Pitch accent tonal alignment in declarative sentences in the Spanish of the Basque Country: A study of language contact

Gorka Elordieta and Aritz Irurtzun

University of the Basque Country UPV/EHU and CNRS-IKER

ABSTRACT:

Previous studies like Elordieta (2003) and Elordieta and Calleja (2005) suggested that the fact that speakers of Lekeitio Spanish produced systematic L+H* pitch accents could be due to partial transfer from the H*+L pitch accent of their native Basque dialect (transfer of H*). Here, we analyse three new Basque Spanish populations: (i) L1 Basque speakers of a Basque dialect with rising accents (Goierri), (ii) monolingual Spanish speakers from Donostia (a city of intense Basque/Spanish language contact), and (iii) monolingual Spanish speakers from Bilbao (a Spanish-prominent city). Our results show consistent posttonic peaks in all three varieties, which we argue further strengthens the hypothesis that the early alignments of Lekeitio Spanish are due to transfer from the Basque spoken there.

KEYWORDS:

pitch-accent, alignment, language-contact, Spanish, Basque

1. Introduction*

It is only very recently that studies on intonation in language contact situations have started to arise. So far, most of the studies have concentrated on the analysis of specific varieties in isolation, avoiding language-contact situations given that they were considered experimentally noisy. However, recently some advances have been made on this issue, attesting all sorts of interactions in diglossic language contact, where prosodic transfer can occur both from the more prestigious language to the less prestigious one and *vice-versa*. For instance, Colantoni and Gurlekian (2004) found Italian-like prosodic features in the Spanish of Buenos Aires, which they link to transfer from the Italian spoken by immigrants to Argentina from the second half of the 19th century to the beginning of the 20th century. O'Rourke (2005) and Muntendam and Torreira (this volume) attest some features of Quechua intonation in the Spanish spoken in Cuzco. Alvord (2006) shows that prosodic transfer occurs from English onto the dialect of Spanish spoken by Cuban immigrants in Florida. Likewise, Colantoni, Cuza and Mazzaro (this volume) also find evidence of influence from English in the choice of pitch accent types in narrative speech in Spanish for long-term Mexican immigrants in the US (an effect that is stronger among heritage speakers). Finally, Romera and Elordieta (2013) and Simonet (2008) found traits of the local Majorcan variety of Catalan in the variety of Spanish spoken there.

This paper constitutes a new step in this emerging area of research with the study of the intonation of the variety of Spanish spoken in the Basque Country, an area where Basque exists in a diglossic situation with respect to Spanish.

2. Background

*Both authors contributed equally to this work. We would like to thank first of all the speakers from whom we gathered the data, without which this paper would not exist. We are especially grateful to Irene de la Cruz for finding and recording the speakers of BS. This paper benefitted from the insightful comments of two anonymous reviewers, as well as from the guidance of the editors of this volume. This work was partially funded by the following agencies: European Commission (AThEME 613465), Basque Government (IT769-13), UPV/EHU (UFI 11/14 HiTeDI), Agence Nationale de la Recherche (ISQI 2011 JSH2 004 1), Ministry of Economy and Competitiveness (FFI2011-29218, FFI2012-38064-C02-01, CSD2007-00012), National Science Foundation (BCS-1147083) and GECT Eurorégion Aquitaine-Euskadi.

In previous studies, Elordieta (2003, 2006) and Elordieta and Calleja (2005) investigated the properties of pitch accent tonal alignment in two varieties of the Spanish spoken in the Basque Country: Lekeitio Spanish (LS) and Vitoria Spanish (VS). These varieties were carefully chosen for those studies because the sociolinguistic profile of the speakers is very different in both groups. Lekeitio is a small town in a highly Basque-speaking environment (86.3% of the inhabitants speak Basque) whereas Vitoria is the capital city of an area where the presence of Basque is much smaller these days (only 24.5% of the inhabitants know Basque, cf. Eusko Jaurlaritza (2009)) and is largely spoken as a second language. Furthermore, the variety of Basque spoken in Lekeitio has a pitch-accent word prosodic system where accents (both lexical and phrasal) have the bitonal H*+L structure of a fall (cf. Elordieta, 1998, *et seq*.). In Vitoria, on the other hand, the local variety of Basque was lost centuries ago, and nowadays Standard Basque and the dialects of native speakers of Basque from other areas of the Basque Country are spoken in the city. Standard Basque is characterized by its postinitial stress-accent system. As for pitch accents, Elordieta and Hualde (2014) characterize them as rising accents, with a peak on the tonic syllable when immediately preverbal and in narrow focus and on the posttonic syllable in other positions (labelled as (L+H)* in Elordieta and Hualde (2014)).

