 'a car lift'). We designed the scenarios to be maximally natural and for this reason we changed the target stimuli slightly across scenarios (e.g., asking/offering to pass some lemons to your sister while cooking together in the kitchen vs. asking/offering another customer in a restaurant to pass the oil and vinegar).

### 2.3 Procedure

Participants were interviewed individually by a research assistant in a quiet room at the Universitat Pompeu Fabra using a Marantz Professional PMD660 digital recorder and Rode NTG-2 microphone. They were shown the questionnaire through presentation software and were invited to read it silently once or twice to familiarize themselves with the situations. They then put on a headset and the recording began. The different situations were presented at random. For each situation, participants read the introductory scenario and responded in the way they considered most appropriate. They performed the DCT twice. The first time they were asked to answer freely, and the



**Figure 2.** Waveform, spectrogram and F0 contour of the offer *Que vol les setrilleres?* 'Do you want the oil and vinegar?', followed by the orthographic, pragmatic and prosodic transcriptions



**Figure 3.** Waveform, spectrogram and F0 contour of the request *Perdoni, li faria res, portar-me fins a casa meva?* 'Could you please give me a lift home?' followed by the orthographic, pragmatic and prosodic transcriptions

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second time participants were required to use a question. The DCT interview lasted approximately 30 minutes. The sentences were digitized at a 44100 Hz sampling rate and 16 bit amplitude resolution. A total of 480 target responses were obtained (15 participants x 16 discourse settings x 2 types of responses).

#### 2.4 Data labeling

The recordings were digitized and segmented into separate audio files, one for each situation, using a Praat script (Boersma & Weenink, 2013). A second Praat script was used to create TextGrids for annotating the data. The data was transcribed orthographically and pragmatically, that is, it was analyzed for the main linguistic features that will allow us to assess the use of indirect language. Data labeling was carried out by the first and second authors, and any problematic cases were discussed and agreed upon by the whole team. Finally, a third Praat script extracted the annotations onto a spreadsheet for processing.

- (1) Tier 1 Orthographic transcription
- Tier 2 Sentence type (question, tag question, declarative, imperative)
- Tier 3 Form of address: informal *tu* (coded as 0), formal *vostè* (coded as 1)
- Tier 4 Verbal form: Future/ imperative (coded as 0), present indicative (coded as 1), imperfect indicative/ conditional (coded as 2)
- Tier 5 Intonation

The intonational labeling was carried out following the Cat\_ToBI framework (Prieto, 2014), which, in line with the Autosegmental-Metrical model of intonation, claims that intonation contours are composed of a sequence of pitch accents followed by boundary tones. Table 3 below displays the pitch configurations found in the data, the ToBI labels used, and the frequency of each contour in the database.

Figures 2 and 3 illustrate the two most frequent intonation patterns found in the data, as well as the labeling procedure used.

We analysed the level of conventional indirectness and the choice of formal (*vostè* 'you, formal') versus informal treatment (*tu* 'you, informal'), which is associated with the choice between positive and negative politeness, and the choice of verbal form. The combination of form of address and of verbal mood and tense strongly determines the extent to which an offer or a request is perceived as more or less polite.

### 3. Results

The corpus contains a total of 480 sentences produced by 15 speakers in two tasks, a free response task and a question only task. Of these, 462 were judged to be appropriate

responses. Some responses were excluded if the intended speech act (request/offer) was not produced or it was produced incorrectly (for instance, as an indirect reply “I would say to this person that s/he should...”). The data was analyzed statistically with Pearson Chi-Square tests run in SPSS.

We will examine first the choice of sentence type across offers and requests. Second, we will analyze the effects of distance, power, and cost of the action on the use of indirect language (Section 3.2), and on the use of intonational patterns (Section 3.3).

