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## **Vocative intonation preferences are sensitive to politeness factors**

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### **Abstract**

Although intonation has been traditionally associated with the expression of attitudes and intentions on the part of the speaker, little is known about whether sociopragmatic factors, such as power or social distance, or situational ones, like physical distance or insistence, can constrain the use and felicity of pitch contours. This article investigates the felicity conditions underlying the choice of three vocative pitch contours in Central Catalan by means of two experiments, namely a production experiment based on the Discourse Completion Task (320 vocative contours produced by 20 speakers), and an acceptability judgment task in which 72 listeners were asked to rate the appropriateness match between a set of vocative contours and a previous discourse context (3,456 responses). The results from the two experiments show that both situational and social politeness factors govern the choice of vocative intonation. Finally, the results are discussed in line with the traditional classification of politeness strategies defined by Brown and Levinson, in the sense that the three intonation contours can be linked to negative, positive, and bald on-record politeness strategies.

### **Keywords**

Vocatives, vocative intonation, politeness, intonation, chant, Catalan

### **1. Introduction**

Vocatives are addressee-oriented linguistic units that can be used in a variety of speech acts such as greetings, calls, commands, or requests (Parrott, 2010; Poynton, 1990, and others). Research on their pragmatic function has shown that they can fulfill three main functions: attracting someone's attention, identifying someone as an addressee, and maintaining and reinforcing a social relationship (Biber, Johansson, Leech, Conrad, & Finegan, 1999; Leech, 1999; McCarthy & O'Keefe, 2003; Norrick & Chiaro, 2009). Zwicky (1974, p. 796) claimed that vocatives express "attitude, politeness, formality, status, intimacy, or a role relationship, and most of them mark the speaker [...] as belonging to a subculture,

social class, or geographical dialect” (see also Axelson, 2007, pp. 95-122). Thus, one of the main discourse functions of vocatives is to identify participants’ roles and characterize the speaker in relation to the addressee, as they are especially relevant as markers of power and solidarity (Brown & Levinson, 1987; Hook, 1984; Wood & Kroger, 1991; Ostermann, 2000; Ahmed, 2007; cf. French *toi* vs. *vous* ‘you’).<sup>1</sup>

Languages can use a variety of strategies to mark vocatives, such as morphological case or particles, as well as prosodic mechanisms such as specific intonation patterns, stress shifts, or truncation patterns (see Daniel & Spencer, 2009, for a review). Crosslinguistic research on vocative intonation has documented a specific pitch contour known as *vocative chant* (Lieberman, 1979), *stylized fall* (Ladd, 1978), or *chanted call* (Hayes & Lahiri, 1991).<sup>2</sup> This tune consists of a rising pitch accent, typically associated with the stressed syllable, followed by a sustained mid boundary tone (labeled (L+)H\* !H% after Ladd (1996)). In fact, some authors have stated that politeness-related factors such as age and social status constrain the use of the vocative chant across languages. The chanted form has been found to be characteristic of children’s speech across languages – Abe (1998) reported that the vocative chant in Japanese is likely to be used by a group of children for calling their friend out of his or her house to join them – and Sadat-Tehrani (2008) explained that Persian speakers will usually not call somebody of a higher social rank (e.g., their boss, or an elderly person) in chanted form. The main goal of the present study is to investigate the influence of social politeness factors (i.e., power and social distance) as well as two situational factors (the physical distance between participants and insistence) on vocative pitch contour selection and felicity.

Frota and Prieto (to appear, 2015) report that almost all Romance languages (Catalan, French, Friulian, Italian, Portuguese, Romanian, Sardinian, and Spanish) use a form of the vocative chant (three language-specific types differentiated by the tune-text association of the !H target), as well as a final-falling calling contour characterized by a high pitch on the nuclear syllable (H\* or L+H\*) followed by a low (L%) or a falling (HL%) boundary tone. Situational factors, such as insistence and physical distance, have been highlighted as playing a role in the selection of vocative intonation (see Prieto et al., to appear, 2015, for Catalan, and Frota et al., to appear, 2015, for European Portuguese), though these claims have been based on a handful of examples and there is a need for further empirical and quantitative investigation.

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<sup>1</sup> In French, as in other Romance languages, two different forms of the second person singular are used to mark politeness: while in English the vocative form *you* can be used to address any person regardless of their age or social status, in French the use of the formal or the informal form for ‘you’ — *vous* or *toi*, respectively — depends on various factors including the age of the interlocutor, his or her job status, how well the person is known, as well as the speaker’s attitude towards the person (see, e.g., Brown & Gilman, 1960).

<sup>2</sup> Ladd (1978) and Lieberman (1979) for English, Gussenhoven (1993, 2005) for Dutch, Grice, Baumann & Benzmueller (2005) for German, Fagyal (1997) for French, Prieto, Borràs-Comes, Crespo-Sendra, Roseano, Sichel-Bazin & Vanrell (to appear, 2015) for Catalan, Prieto & Roseano (2010) for Spanish, Arvaniti & Baltazani (2005) for Greek, Varga (2008) for Hungarian, Sadat-Tehrani (2008) for Persian, Hayes & Lahiri (1991) for Bengali, Abe (1998) for Japanese, etc.

In addition to the limited knowledge of the role of situational factors, little is known about the potential role of social politeness in vocative pitch contour selection and felicity. Researchers have pointed out that the speaker's choice of vocative forms acts as a marker of power and solidarity across languages (Brown & Levinson, 1987; Hook, 1984; Ostermann, 2000), but to our knowledge no previous studies have been carried out on the effects of these factors in empirical terms. Following Astruc, Vanrell, and Prieto's (in press) work on the intonation of request and offering questions, we took as a starting point Brown and Levinson's (1987) classical version of politeness theory for the control of the social variables, which remains the most influential model.