The results obtained by Elordieta (2003, 2006) and Elordieta and Calleja (2005) show that both LS and VS have rising pitch accents, like Peninsular Spanish, at least in read speech (cf. Estebas-Vilaplana & Prieto, 2010; Face, 2002, among others). However, there are differences in the alignment of L and H tones between LS and VS. Valleys (i.e., L target tones) are realized before the onset of the stressed syllable in both varieties, but are significantly earlier in LS than in VS. Peaks (i.e., H target tones) are realized within the tonic syllable in LS but on the posttonic syllable in VS. Table 1 summarizes the phonetic alignment of pitch accents in each variety. The alignment of L is measured with respect to the onset of the stressed syllable (which would be point 0), and the alignment of H is measured with respect to the offset of the stressed syllable (point 0). Hence, negative values for L alignment indicate that the target tone is realized before the onset of the

stressed syllable (in the pretonic syllable), and positive values indicate that the target tone is realized after the onset of the stressed syllable (within the tonic syllable). For H alignment, negative values indicate that the target tone is realized before the offset of the stressed syllable (i.e., on the tonic syllable), and a positive value indicates that the target tone is realized after the offset of the stressed syllable (i.e., on the posttonic):

	L alignment *0 = Onset of stressed syllable*	*H alignment* *0 = Offset of stressed syllable*
LS	-12 ms (SE=28.04)	-26.70 ms (SE=52.28)
VS	-21.26 ms (SE= 4.47)	36.44 ms (SE=2.25)

Table 1. General alignment of L and H alignment in LS and VS [adapted from Table 1 in Elordieta and Calleja (2005: 405)]

There is a fundamental difference in peak alignment between prenuclear and nuclear accents in Spanish, where prenuclear accents are all non-final accents in an intonational phrase and nuclear accents are the final accents. All descriptions in the literature (cf. Beckman, Díaz-Campos, McGory & Morgan, 2002; Estebas-Vilaplana & Prieto, 2010, Face, 2002; Face & Prieto, 2007; Sosa, 1999; *inter alia*) report the phonetic realization of peaks on the posttonic syllable in prenuclear accents (transcribed as L*+H in Face (2002) and others, or L+>H* in Face & Prieto (2007)). For nuclear accents, most studies based on read speech have reported rising accents with peaks within the tonic syllable (transcribed as L+H*). However, some studies have shown that falling contours are also observed on the nuclear stressed syllable, with a H in the pretonic syllable and a L target at the end of the tonic syllable (i.e., H+L*, cf. Beckman et al., 2002), and recent research based on semi-spontaneous speech revealed that low-tone accents are most common (L*, cf. Estebas-Vilaplana & Prieto, 2010).

For VS, Elordieta and Calleja (2005) observed the same prenuclear-nuclear distinction in peak alignment reported for read speech in Peninsular Spanish, namely that peaks were aligned later

in prenuclear position than in nuclear position. For LS, these authors found earlier peaks not only in the final accent of the utterance but also on the accent preceding it (that is, on the accents in the object phrase, composed of two words in their database). The following table summarizes the results in LS and VS:[1]

	Peak alignment				
	1st accent in subject	*2nd accent in subject*	*Accent in Verb*	*1st accent in object*	*2nd accent in object*
LS	-13.51 ms N=43 SE=6.25	+11.56 ms N=53 SE=7.26	-16.63 ms N=52 SE=6.59	-61.03 ms N=52 SE=5.49	-61.80 ms N=38 SE=5.19
VS	68.62 ms N=35 SE=5.51	69.58 ms N=44 SE=4.41	50.64 ms N=43; SE=4.30	68.42 ms N=44; SE=4.62	-78.58 ms N=40; SE=4.40

Table 2. Location of F0 peaks by Position in LS and VS. Negative and positive values refer to an alignment before and after the offset of the stressed syllable, respectively [adapted from Table 5 in Elordieta and Calleja (2005: 407)]

From these results, Elordieta and Calleja (2005) concluded that VS, on the one hand, is very similar to MS (displaying H alignment on the posttonic syllable in prenuclear accents and on the tonic syllable in nuclear accents (cf. Face, 2002)), and that LS, on the other hand, shows categorical differences with respect to VS, given that in LS all accentual peaks are systematically aligned within the boundaries of their corresponding tonic syllables.

Elordieta (2003, 2006) and Elordieta and Calleja (2005) explain the alignment pattern in LS as the result of transfer of the alignment of H in these speakers' native variety of Basque. That is, the H of the H*+L pitch accent in Lekeitio Basque (and in Northern Bizkaian Basque in general) is realized within the tonic syllable, and the speakers transfer this H alignment pattern to the L+H pitch accent they produce in Spanish. This pitch accent can be transcribed as L+H*. As for the

[1] There were also differences in L alignment between prenuclear and nuclear accents. In VS nuclear accents, L was aligned later than in prenuclear accents (although still before the onset of the tonic syllable), and in LS L was aligned later in the two accents in the object phrase.

earlier peak alignment in accents in object position, an interesting discussion arises. Elordieta (2006) attributes the earlier alignment to a possible transfer of 'nuclearity' in Lekeitio Basque. In Lekeitio Basque, with the canonical word order SOV, the phrase that precedes the verb (the O) contains the most prominent accents in the intonational phrase. It is important to note that it is not just the last accent within this phrase that is perceived as the most prominent accent in the utterance. Rather, native speakers seem to perceive all of the accents in the preverbal phrase with similar degrees of prominence (although a proper perception experiment is pending). In Spanish, then, these speakers would associate prominence not only with the last accent in the intonational phrase, but with all the other accents contained with it in the same syntactic phrase, which in our corpus was an object phrase.