### 3.1 Morpho-syntactic and intonational strategies used with offers and requests

Of the sentences elicited in the free response task, 75% were questions, 22% were declarative sentences, 3% were imperatives, and a small percentage were tag questions. Figure 4 shows the occurrence of each sentence type (question, declarative, imperative, and tag question) across offers (left panel) and requests (right panel).

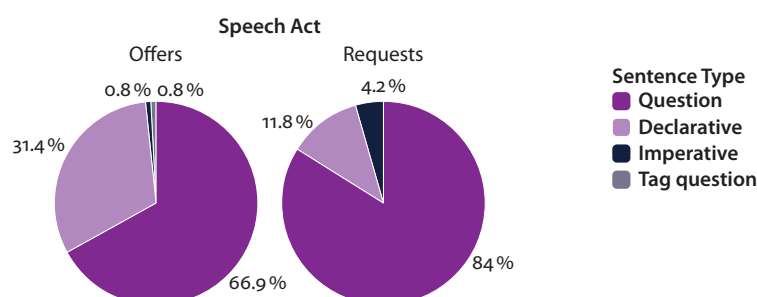


Figure 4. Sentence types used with offers (left panel) and requests (right panel)

The results in Figure 4 show a difference in distribution between offers and requests. The preferred type of sentence for both offers and requests is a question, but there is a difference in their distribution in that speakers used declaratives more frequently with offers than with requests (about 32% against 12%), while questions were used more frequently with requests (84%) than with offers (67%).

In relation to the morpho-syntactic strategies used, we observed that with high-level distance offers and requests, that is offers and requests to strangers (for instance, to another customer in a restaurant), speakers used the formal form of address (*vostè*) and conventionally indirect language more frequently than with low-level distance requests (e.g., to a sibling at home). To a lesser extent, high distance level power situations (addressing the company’s director at a work lunch) also elicited more occurrences of the formal form of address and conventionally indirect



language than low power level situations (addressing a colleague at a work lunch). This means that our participants were more likely to use the *V* form (*vostè* ‘you, polite’) combined with a conditional or imperfect verbal form, as in examples (3a) and (3b).

These are examples of the morpho-syntactic strategies used in the examples presented in Figures 2 and 3:

- (3) a. *Que vol les setrilleres?* ‘Do you want the oil and vinegar?’  
 form of address: formal, *vostè*  
 verbal form: present indicative  
 sentence type: question
- b. *Perdoni, li faria res, portar-me fins a casa meva?* ‘Could you give me a lift home?’  
 form of address: formal, *vostè*  
 verbal form: conditional  
 sentence type: question

### 3.2 Use of intonation patterns with offering and requesting questions: Effects of Distance, Power and Cost

The question-only task produced questions 98% of the time, as expected, but also prompted a few unexpected declarative sentences (about 2%). There were no statistically significant differences in the distribution of the different intonation patterns used with questions between the responses to the free response task and the question only response task, and thus all the data obtained for questions were pooled for the intonational analyses presented in this section. The analyses are based on 395 cases of interrogative sentences.

Table 2 displays the frequency distribution of the pitch configurations found in the data, the Cat\_ToBI labels used, and the frequency of each contour in the database (separated by offers and requests).

Overall, the most frequently occurring pattern is the rising pattern (L\* H%), present in 49% of occurrences, followed by the falling pattern (H+L\* L%), with 45%. These two patterns make up about 94% of the total, and for this reason we will focus on them to analyse the effect of each separate social variable (Distance, Power, and Cost) on the choice of the two main question intonation patterns, i.e., the rising L\* H% and the falling pattern, H+L\* L%. The rarest pattern in the corpus is the high rise (L+H\* H%) with only 2 occurrences, both in the context of offers to siblings. The high rise in Catalan has consistently been associated with questions offering treats such as sweets to children (Astruc, 2008; Prieto & Rigau, 2007), a pattern which has also been identified with different meanings in English (e.g., Gussenhoven, 2005), and Spanish (Escandell-Vidal, 1998).

