



Research Article

Prosodic mitigation characterizes Catalan formal speech: The Frequency Code reassessed

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ABSTRACT

Research in the past few decades has claimed that high or rising fundamental frequency (F0) signals a set of meanings related to the expression of politeness (e.g., deference, submission or lack of confidence (Gussenhoven, 2004; Ohala, 1984)). In this regard, the Frequency Code has been proposed to explain the universal tendency for high pitch to be interpreted as related to politeness and other sociopragmatic meanings (Gussenhoven, 2004; Gussenhoven, Chen, & Rietveld, 2002; Ohala, 1984). Recently, however, some experimental research has questioned the universality of the Frequency Code and pointed to the importance of taking other prosodic parameters into account (e.g., Brown & Levinson, 1987; Grawunder, Oertel, & Schwarze, 2014; Winter & Grawunder, 2012). Clearly, further work is needed before the question of universal tendencies in the prosodic encoding of politeness can be conclusively settled. The present study attempts to help fill that gap. Twenty Catalan speakers participated in an oral discourse elicitation task designed to investigate the prosodic components of politeness in requests in formal register speech compared to informal speech by not only analysing F0 parameters but also taking into account other prosodic parameters such as duration, voice quality and intensity, and controlling for the use of phonological intonational patterns. Results showed that subjects exhibited a slower speech rate, a lower mean pitch, less intensity, less shimmer and less jitter and an increase in H1–H2 in the formal condition. Thus, contrary to previous claims, the Frequency Code appears not to hold for this language. Rather, our results support the idea that Catalan speakers use a phonetic mitigation strategy involving various prosodic correlates. After comparing our findings with the results reported in previous literature for other languages, we entertain the hypothesis that prosodic mitigation may well play a strong role in marking politeness cross-linguistically.

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1. Introduction

When communicating, interlocutors constantly position themselves in relation to the ongoing social interaction. Depending on whether a person is interacting with a senior or peer, the socio-pragmatic level of their speech will be adapted in one way or another. This relationship between formal speech and its use with superiors has kindled the idea that it might be associated with Ohala's Frequency Code (see Gussenhoven, 2004, chap. 5). The Frequency Code proposed that using low pitch speech (characterized by low F0) to signal dominance and high pitch speech to signal subdominance is

universal. By proposing a relation between the vocal expression of subdominance (a speaker making him/herself smaller) in situations of unequal power requiring politeness, it has been suggested that there is a clear association between high pitch and polite speech (e.g., Chen, Gussenhoven, & Rietveld, 2004; Orozco, 2010; Tsuji, 2004).

Until recently the Frequency Code has been assumed to be a well-established biological code in regard to its affective interpretation. However, in the past few years, evidence has emerged which contradicts its supposed universality (e.g., Winter & Grawunder, 2012). Furthermore, other research has also found that other acoustic cues besides F0 such as duration, intensity and voice quality also seem to play an important role in the expression of sociopragmatic meanings such as politeness. Following up on recent evidence against the

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universality of the Frequency Code and its applicability to formal speech, the present study analyses a corpus of semispontaneous requests elicited in status-symmetrical and status-asymmetrical situations. On the basis of our findings, we attempt to characterise an acoustic profile in Catalan formal and informal register speech, similar to Winter and Grawunder (2012), but we additionally consider intonational phonology and set out to discuss our results in relation to the Frequency Code in a more comprehensive way.