Starting with this background, in which we have a variety of Spanish spoken by native speakers of Basque and a variety of Spanish spoken by native speakers of Spanish, a research question arises: whether the influence of Basque, in and of itself, serves as the catalyst for early accentual peaks in the Spanish spoken in Basque-speaking areas. That is, we want to see whether all L1 Basque speakers, not just native speakers of Northern Bizkaian Basque like those from Lekeitio, show early peaks in their pitch accents. In turn, this question brings with it another one, namely whether all native speakers of Spanish in the Basque Country (not just those from Vitoria) present peak alignment patterns that are similar to Peninsular Spanish. Our research questions for this paper, then, are the following:

1. Is the tonal alignment pattern of LS common to all L1 Basque speakers, notwithstanding the prosodic characteristics of the Basque dialect they speak?

2. Is the tonal alignment pattern of VS common to all monolingual/L1 Spanish speakers?

We addressed Question #1 through an analysis of the alignment of accentual tones in the variety of Spanish spoken by L1 Central Basque speakers. Central Basque refers to the group of varieties spoken in the province of Gipuzkoa, southeastern Bizkaia and the northeastern tip of Araba, that share a similar pattern of stress placement, namely a postinitial accent (cf. Hualde,

1999). We chose these speakers because they provided us with a nice testing ground in comparison with speakers of Northern Bizkaian Basque, of which Lekeitio Basque is one representative. Central Basque is not a pitch-accent variety but a stress-accent variety, with no lexical distinctions between accented and unaccented roots and affixes. Additionally, unlike Northern Bizkaian Basque, Central Basque has rising rather than falling accents, and peaks on the posttonic syllable in prenuclear accents and on the tonic in nuclear accents (Elordieta & Hualde, 2014; Elordieta & Irurtzun, in prep.). Although in principle it would seem to be expected that native speakers of Central Basque would not show early peak alignment in pitch accents in Spanish because their native dialect of Basque does not have early peaks, it is nonetheless important to analyze what the actual type of pitch accent produced by these speakers is. There exists a common impressionistic observation (among linguists and non-linguists) that inhabitants of the Basque Country sound different in their Spanish intonation from speakers from other areas of Spain, including neighbouring areas. Given the presence of early peaks in LS, there is an open question as to whether such a feature is shared by other native Basque speakers as well, or whether there are differences in Spanish intonation within the community of native Basque speakers.

Question #2 was addressed through the analysis of the alignment patterns of accentual tones in the varieties of Spanish spoken by monolingual/L1 Spanish speakers from other areas of the Basque Country. For this, we chose monolingual/L1 Spanish speakers from Bilbao and Donostia-San Sebastian, the capital cities of the provinces of Bizkaia and Gipuzkoa, respectively.[2]

With the comparison of these varieties we will be able to address which factors are necessary for prosodic transfer from Basque to Spanish in this language-contact situation. In the following section we present the experimental design and setting employed for obtaining the data.

[2] Nowadays there are very few people in the Basque Country without any knowledge of Basque, as virtually everybody in this autonomous community is exposed to Basque, even if this is limited to written form, through advertisements or official names of buildings or streets. For the purposes of this article, the group of monolingual and L1 speakers of Spanish is formed by those speakers with little knowledge of Basque or for whom Spanish is their native and clearly dominant language, which they use in their everyday lives and in which they feel more comfortable. Within this group we would also include speakers who learned Basque at school but who only use it in academic environments, using Spanish the rest of the time.

3. The experiment

3.1 The design

We designed a production experiment to obtain data which would allow us to compare three new varieties of the Spanish spoken in the Basque Country with the previously studied LS and VS. The three varieties were the following:

(i) The Spanish of L1 Basque speakers from a non-urban area of Central Basque (Goierri). This variety will henceforth be abbreviated as GS.

(ii) The Spanish of monolingual or L1 Spanish speakers from two urban areas:

(iia) Donostia-San Sebastian (an area of intense Basque/Spanish language contact). This variety will henceforth be abbreviated as DS.

(iib) Bilbao (a Spanish-prominent area where Spanish has much less contact with Basque). This variety will henceforth be abbreviated as BS.

We recorded 4 female speakers of each variety, ages 19-22. The data from Bilbao were taken from previous work (Elordieta & Irurtzun, 2012). In order to make the results directly comparable to those in Elordieta (2003) and Elordieta and Calleja (2005), the same set of sentences used as stimuli in those studies was used in this experiment (those sentences were in turn part of the stimuli in Face's (2002) study of tonal alignment in MS, so that the results could be directly comparable with those of MS). Speakers were asked to read 5 declarative sentences with SVO word order (cf. (1-5)) as answers to a previous question such as *¿Qué pasa?* 'What's up?', that is, as neutral or broad focus declarative sentences, in as natural a style as possible (we represent accent-bearing syllables in boldface).