Brown and Levinson (1987, p. 61) based their theory around the concept of *face*, defined as:

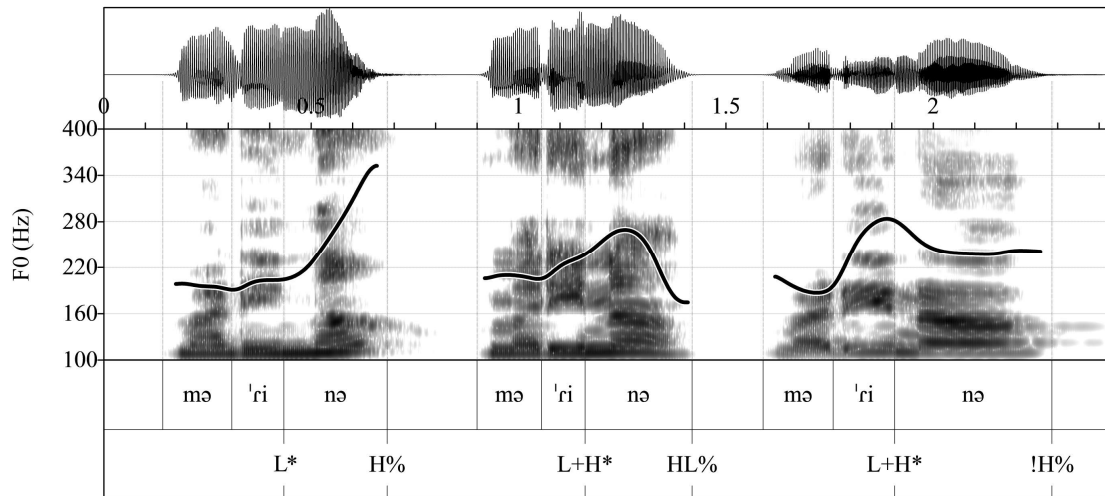
the public self-image that every member wants to claim for himself, consisting in two related aspects: negative face, the basic claim to territories, personal preserves, rights to non-distraction (i.e., to freedom of action and freedom from imposition), and positive face, the positive consistent self-image or 'personality' (crucially including the desire that this self-image be appreciated and approved of) claimed by interactants

The authors then state that every speech act (e.g., a vocative) has the potential to be a face-threatening act (FTA), and that the assessment of the seriousness of any FTA depends on the relationship between the speaker and the hearer, which generally involves three factors (1987, p. 74): the *social distance* (or *solidarity*) between them, their relative *power* (or *social status*), and the absolute ranking of impositions in that particular culture. The politeness strategy to be followed in doing the FTA will crucially depend on these factors (and thus very importantly on the personal relationship between the interactants), and it can be of four types: *bald on-record* (e.g., "Shut the window"), *positive* (e.g., "Hey, how about shutting the window, man?"), *negative* (e.g., "Would you mind shutting the window, please?"), or *off-record* (e.g., "I think I'm cold..."). In the studies presented here, we will control for and test the potential effects of power and social distance, in addition to physical distance and insistence.

In Central Catalan, vocatives are mainly identified through the lack of the personal article (*Maria, menja una mandarina!* 'Mary, have a tangerine!' vs. *La Maria menja una mandarina* 'Mary is eating a tangerine'). Interestingly, a variety of intonation contours can be used with vocatives (see, e.g., Prieto et al., to appear, 2015). The *Interactive Atlas of Catalan Intonation* (Prieto & Cabré, 2007-2012) documented that the most frequent pitch contours used for vocatives in Central Catalan are L\* H%, L+H\* HL%, and L+H\* !H%, whereas the rising-falling pitch contour L+H\* L% is more rarely found. Figure 1 illustrates the three most frequent intonational contours found for Catalan vocatives, namely L\* H% (left), L+H\* HL% (center), and L+H\* !H% (right), applied to the proper name *Marina* [mə'rinə].

Our general research question is to assess the felicity conditions that constrain vocative intonation preferences in Catalan. This language provides a good test case for this question, as it frequently uses three different intonational contours for vocatives. This research question will be investigated by means of two complementary experiments, namely a production experiment using a DCT methodology (Section 2), and an acceptability judgment task in which speakers are asked to rate the appropriateness of these three intonation patterns in

relation to the preceding pragmatic context (Section 3). The following two sections describe the methods and results for these two experiments.



**Figure 1.** The three main intonational contours found in Catalan vocatives, from left to right: L\* H%, L+H\* HL%, and L+H\* !H%. The contours illustrated are taken from three speakers (MD, NA, MR) that participated in the subsequent production experiment.

## 2. Production experiment (DCT)

### 2.1. Methodology

#### 2.1.1. Participants

Twenty speakers of Central Catalan (17 female and 3 male), aged between 18 and 55 (mean = 27.05 years), volunteered to participate in the production experiment. All participants were native speakers of Catalan and, when asked to rate their own linguistic dominance, said that they used it as their main language. On average, they reported using Catalan (as opposed to Spanish) during more than 80% of their daily activities.

#### 2.1.2. Materials and procedure

In order to elicit vocative intonation patterns in Central Catalan across a set of contextual or pragmatic conditions, we designed the target discourse contexts for a Discourse Completion Task (henceforth DCT; Blum-Kulka, House, & Kasper, 1989; Billmyer & Varghese, 2000; Félix-Brasdefer, 2010) aimed at eliciting vocative utterances. In a DCT, the speakers are presented with specific discourse contexts that constrain their productions, so this enables the researcher to obtain semi-spontaneous productions while controlling for specific pragmatic factors.

Following Brown and Levinson's (1987) politeness theory, two sociopragmatic features were controlled for in the target discourse contexts, namely Social Distance (henceforth SOCIALDIST; 2 levels: at-work vs. at-home situations) and POWER (2 levels for each social distance value: at work, calling a supervisor vs. a subordinate; at home, calling an aunt vs. a

little sister). The other two (situational) factors were Physical Distance (henceforth PHYSICALDIST; same room (close), outside speaker's room (distant)) and the degree of INSISTENCE (first call, second (insistent) call). The combination of these factors resulted in a total of 16 target discourse contexts ( $2 \text{ POWER} \times 2 \text{ SOCIALDIST} \times 2 \text{ PHYSICALDIST} \times 2 \text{ INSISTENCE}$ ). The examples in (1) and (2) show the English translations for two different DCT communicative situations which exemplify the different levels of the abovementioned factors.

- (1) Discourse context: You're a project manager in a big company. The vice-president is Mrs. Marina Smith. She holds a position of authority and you don't know her very well. You need her to sign some documents. She's in front of you. Call out her name so that she will come over.