**Table 2.** Inventory of interrogative nuclear configurations in the data. Pitch representation, ToBI label, description and frequency of occurrence of each contour in the database, separated by offers and requests

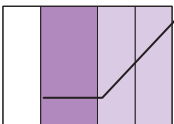
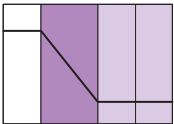
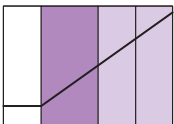
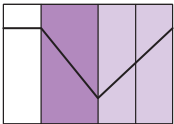
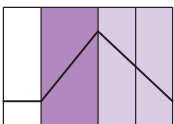
Pitch diagram	ToBI label	Name and description	Frequency	
			Offers	Requests
	L*H%	Rising: Low plateau at the minimum of the speaker's range, followed by a rising movement throughout the last accented syllable to the end of the sentence.	72 (38.5%)	119 (57.2%)
	H+L*L%	Falling: Steady high tone from the beginning of the sentence and a descent throughout the last accented syllable to the end of the sentence.	105 (56.2%)	74 (35.6%)
	L+H*H%	High rise: Continuous rise throughout the last accented syllable to the end of the sentence.	2 (1.1%)	0
	H+L*H%	Fall-rise: Steady high tone from the beginning of the sentence and a descent throughout the last accented syllable, which is followed by a rise to the end of the sentence.	5 (2.7%)	10 (4.8%)
	L+;H*L%	Circumflex/Upstepped: Low tone on the syllable preceding the last accented syllable followed by a peak within the last accented syllable followed by a fall to the end of the sentence.	3 (1.6%)	5 (2.4%)

Figure 5 displays the distribution of the two nuclear intonation patterns (rising L\* H% vs. falling H+L\* L%) in questions used for offers and requests, separated by the cost of the action (low level cost vs. high level cost).

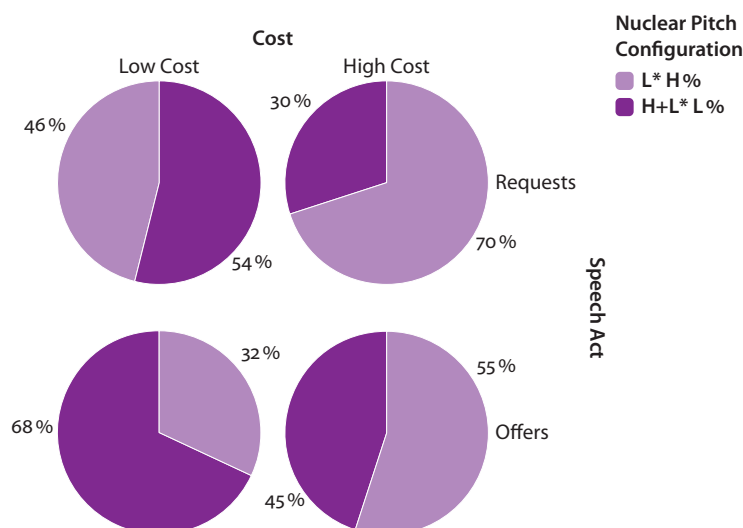


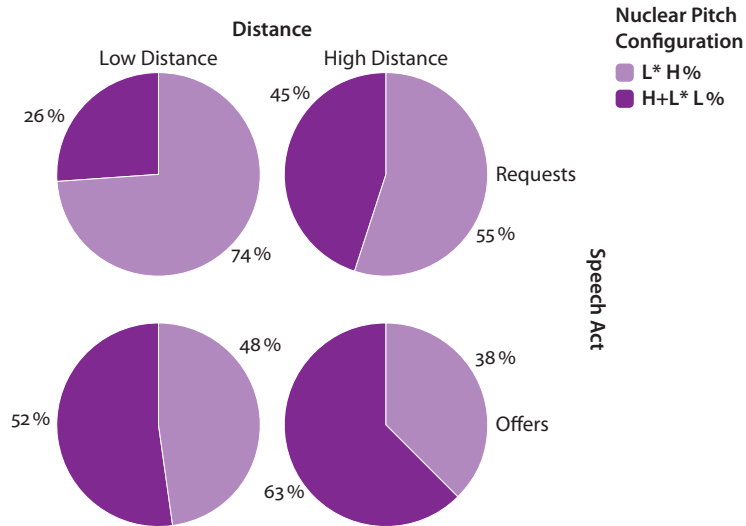
Figure 5. Distribution of the two main intonation patterns (rising L\* H% vs. falling H+L\* L%) according to the two levels of the factor Cost in requests and offers