(1) El her**ma**no de Ma**no**lo le **da**ba el **nú**mero de **vue**lo.
the brother of Manolo cl. give the number of flight
'Manolo's brother gave him/her the flight number'

(2) El **ni**ño ga**lle**go ad**mi**ra a la **ni**ña de **Má**laga.
the boy galician admire to the girl of Malaga
'The Galician boy admires the girl from Malaga'

(3) La **ma**dre de Ma**rí**a exa**mi**na la **na**ve mo**ra**da.
the mother of Maria examine the ship purple
'Maria's mother examines the purple ship'

(4) La boli**via**na de Bada**lo**na rememo**ra**ba la merme**la**da de Magda**le**na.
the Bolivian of Badalona remember the marmalade of Magdalena
'The Bolivian from Badalona remembered Magdalena's marmalade'

(5) La boli**via**na rememo**ra**ba la merme**la**da de Magda**le**na.
the Bolivian remember the marmalade of Magdalena
'The Bolivian remembered Magdalena's marmalade'

As can be seen, stimuli were almost exclusively composed of voiced and sonorant segments so that the resulting F0 track was as measurable as possible. A total of 180 utterances were analyzed (5 sentences x 3 renditions x 3 varieties x 4 speakers), and a total of 864 pitch accents were analyzed for tonal alignment (144 utterances x 5 stressed syllables and 36 utterances x 4 stressed syllables). Following the same methodology as in Face (2002), Elordieta (2003) and Elordieta and Calleja (2005), for each L+H pitch accent we measured the distance (in ms) from the L target tone to the onset of the stressed syllable and the distance from the H target tone to the offset of the stressed syllable. The data were recorded directly onto a laptop computer using a Sennheiser PC333D hypercardioid microphone in the Phonetics Lab at the Faculty of Arts of the University of the Basque Country UPV/EHU in Vitoria-Gasteiz.

3.2 Illustrative data

Below we show one pitch track per variety of utterances corresponding to item (1). Lexically accented syllables appear segmented separately and transcribed in capital letters (the acoustic analysis was carried out with *Praat*, cf. Boersma & Weenink, 2013). In section 4 we present the quantitative results obtained from the experiment.

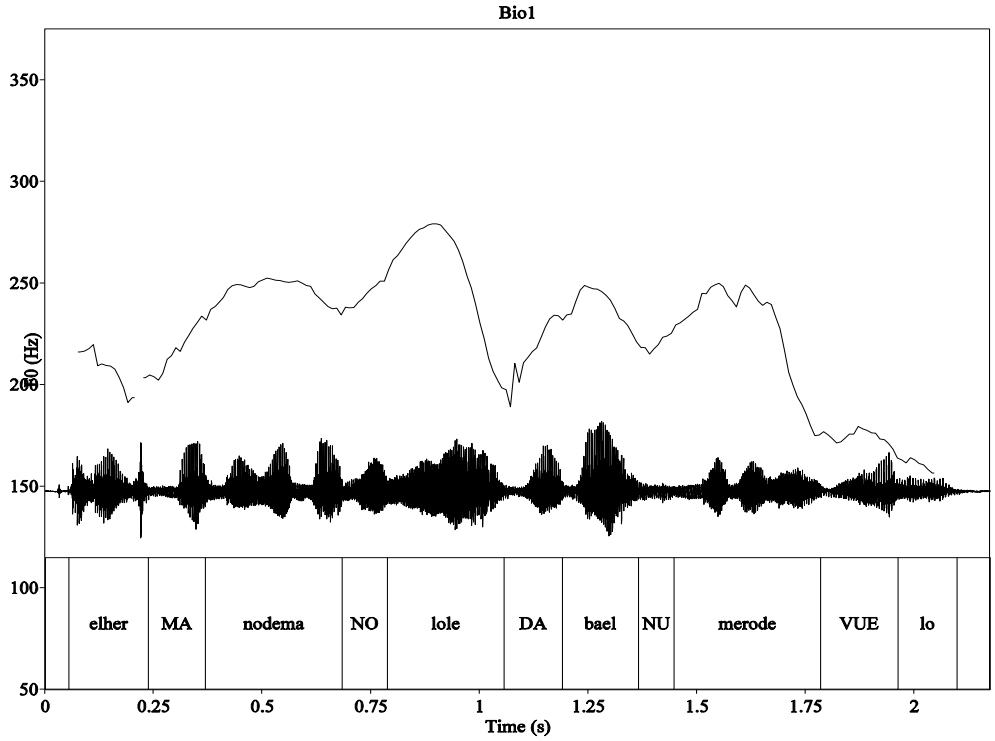

Figure 1: Bilbao Spanish (BS)