[POWER: to superior, SOCIALDIST: at work, PHYSICALDIST: close, INSISTENCE: first call]

- (2) Discourse context: Your little sister Marina is very good at math and you want her to help you with your homework. You are the older sister and you have a lot of influence over her. She's now in the next room, so she may not hear you very well. You have already called her once. Call out to her again.

[POWER: to subordinate, SOCIALDIST: at home, PHYSICALDIST: far, INSISTENCE: insistent call]

Importantly, the target discourse contexts were controlled for the potential confounding effects of other pragmatic factors. For example, in order to control for potential gender effects, female participants were asked to call another woman (*Marina* [mə'ri:nə]) and male participants were asked to call another man (*Emili* [ə'mili]). In addition, to avoid potential syntactic influences on prosodic patterns, the DCT was designed to elicit isolated vocative forms. Finally, the cost of the petition to the interlocutor was also taken into consideration. The ultimate will of the speaker is in the one case to get some documents signed and in the other to get some help with math homework from a close relative that is very good at it. Though both situations involve a low cost request, participants were told to call their interlocutor with the aim of getting them to do the same single action, i.e., to come closer to them, with no additional information contained in the utterance. Thus, participants were told to focus on their interlocutor's name only and to specify the reason for their calling only after this first action was accomplished.

The experiment took place in a quiet room at the Universitat Pompeu Fabra in Barcelona. The 16 target contexts were described orally by the experimenter to each of the 20 participants. The participants' responses were digitally recorded using a Marantz 660 or a Zoom H4n handheld digital recorder. The total number of vocatives obtained was 320 (16 contexts  $\times$  20 speakers). The mean duration of the experiment was 5 minutes.

### 2.1.3. Analysis

The 320 vocatives obtained were prosodically labeled using the Cat\_ToBI system (Prieto et al., to appear, 2015) by the first two authors of the article, both proficient speakers of

Catalan and experts in the labeling system. The labels were then submitted to an inter-transcriber agreement test. The inter-transcriber agreement between the two labelers' coding was quantified by means of the Cohen's kappa coefficient (Cohen, 1960), which gave an overall coefficient of .92. Disagreements were resolved by the coding of the third author, whose labels always coincided with one of the two previous candidates in conflict for each production.

## 2.2. Results

### 2.2.1. Contour selection

Table 1 shows the absolute number (N) and frequency of appearance (%) of the intonational contours obtained. These results confirm the previous findings reported by Prieto et al. (to appear, 2015; see also Prieto & Cabré, 2007-2012), namely that Central Catalan speakers use three main intonational contours for vocatives (L+H\* HL%, L+H\* !H%, L\* H%), and less frequently L+H\* L% (which represented around 4% of the data). The analysis presented in this section will only take into consideration the three most frequent patterns.

**Table 1.** Absolute number (N) and frequency of appearance (%) of each intonational contour in the DCT experiment.

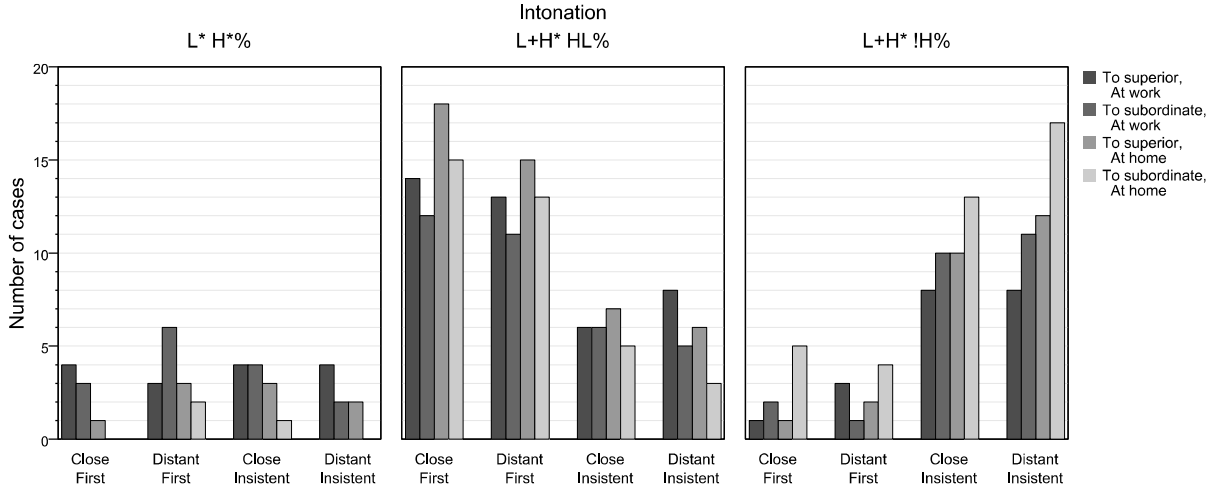
Intonation	N	%
L* H%	42	13.13
L+H* HL%	157	49.06
L+H* !H%	108	33.75
L+H* L%	13	4.06

Figure 2 shows the number of times that each contour (different panels, from left to right: L\* H%, L+H\* HL%, L+H\* !H%) was produced across the possible combination of pragmatic factors. SOCIALDIST and POWER are represented by the different gray shades in the bars (from darker to lighter: to superior at work, to subordinate at work, to superior at home, to subordinate at home). PHYSICALDIST and INSISTENCE are represented in the x-axis of each panel (close first call, distant first call, close insistent call, distant insistent call). As mentioned above, L+H\* L% was excluded because it had few occurrences. The graph panels suggest that while L+H\* HL% is preferred for first calls, L+H\* !H% is preferred for insistent calls. Interestingly, some effects for POWER and SOCIALDIST also arise from the graph; whereas the L+H\* !H% seems to be preferred with subordinates at home, the opposite pattern seems to be found for L\* H% with superiors at work.

To determine whether there were significant differences in the proportion of each pitch contour used across conditions, a General Linear Mixed Model (GLMM) was conducted with

the mean produced proportion as the dependent variable (binomial distribution, logit link).<sup>3</sup> INTONATION, POWER, SOCIALDIST, PHYSICALDIST, INSISTENCE, and all their possible combinations were set as fixed factors. SUBJECT was set as random factor. Table 2 presents the results of all effects in which INTONATION was involved.