The results in Figure 5 show a clear difference between the question intonation patterns used in offers and requests and, within each, between low level cost and high level cost situations. The high level vs. low level differences in cost are statistically significant, both for offers (*Pearson chi-square* = 9.201,  $p = .002$ ) and requests (*Pearson chi-square* = 4.649,  $p = .022$ ). Within requests, high cost requests receive a rising intonation pattern 70% of the time, while this tendency decreases to 54% in the case of low level cost requests. In the case of offers, the reverse tendency applies, that is, the falling intonation pattern is generally observed in low cost offers (68%), while it decreases to 45% in the case of high cost offers.

In relation to Distance, Figure 6 shows the distribution of the two main intonational patterns (rising L\* H% vs. falling H+L\* L%) with requests and offers according to the two levels of the social variable Distance.

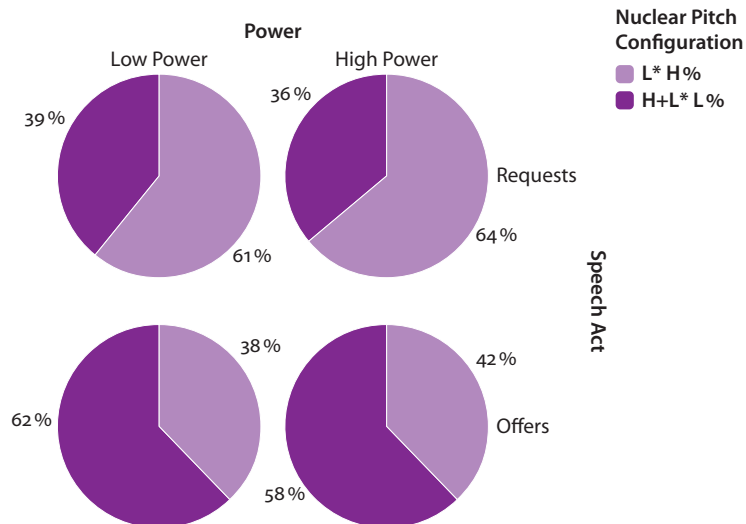
The results in Figure 6 show that this social variable triggers different distributions of pitch patterns for both offers and requests. Our results showed statistically significant effects of Distance, but only with requests (*chi-square* = 4.168,  $p = .031$ ). Importantly, the results point to a strong preference for the rising pattern with low distance requests (74%). As mentioned above, there is a 10% difference between low and high level distance offers, but this is not statistically significant.

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**Figure 6.** Distribution of the two main intonational patterns (rising L\* H% vs. falling H+L\* L%) with requests and offers according to the two levels of the social variable Distance

Figure 7 shows the distribution of the two main intonational patterns (rising L\* H% vs. falling H+L\* L%) with requests and offers according to the two levels of the social variable Power.



**Figure 7.** Distribution of the two main intonational patterns (rising L\* H% vs. falling H+L\* L%) with requests and offers according to the two levels of the social variable Power

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The results in Figure 7 show a tendency to use the falling pattern with offers (62% with low power offers and 58% with high power offers) and the rising patterns with requests (61% and 64% respectively). Yet beyond this general preference, chi-square tests revealed no statistically significant effects between low and high level power requests or between low and high level power offers.