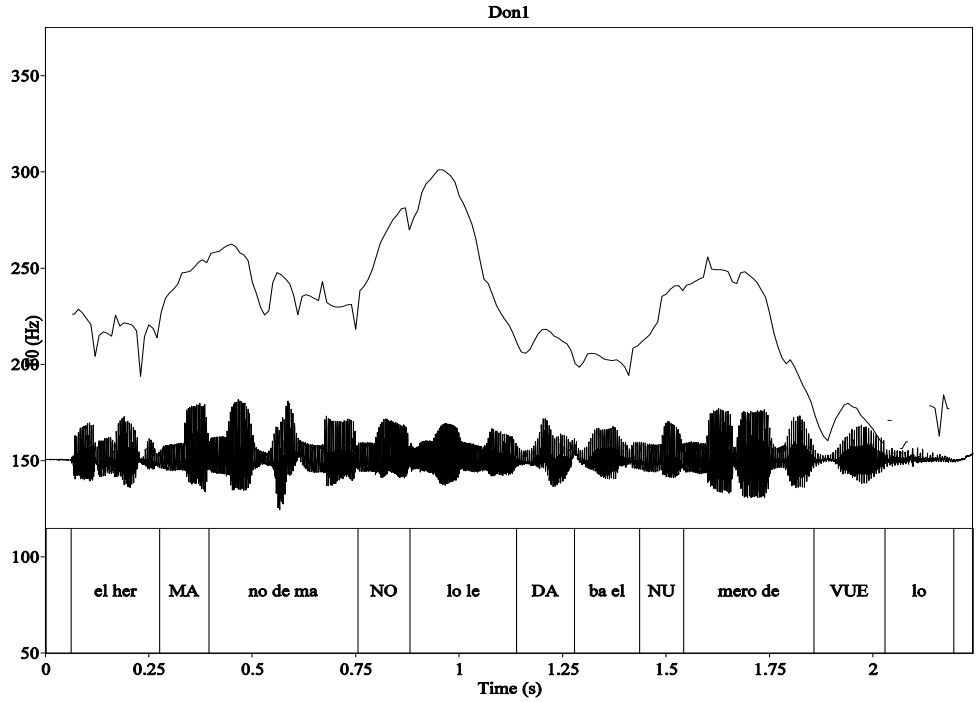

Figure 2: Donostia Spanish (DS)

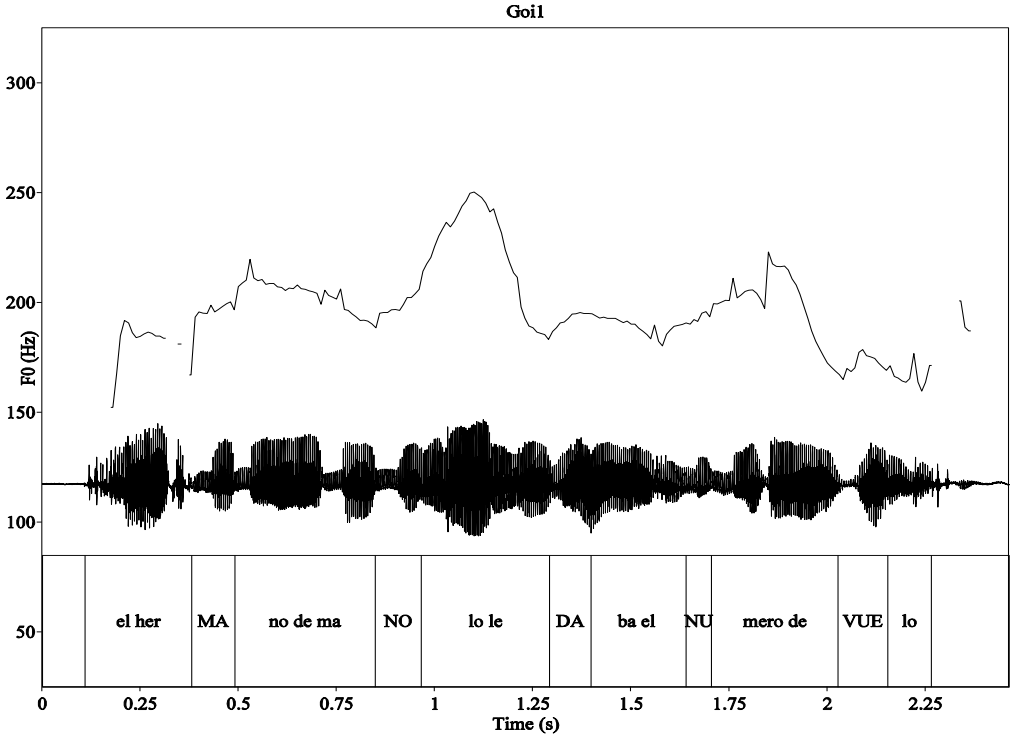

Figure 3: Goierri Spanish (GS)

4. Results

The most relevant result of the quantitative measurements is that for the three varieties studied peaks/H targets are typically phonetically aligned with the posttonic syllable. There are significant differences, however, between DS and BS on the one hand and GS on the other, as in GS peaks are aligned even later than in DS and BS. The main results are presented in Table 3 (where figures represent means).[3] A one-way ANOVA was carried out for L alignment and another for H alignment, with 'L alignment' and 'H alignment' as dependent variables, respectively, and 'Variety' (DS, BS and GS) as a factor. The differences in H alignment between GS and DS and between GS and BS were significant at $p<0.001$ and $p=0.005$, respectively ($F(2,846)=8.422$).