Bonferroni pairwise contrasts were conducted in order to determine the direction of the significant effects. The results of the pairwise comparisons showed that the main effect of INTONATION can be explained such that L+H\* HL% was more frequent than L+H\* !H%, and they were both more frequent than L\* H% (all comparisons:  $p < .001$ ). The interaction INTONATION×INSISTENCE indicates that L+H\* HL% was more frequent in first than insistent calls ( $p < .001$ ), and that L+H\* !H% was more frequent in insistent calls than in first calls ( $p < .001$ ). The interaction INTONATION×POWER indicates that L+H\* HL% was more frequent when calling a superior than a subordinate ( $p = .047$ ). The interaction INTONATION×SOCIALDIST indicates that L\* H% was more frequent at work than at home ( $p = .001$ ).



**Figure 2.** Number of productions of the three target vocative contours (different panels: L\* H%, L+H\* HL%, L+H\* !H%) across the different pragmatic conditions (the combinations of POWER and SOCIALDIST are shown in different color bars, while the PHYSICALDIST and INSISTENCE are represented in the x-axis).

<sup>3</sup> Because multinomial distributed models are not able to provide pairwise comparisons in SPSS v21, the production database was modified in the following way: first, another column was added to the database with each of the three main contours that could be produced; and then a dummy variable was created indicating whether that contour was indeed used in that specific context or not. The resulting table presented 960 rows (20 speakers × 16 contexts × 3 possible contours). The dummy variable was taken as the dependent variable in the GLMM.

**Table 2.** GLMM effects related to INTONATION: detailed results of the GLMM applied to the Experiment 1 data in which INTONATION was involved [Int = INTONATION, P = POWER, SD = SOCIALDIST, PD = PHYSICALDIST, I = INSISTENCE].

Source	F	df1	df2	Sig.
Int	36.952	2	912	<b>.000</b>
Int×P	4.493	2	912	<b>.011</b>
Int×SD	5.863	2	912	<b>.003</b>
Int×PD	1.309	2	912	.271
Int×I	51.994	2	912	<b>.000</b>
Int×P×SD	1.883	2	912	.153
Int×P×PD	0.124	2	912	.883
Int×P×I	0.390	2	912	.677
Int×SD×PD	0.723	2	912	.486
Int×SD×I	1.597	2	912	.203
Int×PD×I	1.475	2	912	.229
Int×P×SD×PD	0.091	2	912	.913
Int×P×SD×I	0.215	2	912	.807
Int×P×PD×I	1.551	2	912	.213
Int×SD×PD×I	0.417	2	912	.659
Int×P×SD×PD×I	0.106	2	912	.899

### 2.2.2. Gradient acoustic properties

The acoustic properties of the two most frequent contours (L+H\* HL% and L+H\* !H%) were further examined in order to find out whether they vary consistently according to the four contextual factors. For each sentence, four measures were extracted: the duration of the stressed and post-stressed syllables (in ms), the pitch range of the rising movement within the stressed syllable (in st), and the range of the posttonic final fall (also in st). Eight GLMMs were then conducted (2 contours × 4 measures), in which these four acoustic measures were set as dependent variables (TonicDur, PosttonicDur, TonicRise, PosttonicFall), the four pragmatic factors and all their possible interactions were set as fixed factors, and Subject as a random factor.

For L+H\* HL%, all measures but TonicDur provided significant effects; for L+H\* !H%, all measures except PosttonicFall showed significance. This second fact indicates that, in vocative chants, the distance in semitones between the target tones associated with the stressed and post-stressed syllables is found to be consistent independently of the four factors that have been shown to govern contour selection ( $M = 3.28$  st,  $SD = 1.63$  st).

In general, duration variation (in both stressed and post-stressed syllables) is related to SOCIALDIST. The effect of this factor is significant on TonicDur in L+H\* !H% ( $F(1, 73) =$



6.052,  $p = .016$ ), and on PosttonicDur in both L+H\* HL% ( $F(1, 120) = 23.377, p < .001$ ) and L+H\* !H% ( $F(1, 70) = 14.886, p < .001$ ). Another effect found to be significant was that of PHYSICALDIST on PosttonicDur for both L+H\* HL% ( $F(1, 120) = 31.053, p < .001$ ) and L+H\* !H% ( $F(1, 70) = 5.377, p = .023$ ). In all cases, the direction of the effect was such that longer durations were produced in closer social distances and in farther physical distances. Two additional effects were found when analyzing PosttonicDur in L+H\* HL%: a main effect of INSISTENCE ( $F(1, 121) = 10.884, p = .001$ ) such that longer syllable duration was found in insistent calls, and a POWER×INSISTENCE interaction ( $F(1, 119) = 4.018, p = .048$ ), which indicates that the effect of Insistence is restricted to those calls addressed to subordinates.

Variation in the range of pitch rises and falls is generally due to a main effect of PHYSICALDIST, which affects TonicRise in both L+H\* HL% ( $F(1, 116) = 42.820, p < .001$ ) and L+H\* !H% ( $F(1, 66) = 22.425, p < .001$ ), and PosttonicFall in L+H\* HL% ( $F(1, 85) = 23.377, p = .046$ ). In all cases, the direction of the effects was such that a larger pitch excursion was used when the interlocutors were more distant. Several significant interactions found for L+H\* HL% indicated that the effect of PHYSICALDIST is especially intense in calls addressed to subordinates.

Table 3 shows the mean values and standard deviations of the syllable durations (ms) and pitch range measures (st) in each of the two levels of SOCIALDIST and PHYSICALDIST, for both L+H\* HL% and L+H\* !H%.

Due to the production task constraints, each participant could only produce one contour for a given communicative context, meaning that this methodology does not allow us to adequately assess how felicitous other possibilities would be in that specific context. In order to investigate this issue, we then conducted a perception experiment in which all participants had to rate the degree of acceptability of the target vocative contours L\* H%, L+H\* HL%, and L+H\* !H% in all 16 contexts.