1.1. Politeness and the Frequency Code

In the field of pragmatics, making a request has been regarded as an example par excellence of a face-threatening speech act since it intrinsically threatens the hearer's face (Brown & Levinson, 1987). The so-called extent of the threat in a request is typically assessed according to three variables: the social distance between the interlocutors, their relative power and the cost to the speaker of imposing him or herself on the addressee. Thus, importantly, depending on whether a person is making a request of a senior or peer, the socio-pragmatic level of speech is adapted accordingly to minimize the threat. This is accomplished through mitigation devices. Caffi (2007) defined mitigation as a cover term for a set of strategies that are designed to soften, attenuate or alleviate one or several aspects of a person's speech. In Brown and Levinson's (1987) classical model of politeness the term mitigation is used co-extensively with the term politeness, referring to a set of strategies that is used by speakers to attenuate the potential impact of what the authors call 'face-threatening acts'. Since both terms frequently co-occur, they have often been considered synonyms in the literature (Fraser, 1990; Holmes, 1984; etc.). However, while politeness-related effects belong to an important group of pragmatic effects that mitigation can have, not every case of mitigation is necessarily related to politeness (Albelda, 2007; Held, 1989; Hernández-Flores, 2004; Holmes, 1984; Maíz-Arévalo, 2012; Rees-Miller, 2011). Mitigation can also be used more generally by a speaker out of uncertainty, caution or consideration (Caffi, 2007). Since formal speech is used when addressing a status superior, it has often been analysed as one type of politeness (e.g., Ide, 1989; Winter & Grawunder, 2012). While in Korean honorifics (informally referred to as politeness markers) are morphemes that are part and parcel of formal speech, politeness used in formal register speech is not limited to languages with explicit honorific systems or "discernment cultures", as claimed by Watts (1989). It is this notion of mitigating potential impact when addressing a superior that connects formality in speech and the Frequency Code. The Frequency Code itself is grounded in size asymmetries and physical dominance. These associations are based on the observation that animal (and human) voices with high pitch are biologically associated with smaller size, since small animals tend to have small larynxes that produce higher-pitched sounds. As mentioned above, the Frequency Code proposes that, on the one hand, rising or high F0 is universally associated with a range of social messages, such as submission, politeness, deference and lack of confidence, while falling and low pitch is associated with opposing social messages such as confidence, threat, aggression, assertiveness and authority. On the linguistic level, low pitch

is associated with speech acts involving high certainty, such as asserting, while high pitch is associated with speech acts involving uncertainty, such as asking questions (Gussenhoven, 2002; Ohala, 1984).

Gussenhoven (2002) brought together research on additional factors affecting intonational form, leading to further claims of a universal form-function relationship. He claimed that this form-function relationship is based on three biological codes: the Frequency Code, the Effort Code and the Production Code.¹ While these biological codes can be classed as affective (signalling attributes of the speaker) vs. informational (signalling attributes of the message), and while the meanings are universally available to all humans, the universal meanings deriving from different codes might be mutually incompatible and thus displayed in different ways depending on the language. The Frequency Code as originally proposed by Ohala (1984) constitutes the first of Gussenhoven's biological codes. It is based on the fact that the larynx varies in size across speakers, which leads to intrinsic pitch differences between children, women and men, and thus both larynx size and also vibration rate can be exploited to signal power or also smallness. The informational interpretations of these differences include uncertainty for higher pitch and certainty for lower pitch. Also as pointed out by Ohala, the affective interpretations of higher pitch are equated with submissive, friendly, polite, etc. and lower pitch with dominant, confident, aggressive, etc. Regarding these informational interpretations, Gussenhoven (2002, p. 55) points out that "(w)hen the form-function relations become grammaticalised, there is no longer any guarantee that they are maintained, since they are subject to the forces of phonological change", as in the case of question and statement intonation.

1.2. Typological evidence for and against the Frequency Code. The role of pitch modulations in conveying politeness

Some cross-linguistic research conducted on the contribution of F0 to the expression of politeness has endorsed the positive relationship between pitch range² and certain types of intonational meanings, such as friendliness and politeness. Chen et al. (2004) conducted an experiment on Dutch and British English in which they analysed the perception of affective intonational meaning by applying semantic scales for 'friendliness' or 'surprise' depending on gradual changes in pitch range. In general they found the Frequency Code to be valid in these two languages in that increasing the pitch range led to greater perceived friendliness. Yet, more specifically they found that friendliness and emphasis were interpreted in different ways by English and Dutch listeners. While English listeners associated higher register with more friendliness and with less

¹ The *Effort Code* describes the notion that putting in more effort leads not only to more precise articulatory movements but also to a higher number of canonical movements and more pitch movements. Thus, the effort code describes the fact that, when speaking to a superior, people will generally use increased precision of articulation and a wider overall pitch range. The *Production Code* is bound to the exhalation phase in breathing. During vocalization, air is used and as a result the subglottal pressure drops and the pitch seems to drop over time. In this code, high pitch is associated with the beginning of utterances and low pitch with the end. Also, new information is signalled by high pitch, and older information by low pitch.

² "Pitch range" refers to the distance or span between the lowest and highest F0 values (a valley and a peak, respectively) observed in an utterance. Pitch range is automatically modified when pitch height increases or decreases at one point in the utterance but remains unchanged in the rest.

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