As for valleys or L targets, they are aligned shortly before the onset of the stressed syllable in BS, and within the tonic syllable in GS and DS (cf. Table 3). The differences in L alignment between GS and BS and between DS and BS were significant at $p=0.01$ and $p=0.021$, respectively ($F(2,843)=5.270$).[4]

	L alignment *0 = Onset of stressed syllable*	*H alignment* *0 = Offset of stressed syllable*
GS	4.67 ms (N = 276; SD = 32.93)	53.60 ms (N = 276; SD = 71.76)
DS	4.01 ms (N = 281; SD = 32.83)	32.18 ms (N = 281; SD = 68.83)
BS	-3.26 ms (N = 288; SD = 31.47)	35.87 ms (N = 288; SD = 59.91)

Table 3. L and H alignment in GS, DS and BS

The graphs in Figures 4-5 represent the alignment patterns of L and H targets with respect to the reference point used in the analysis, that is, the onset of the stressed syllable for L tones, and the

[3] Statistical analyses and graphs were made with R (R Development Core Team, 2008). N = number of tokens; SD = Standard Deviation.

[4] The rather high Standard Deviation values for H alignment are noteworthy. The explanation for this would be the substantial difference in peak alignment depending on the position of the accent in the utterance in the three varieties under study. In GS, DS and BS, peaks are realized on the posttonic syllable in prenuclear accents but on the tonic syllable in nuclear positions, as shown in Table 4 below. There are also further differences among prenuclear accents, as peaks in the accents in the subject phrase have an even later alignment that the other prenuclear accents (cf. the Appendix for statistical data).

offset of the stressed syllable for H tones. Those reference points are marked as ‘0’ in the graphs (the vertical lines represent median values, and the diamonds represent means).

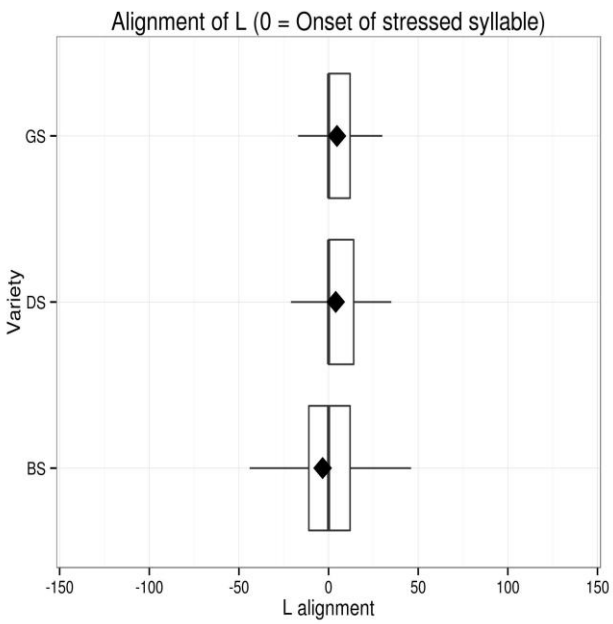

Figure 4: Alignment of L across varieties

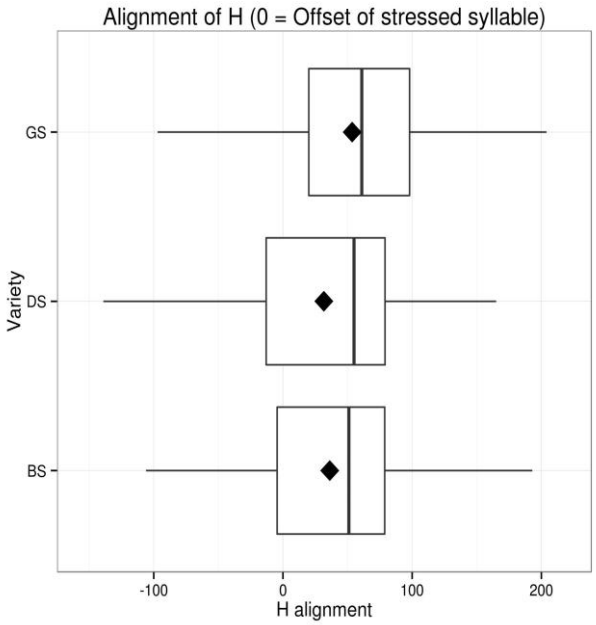

Figure 5: Alignment of H across varieties

Within each variety, speakers are rather homogeneous, as revealed by two-way ANOVA analyses with ‘L alignment’ and ‘H alignment’ as dependent variables and ‘Speaker’ as a factor. For L alignment, the only significant differences are observed between Speakers 1 and 3 of DS ($F(3,277)=5.327$, $p=0.001$), due to the rather late realization of L targets by Speaker 3 (13.90 ms), and between Speakers 1 and 3 and Speakers 3 and 4 of BS ($F(3,284)=4.137$, $p=0.010$ and $p=0.020$, respectively), due to Speaker 3’s rather early L alignment (-13.36 ms). As for H alignment, no differences are found between speakers of each variety.