**Table 3.** Means and standard deviations of syllabic durations and tonic movements (ms or st) in each of the levels of SOCIALDIST and PHYSICALDIST, for the two most frequent contours.

Measure	Intonation	SOCIALDIST		PHYSICALDIST	
		At work	At home	Close	Distant
TonicDur	L+H* HL%	124.67 (15.91)	128.07 (15.47)	123.93 (15.95)	129.31 (15.05)
	L+H* !H%	130.06 (16.37)	133.97 (20.56)	128.38 (18.52)	135.82 (18.74)
PosttonicDur	L+H* HL%	307.27 (81.29)	355.8 (120.66)	309.12 (91.32)	358.97 (115.84)
	L+H* !H%	307.75 (98.39)	388.94 (131.05)	309.66 (96.59)	394.32 (133.35)
TonicRise	L+H* HL%	2.95 (1.97)	2.53 (2.19)	1.85 (1.41)	3.7 (2.28)
	L+H* !H%	5.25 (2.52)	5.53 (2.37)	4.57 (1.85)	6.12 (2.63)
TotalFall	L+H* HL%	3.89 (3.72)	4.5 (4.33)	3.94 (4.2)	4.56 (3.88)
	L+H* !H%	3.02 (1.43)	3.47 (1.74)	3.32 (1.74)	3.25 (1.54)

### 3. Acceptability judgment task

In order to assess the felicity conditions on which Catalan listeners rely for their preferences among vocative pitch contours, we designed an acceptability judgment task in which listeners were asked to rate the perceived degree of adequacy between a given prosodic rendition of a vocative (i.e., uttered with a particular intonational contour) and its preceding discourse context.

#### 3.1. Methodology

##### 3.1.1. Participants

Seventy-two speakers of Central Catalan (44 women and 28 men; mean age = 34.00, stdev = 10.84; mean self-estimated daily usage of Catalan = 86.15%, stdev = 21.18) participated in the acceptability judgment task. None of them had participated in the preceding production experiment.

##### 3.1.2. Materials and procedure

The discourse contexts presented to the participants of the acceptability judgment task were exactly the 16 contexts previously used in the production experiment (2 SOCIALDIST  $\times$  2 POWER  $\times$  2 PHYSICALDIST  $\times$  2 INSISTENCE). Each discourse context was followed by recordings of all three target intonation contours, namely L\* H%, L+H\* HL%, and L+H\* !H%.

From the production experiment data, four speakers (MD, MR, NA, NE) were selected to provide one representative utterance for each of the three intonational contours (L\* H%, L+H\* HL%, and L+H\* !H%). The selection criteria were that the same speaker should have produced all three contours and that the utterances only included the proper noun *Marina*, without any preceding personal term of address (like *senyora* ‘Mrs.’, *senyoreta* ‘Miss’ or *tieta* ‘Aunt’). The three authors of the study plus three more members of the research group in Barcelona checked that the twelve utterances were representative of the target intonational contours, showing similar acoustic properties of duration and pitch range across speakers. The four sets of three utterances were then assigned pseudo-randomly to the different pragmatic contexts, and the resulting 16 test trials were randomly presented to the listeners for judgment.

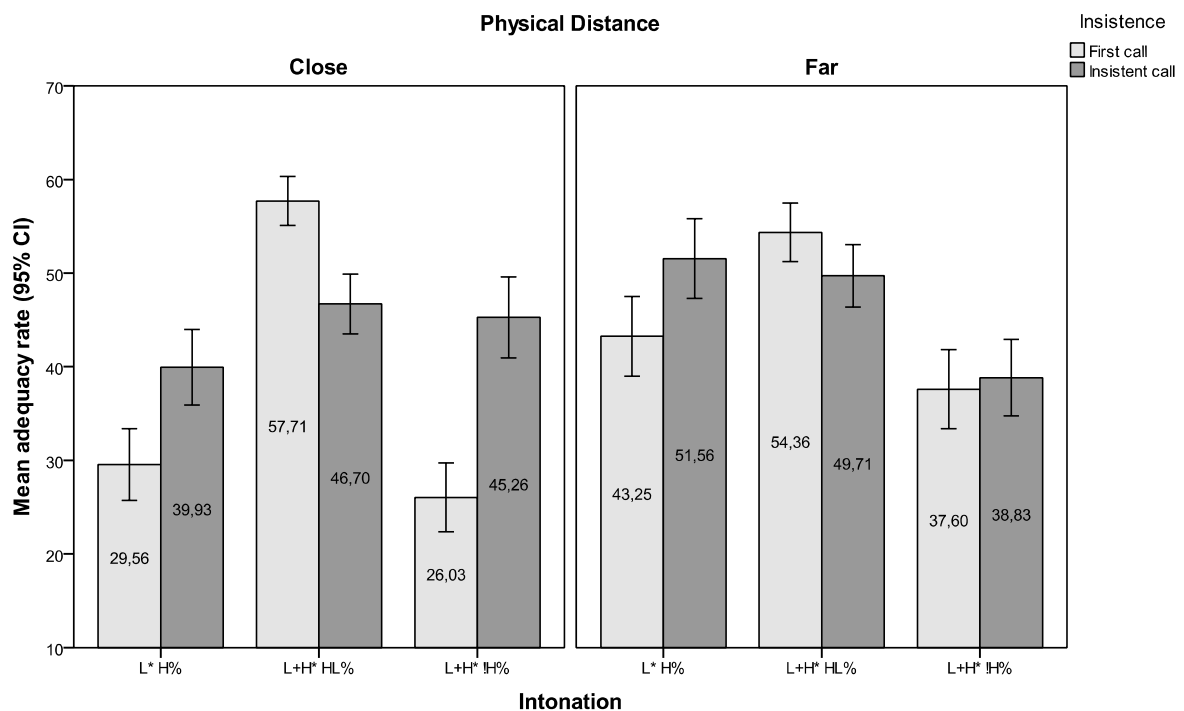
Participants were asked to rate the acceptability of each vocative in the specific contexts using a 0 to 100 scale. The experiment was run through the online survey platform SurveyGizmo (<http://www.surveygizmo.com/>). The mean duration of the experiment was 25 minutes, and the total number of acceptability ratings obtained was 3,456 (72 listeners  $\times$  16 discourse contexts  $\times$  3 intonation contours).