#### 4. Conclusions

This study aimed at exploring the contribution of intonation to the expression of politeness by examining the choice of intonational contour in offers and requests in Catalan, two types of speech acts that involve different degrees of face-threatening behaviour. Specifically, we investigated whether varying the level of the social variables distance, power and cost of the action had any effect on the choice of intonational pattern. Previous work on politeness (Brown & Levinson, 1987) and intonation (Gussenhoven, 2005), has proposed the existence of a universal association between high pitch and politeness. In Catalan, Payrató (2002: §3.4.3) hypothesized that speakers would use a falling intonation pattern when the cost of the proposed action is considered low and the benefit is considered high for the hearer. Prieto and Rigau (2007) similarly argued that the falling intonation pattern was only appropriate when the cost of the proposed action to the hearer is considered low.

To our knowledge this is the first study in the intonational literature that has systematically controlled the effects of politeness and contextual factors (e.g. social distance, power and cost) on the choice of question intonation. A tightly controlled DCT with 16 situations, half of them involving offers and half of them requests, was administered to 15 Catalan participants. The results of this experimental task show that requests are formulated more often with a question (84%) than are offers (66.9%), and are also more likely to be accompanied by formal forms of address and conventionally indirect language, especially at the highest levels of distance and power imbalance.

The results of the DCT task show that speakers used five interrogative intonation patterns, although the rising and the falling patterns made up 94% of the total. Focusing only on the rising and on the falling patterns, we found that requests trigger a higher occurrence of rising patterns than offers (about 57% and 39% respectively). By examining the effects of two levels of distance, power, and cost of the action separately, the level of social distance and cost was found to have significant effects on intonation choice.

In relation to cost, high-level cost situations triggered more rising pitch patterns, something which is pragmatically comparable to the fact that requests triggered more questions than did offers, and that those questions more frequently received a rising pattern than a falling pattern. Our results thus provide some confirmation to claims

made in previous work (e.g., Payrató, 2002; Prieto & Rigau, 2007) in relation to the effects of the factor cost, although we did not find that the rising pattern was used consistently in all situations that involved a high cost. The tendency to use falling interrogative patterns in low-cost situations could be related to the fact that these falling patterns have been associated with a higher degree of certainty/confidence on the part of the speaker regarding the potential for the interlocutor to accept the proposition of the question (Vanrell, Mascaró, Torres-Tamarit, & Prieto, 2013). In the case of low-cost yes-no questions, there is a higher chance that hearers will accept the proposition, and thus speakers tend to use falling question intonation more often.

In relation to social distance, participants used rising questions more frequently with low-level than with high-level social distance requests. Our interpretation is thus that the questions that require little redress or no redress at all, can be uttered with a salient interrogative pattern, and the scenarios at the lowest level of social distance triggered almost no need at all for redress. Gussenhoven's (2005) frequency code predicts that high pitched patterns will be the default patterns for questions. For different reasons, this pattern can also be used in situations where the speaker wants to make clear that the offer made is genuine (that is, it is not an ostensive invitation).

Finally, it is interesting to note that the manipulation of power did not trigger any effect on the choice of intonational contour, although a tendency to use more rising questions with requests and more falling questions with offers was observed. We interpret that this happened because the DCT presented a work-related situation (boss and employee), and in most work-place situations in Catalonia there is a preference for the informal form of address between employee and employer, if they know each other (e.g., using "tu" with your line-manager, but "vostè" with someone you know less).

In sum, our findings show that there are two social variables related to politeness (cost of the action and social distance) that have statistically significant effects on the choice of intonational contour in offering questions and requests. To further investigate the pragmatic relevance of all three politeness variables, we would need to carry out carefully controlled perception experiments that take into account the relevant contextual variables, as for instance in Armstrong (2012) and Vanrell, Armstrong and Prieto (2014).

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