Although GS presents peaks that are realized later than in DS and BS, not all GS speakers present statistically significant differences with all speakers of DS and BS. One-way ANOVAs with ‘H alignment’ as the dependent variable and ‘Speaker’ as the independent variable showed that Speaker 1 of GS differs from six of the eight speakers from DS and BS (non-significant differences with Speakers 3 and 4 of BS) and that Speaker 3 of GS differs from four of the eight speakers from

DS and BS (non-significant differences with Speakers 1 and 2 of DS and BS). However, Speaker 2 of GS presents differences only with Speaker 1 of DS, and Speaker 4 does not present any significant differences with any of the DS and BS speakers. These differences between individual speakers will be important for the discussion at the end of the next section.

As mentioned in section 2, in Peninsular Spanish there is a difference in H alignment between prenuclear and nuclear accents in neutral declarative utterances, that is, between non-final and final accents. In prenuclear accents H is realized on the posttonic syllable, whereas in nuclear accents it is realized on the tonic syllable. This difference was also reported for VS by Elordieta and Calleja (2005). For LS, a difference in H alignment was found between the accents in the object phrase and the preceding accents on the subject and on the verb, in that peaks were aligned earlier in the object phrase than in the other positions. Hence, a comparison with GS, DS and BS also calls for a separate analysis of H alignment for prenuclear and nuclear accents.

Our results also reveal that H is aligned earlier in the nuclear accent than in prenuclear accents in the three varieties: peaks are phonetically aligned with the posttonic syllable in prenuclear accents and with the tonic syllable in nuclear accents. The results for H tone alignment for each accented syllable are summarized in Table 4. As we can see, all peaks in prenuclear position (i.e., 1st-4th accent) are clearly aligned after the offset of the accented syllable (i.e., are realized on the posttonic syllable), whereas nuclear accents have negative values, that is, they have peaks within the tonic syllable.

	1st accent	2nd accent	3rd accent	4th accent	5th accent
GS	83.13 ms (N = 47; SD = 45.09)	92.03 ms (N = 58; SD = 63.23)	62.95 ms (N = 57; SD = 36.63)	71.67 ms (N = 58; SD = 54.86)	-39.21 ms (N = 56; SD = 62.56)
DS	57.27 ms (N =48; SD = 56.40)	72.98 ms (N = 60; SD = 37.00)	42.42 ms (N = 60; SD = 42.55)	53.71 ms (N = 59; SD = 41.54)	-70.35 ms (N = 54; SD = 54.62)
BS	80.58 ms (N = 60; SD = 35.67)	37.35 ms (N = 60; SD = 54.84)	51.52 ms (N = 60; SD = 34.64)	37.52 ms (N = 60; SD = 49.74)	-43.48 ms (N = 48; SD = 51.31)

Table 4. H alignment by accent in GS, DS and BS

H tone alignment is graphically represented in Figure 6. As in Figure 5, '0' is the reference point from where the phonetic alignment of the H tonal target was calculated (the offset of the stressed syllable). Additionally, as in Figures 4-5, the vertical lines represent median values and the diamonds represent means.