#### 3.2. Acceptability judgment results

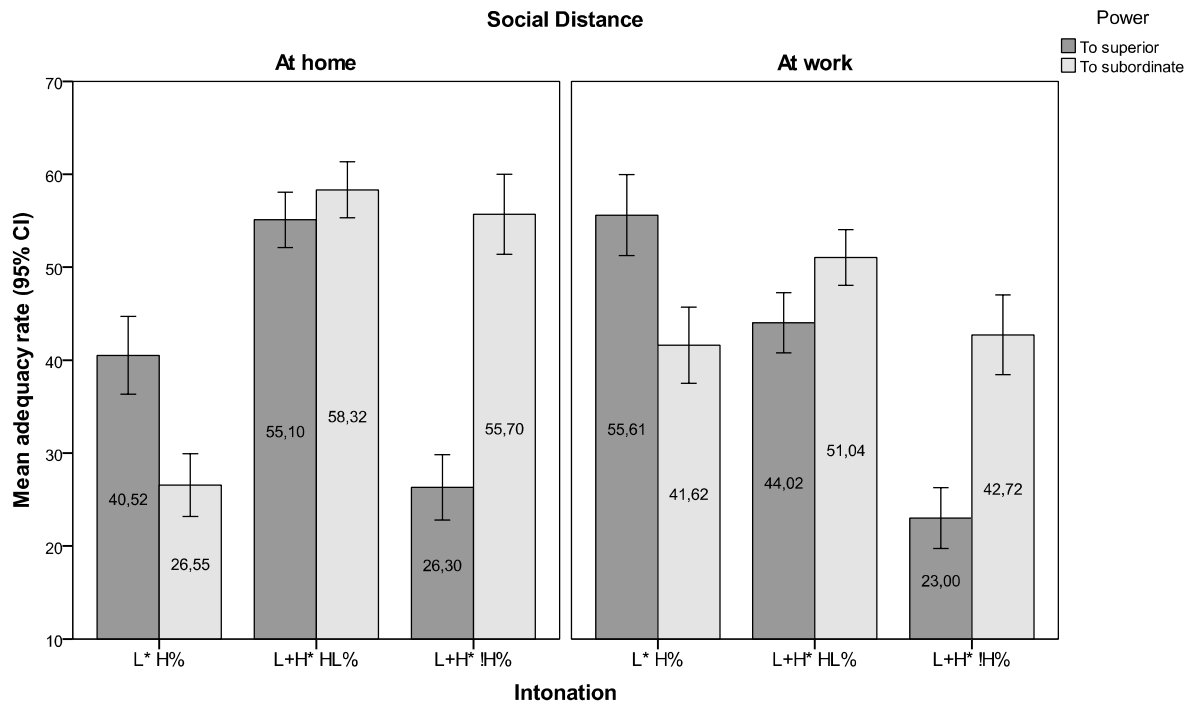
Figure 3 shows the mean acceptability rates for each intonational contour as a function of the two situational factors PHYSICALDIST and INSISTENCE. L\* H% was perceived to be more felicitous for farther and insistent vocatives. L+H\* HL% was found to receive higher

acceptability judgments overall (representing a mean acceptability rate of more than 45%) in all contexts, especially in first calls. Finally, L+H\* !H% was more felicitous for insistent calls when physically close.

Figure 4 shows the mean acceptability rates for each intonational contour as a function of the two sociopragmatic factors POWER and SOCIALDIST. L\* H% was perceived to be more felicitous when speaking with superiors, both at home and at work, though its use in at-work contexts was rated as more appropriate than in at-home contexts. L+H\* HL% was found to be especially felicitous in at-home contexts and with subordinates. Finally, L+H\* !H% was perceived to be more felicitous in situations where the speaker is addressing subordinates rather than superiors, and it was also preferred at home as compared to work contexts.



**Figure 3.** Mean acceptability rates for each intonational contour as a function of the contextual factors PHYSICALDIST (left panel: close; right panel: distant) and INSISTENCE (light gray bars: first calls; dark gray bars: insistent call).



**Figure 4.** Mean acceptability rate for each intonational contour as a function of the sociopragmatic factors SOCIALDIST (left panel: at home; right panel: at work) and POWER (light gray bars: to subordinate; dark gray bars: to superior).

A GLMM was conducted with the acceptability rate as the dependent variable. INTONATION, POWER, SOCIALDIST, PHYSICALDIST, INSISTENCE, and all their possible combinations were set as fixed factors. SUBJECT was set as random factor. Table 4 presents the results of all effects in which INTONATION was involved.

The direction of the significant effects was determined by Bonferroni pairwise contrasts, which showed that the main effect of INTONATION can be explained such that L+H\* HL% was rated higher than L\* H%, and they were both more acceptable than L+H\* !H% (all comparisons  $p < .001$ ).

As for paired interactions, the interaction INTONATION×POWER indicates that L\* H% was more accepted when calling a superior than a subordinate ( $p < .001$ ), and that L+H\* HL% and L+H\* !H% were accepted more often for calling a subordinate than a superior ( $p = .002$  and  $p < .001$ , respectively).<sup>4</sup> The interaction INTONATION×SOCIALDIST indicates that L\* H% was accepted more often at work than at home, and that the contrary is true for L+H\* HL% and

<sup>4</sup> Regarding POWER, the triple interactions Int×P×SD and Int×P×I specify that the preference for L+H\* HL% for calling a subordinate is tied to at-work situations ( $p = .003$ ) and insistent calls ( $p = .001$ ).

L+H\* !H% (all  $p < .001$ ).<sup>5</sup> The interaction INTONATION×PHYSICALDISTANCE indicates that L\* H% was more acceptable in farther physical distances relative to close physical distances.<sup>6</sup> Finally, the interaction INTONATION×INSISTENCE indicates that L+H\* HL% was accepted more often in first than in insistent calls, and that both L\* H% and L+H\* !H% were accepted more often in insistent than in first calls.<sup>7</sup>

**Table 4.** GLMM effects related to INTONATION: detailed results of the GLMM applied to the Experiment 2 data in which INTONATION was involved [Int = INTONATION, P = POWER, SD = SOCIALDIST, PD = PHYSICALDIST, I = INSISTENCE].

Source	F	df1	df2	Sig.
Int	90.253	2	3337	<b>.000</b>
Int×P	135.935	2	3337	<b>.000</b>
Int×SD	68.843	2	3337	<b>.000</b>
Int×PD	16.706	2	3337	<b>.000</b>
Int×I	37.933	2	3337	<b>.000</b>
Int×P×SD	4.414	2	3337	<b>.012</b>
Int×P×PD	7.735	2	3337	<b>.000</b>
Int×P×I	7.941	2	3337	<b>.000</b>
Int×SD×PD	7.577	2	3337	<b>.001</b>
Int×SD×I	1.870	2	3337	.154
Int×PD×I	14.006	2	3337	<b>.000</b>
Int×P×SD×PD	0.981	2	3337	375
Int×P×SD×I	4.736	2	3337	<b>.009</b>
Int×P×PD×I	1.594	2	3337	.203
Int×SD×PD×I	1.640	2	3337	.194
Int×P×SD×PD×I	4.497	2	3337	<b>.011</b>

<sup>5</sup> Regarding SOCIALDIST, the triple interactions Int×P×SD and Int×SD×PD specify that the preference for L+H\* !H% for calling at home is tied to calling a subordinate ( $p < .001$ ) and close physical distances ( $p < .001$ ).

<sup>6</sup> Regarding PHYSICALDIST, three triple interactions (Int×P×PD, Int×SD×PD, and Int×PD×I) show that L+H\* !H% was preferred for far physical distances when calling a subordinate ( $p = .029$ ), in at-work situations ( $p = .005$ ), and in first calls ( $p < .001$ ); in addition, L+H\* !H% was also preferred for close physical distances in insistent calls ( $p = .006$ ). Finally, the triple interaction Int×SD×PD indicates a preference for L+H\* HL% in close physical distances only in at-work situations ( $p = .050$ ).

<sup>7</sup> Regarding INSISTENCE, the triple interactions Int×P×I and Int×PD×I indicate a preference for L\* H% for insistent calls when calling a superior ( $p < .001$ ), and a preference for L+H\* !H% for insistent calls in close physical distances ( $p < .001$ ).

#### 4. Discussion and conclusions

The two experiments reported in this article have addressed the role that four pragmatic factors play in vocative intonation preferences in Catalan. First, we ran a DCT production experiment in order to elicit a variety of vocative contours in a controlled set of communicative situations. The analysis of 320 vocative contours (20 speakers  $\times$  16 contexts) showed that Central Catalan speakers used mainly three contours for vocatives, namely the rising interrogative contour (L\* H%), a contour ending in a rising-falling boundary tone (L+H\* HL%), and the vocative chant (L+H\* !H%). These results were consistent with Prieto et al. (to appear, 2015) and Prieto and Cabré (2007-2012) and revealed that the four contextual factors were statistically significant for this pitch contour selection. L+H\* HL% was more frequently used for first calls, and the vocative chant L+H\* !H% for insistent calls. Moreover, L+H\* HL% was used more frequently when calling a superior than a subordinate, and L\* H% was most usually produced in situations where the speaker had no close relationship with the hearer (i.e., in work situations).

The analysis of the phonetic patterns of the utterances obtained in the DCT experiment (i.e., duration and pitch range of the stressed and post-stressed syllables) also revealed some interesting findings. On the one hand, longer syllable durations were obtained in closer social distances, farther physical distances, and insistent calls (esp. when calling a subordinate). On the other hand, farther physical distances led to larger rises in the stressed syllable (in both L+H\* HL% and L+H\* !H%) and larger falls in the post-stressed syllable (only in L+H\* HL%, since the pitch difference between the H and !H tones in vocative chants was fairly consistent).

Second, we ran an acceptability judgment task in which listeners were asked to rate the perceived acceptability of vocatives (uttered with three different intonational contours) in a target discourse context. This task allowed us to investigate in a more systematic fashion the perceived acceptability rates of each of the three intonational contours in the 16 communicative contexts used in the DCT. The analysis of 3,456 responses (72 listeners  $\times$  16 discourse contexts  $\times$  3 intonation contours) revealed a set of results that were essentially consistent with the production task, i.e., the results summarized two paragraphs above for production were also borne out by the perception task.<sup>8</sup> However, a great number of additional results were obtained, which are discussed below in terms of the two types of pragmatic factors analyzed here, namely situational factors and sociopragmatic factors.

To summarize the effects of the situational factors (Physical Distance and Insistence), L\* H% was found to be more appropriate for more distant communication, and also to some extent for insistent calls. One notes that these two situations may involve an implicit

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<sup>8</sup> The only exception to this was the preference for L+H\* HL% regarding POWER. Whereas in the DCT more L+H\* HL% was produced when addressing superiors ( $p = .047$ ), its acceptance was greater for addressing subordinates in the acceptability judgment task ( $p = .002$ ). This difference might be explained by the general multi-purpose behavior of L+H\* HL%, as suggested below.

interrogation, since such calls may connote questions such as ‘Can you hear me?’ or ‘Are you paying attention to me?’, typically previous to an actual request for action. L+H\* HL% vocatives were linked to first calls (also found in the production study) and shorter physical distances, contexts in which their specific function seems to be to open the communication channel. Finally, L+H\* !H% was preferred for insistent calls (also found in production) in short distances, so they seem to be related to those cases in which the communication channel is already open (i.e., when it is not necessary to ask ourselves whether our interlocutor can hear us or not). In sum, the patterns obtained when looking at the influence of the situational factors suggest three different stages in the establishment of the communication channel (which correspond to the use of three particular intonation contours): first, a check for the listener’s availability when the channel has not been opened yet (L\* H%); second, the opening of a communication channel itself (L+H\* HL%); and third, an optional calling when the communication is considered to be already established, as happens with insistent calls (L+H\* !H%). Therefore, when the speaker uses a particular vocative contour, he or she is also expressing a particular degree of imposition over the listener.

The results found for the sociopragmatic factors (Power and Social Distance) can be summarized in Table 5:

**Table 5.** Summary of the acceptability results related to Power and Social Distance.

Contour	Preference
L* H%	<b>to superior</b> > to subordinate; <b>at work</b> > at home
L+H* HL%	<b>at home</b> > at work to subordinate > at work to superior
L+H* !H%	<b>to subordinate</b> at home > to subordinate at work > to superior

In line with the DCT results, we found that the L\* H% contour was mainly preferred in work situations and with superiors. Calling a superior at work with an interrogative contour may indicate that the speaker is trying to minimize the imposition of requiring something from his/her addressee, interrupting them in what they are doing. This can be directly related to what Brown and Levinson (1987) call *negative politeness* strategies: not wishing to run the risk of showing offense, the speaker uses a strategy that shows deference and avoids causing the impression of imposing on the hearer. As Leech and Svartvik (1975, p. 147) state, “it is often more tactful to use a request than a command: i.e., to ask your hearer whether he or she is willing or able to do something”.

The calling contour L+H\* !H% was found to be most felicitous for calling subordinates, especially at home, which is consistent with the literature on vocative chants in other languages (Sadat-Tehrani, 2008; Abe, 1998; Fónagy, Bérard, & Fónagy, 1983; Di Cristo, 1998). In general, Catalan speakers will usually not call somebody of a higher social rank (in the case of our experiment, their boss) in chanted form unless they want to express insistence. These results are in line with what Brown and Levinson (1987) described for *positive politeness* strategies: the speaker may try to avoid giving offense by highlighting friendliness,

which can be expected in those cases where listener and speaker are socially close and power distinctions are small.

The L+H\* HL% pitch contour received high acceptability ratings across all contexts – it was never regarded as the least felicitous contour in any context. We might argue that speakers tend to use this contour as an unmarked, multi-purpose contour for Central Catalan vocatives. In terms of Brown and Levinson's politeness theory, this seems to correspond to the absence of both positive and negative politeness strategies. In fact, this pitch contour is especially felicitous in home situations, where power distinctions are not very important – at least in contemporary Catalan society – so that there is no need to resort explicit (i.e., positive or negative) politeness strategies to save face.<sup>9</sup> This would link L+H\* HL% contours to Brown and Levinson's (1987, p. 69) *bald on-record politeness* strategies, used by speakers in three main circumstances (see also Bousfield, 2008):

(a) S[peaker] and H[earer] both tacitly agree that the relevance of face demands may be suspended in the interests of urgency or efficiency; (b) where danger to H's face is *very* small, as in offers, requests, suggestions that are clearly in H's interest and do not require great sacrifices of S (e.g., 'Come in' or 'Sit down'); and (c) where S is vastly superior in power to H, or can enlist audience support to destroy H's face without losing his own.

The greater acceptability of L+H\* HL% across all contexts, and especially at home (and, to a lesser extent, with subordinates at work), can thus be related to the appropriateness of the use of bald on-record politeness strategies in the specific contextual situations of our experiments, where the Speaker is simply requesting something which requires almost no sacrifice on the part of the Hearer.

To summarize the effects of politeness on vocative contours, the patterns obtained when looking at the influence of the sociopragmatic factors suggest a three-way classification of Central Catalan vocative contours into three different types of politeness strategy: negative politeness (L\* H%), bald on-record politeness (L+H\* HL%), and positive politeness (L+H\* !H%). Thus, both situational and sociopragmatic factors lead to two tripartite and linkable classifications of Catalan vocative contours. Whereas in the case of situational factors these contours can be classified into three different degrees of imposition, our analysis of the sociopragmatic factors within politeness theory allows us to analyze these degrees in terms of the social relationship between the speaker and the hearer, as well as in terms of the three different types of politeness strategy.

In fact, if the L+H\* !H% is linked to an implicit idea of total availability of the hearer to pay attention to the speaker (which is obtained through its properties of insistence), the use of this contour might be regarded as polite only in cases where the interlocutors are socially very close and in contexts where the loss of the hearer's face is more difficult to trigger. Otherwise, if such a positive politeness strategy is used in a context that prioritizes negative politeness, that behavior would be regarded as impolite. Such a relationship between politeness theory

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<sup>9</sup> This could explain the inconsistency found for this contour between the two experiments regarding the effect of POWER (see the second paragraph of the Discussion).



and intonation has also been noted in the realm of yes-no questions, though it is not always explicitly stated in similar terms. Astruc et al. (in press) analyzed the intonation of request and offering questions in Central Catalan. In this variety, the most frequently used intonation patterns for polar questions are either rising (L\* H%) or falling (H+L\* L%), and the use of falling intonation is generally linked to confirmation-seeking questions, i.e., questions where the speaker presupposes that his/her uttered proposition will be accepted by his/her interlocutor. Astruc et al.'s (in press) results revealed that falling contours were preferred for low-cost requests and rising contours for high-cost requests. These results make sense in the light of the semantic properties of both contours. Using a falling question can be regarded as impolite (and convey a high degree of imposition) in requests which entail an important cost on the part of the hearer (i.e., borrowing his/her car), because this contour is conveying the presupposition of a positive belief on the part of the speaker (the assumption that he/she will lend him the car). By contrast, using the default L\* H% is regarded as more polite in this context because this tune does not convey this positive presupposition.

In conclusion, the two experiments reported here demonstrate that both sociopragmatic and situational factors (such as relative power, social distance, physical proximity, and the degree of insistence) play an important role in determining vocative pitch contour preferences in Catalan. These factors define a number of contextual situations involving Face Threatening Acts (Brown & Levinson, 1987) that require different politeness strategies. We have proposed that Catalan vocatives, with their three possible intonational contours, appear to be linked to different politeness strategies: first, an interrogative L\* H% vocative is used as a negative politeness strategy; second, the rising-falling contour L+H\* HL% is linked to bald on-record politeness strategies; and third, the L+H\* !H% vocative chant is adopted as a positive politeness strategy. In sum, the analysis of the interplay between sociopragmatic and situational factors and Catalan vocative intonation in the light of politeness theory has broadened our understanding of how politeness inferential meaning controls the intonational variation in this language. This investigation also opens a door to exploring the role of politeness factors in intonational meaning in other types of speech acts.

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