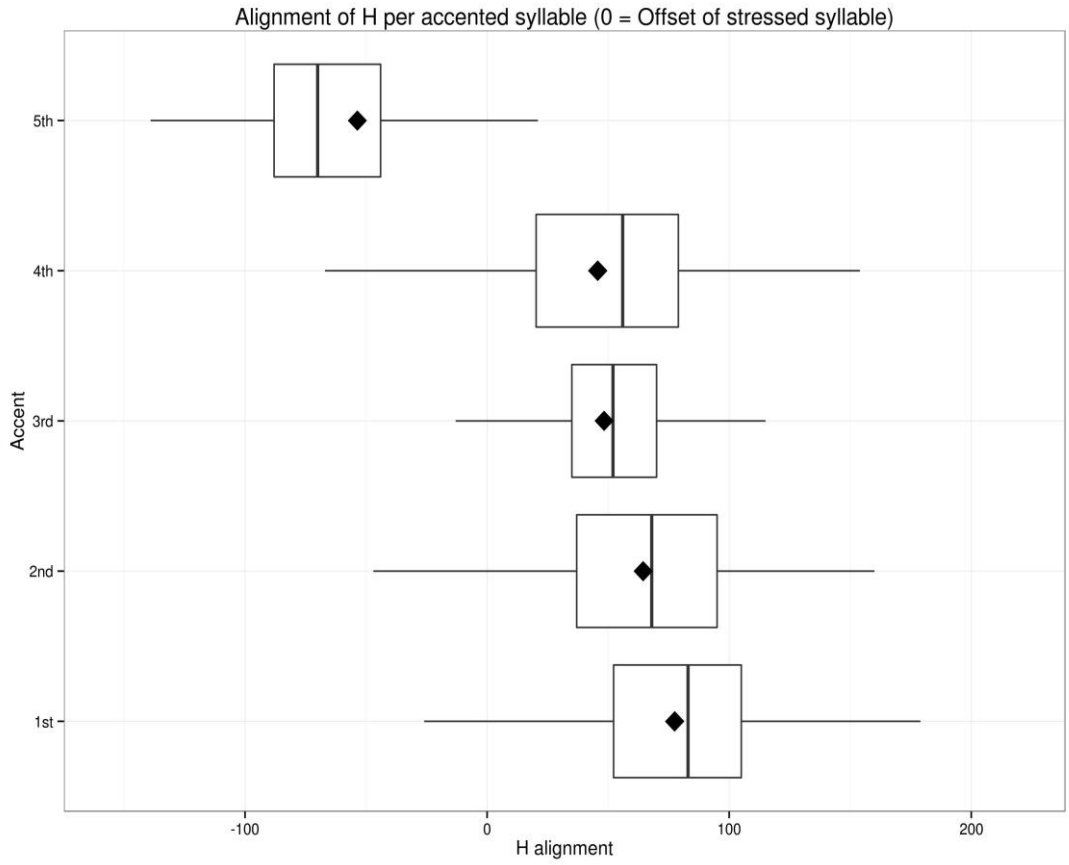

Figure 6: H tone alignment in prenuclear and nuclear accents, where prenuclear accents are the 1st to the 4th accent, and nuclear accents are the 5th accent

Taking the values of the three varieties together, we ran an ANOVA with 'H alignment' as the dependent variable and 'Accent' and 'Variety' as independent variables. There was a significant effect of each factor ('Accent': $F(4, 848)=173.281$, $p<0.001$; 'Variety': $F(2, 848)=18.493$, $p<0.001$). However, there was also an interaction between the two factors ($F=4.780$, $p<0.001$), so we made separate calculations for each variety. These analyses confirmed that the difference in H alignment

between prenuclear and nuclear accents is statistically significant at the $p<0.001$ level for each variety.[5, 6]

As shown in Table 3 above, peaks are aligned significantly later in GS than in DS and BS. When one-way ANOVAs with 'H alignment' as the dependent variable and 'Variety' as an independent variable were calculated per accent, the significant differences for the 1st, 3rd and 5th accents are only with DS ($F(2, 152)=4.764$, $p=0.018$; $F(2, 174)=4.251$, $p=0.011$; and $F(2, 158)=3.911$, $p=0.027$, respectively), and for the 2nd and 4th accents only with BS ($F(2, 175)=16.423$, $p<0.001$ and $F(2, 175)=7.208$, $p=0.001$, respectively). We will return to these differences at the end of the next section.

Our findings for DS and BS coincide with those of previous work on these varieties. For DS, Elejabeitia, Iribar and Pagola (2008) report peaks on the posttonic syllable in prenuclear accents and on the tonic syllable in nuclear accents. For BS, Elejabeitia et al. (2005, 2008) and Robles-Puente (in press) report similar alignment patterns (furthermore, Elejabeitia, Iribar and Pagola (2007, 2008) and Elejabeitia, Iribar, Pagola and Feijoó (2007) find the same type of peak alignment in VS, which was originally analysed by Elordieta and Calleja (2005)). It is difficult to establish further comparisons with these works, however, because Elejabeitia et al. (2005, 2008) are based on only one speaker, and Robles-Puente (in press) does not provide quantitative measurements or statistical results.

5. Discussion and conclusion

[5] Speakers within each variety all present this significant difference for H alignment between prenuclear and nuclear accents at the level $p<0.001$. However, Speaker 1 of DS barely misses the significance level for the difference between the nuclear accent and the 1st accent (i.e., the first accent in the subject, $p=0.052$), and Speaker 2 of BS does not have a significant difference between the nuclear accent and the 2nd accent (i.e., the second and final accent in the subject, $p=0.149$).

[6] There are some differences in H alignment between prenuclear accents, as well as in L alignment, but they are not common to all varieties and it is not straightforward to see a clear pattern, much like what Elordieta and Calleja (2005: 404-406) found for LS and VS, especially in the case of L tone alignment. We prefer to leave these statistical details for the Appendix, in order to keep our focus on the main intonational patterns of GS, DS and VS, those which are clearest and which can be compared with the clearest patterns of LS and VS, as well as Peninsular Spanish. Another reason of concern is the limit of space for the main text of the articles in this volume.

In this paper, we wanted to test whether tonal alignment patterns in pitch accents in Basque Spanish are correlated with the L1 of the speakers (Basque or Spanish). This hypothesis was formulated in two research questions: (1) Do L1 Basque speakers of different varieties have early peaks in all accents, and even earlier ones in the last phrase of the utterance, as in LS? (2) In turn, do L1 Spanish speakers from different parts of the Basque Country have delayed peaks (i.e., on the posttonic syllable) in prenuclear accents and early peaks (i.e., on the tonic syllable) in nuclear accents, as in VS? The results of our experiment lead us to conclude that the answer to the first research question is negative: early peak alignment is not a property of the variety of Spanish spoken by all L1 Basque speakers. The alignment of H targets in GS (spoken by L1 speakers of Goierri Basque) is not similar to the one in LS. In fact, it is similar to VS, with peaks realized on the posttonic syllable in prenuclear accents and on the tonic syllable in nuclear accents. On the other hand, H tone alignment in DS and BS is similar to VS: 32.18 ms in DS and 35.87 ms in BS (cf. Table 3), and 36.44 ms in VS (cf. Table 1). The answer to the second research question is therefore affirmative, but not to the exclusion of L1 Basque speakers, as the late peak alignment of DS and BS is also found in GS.

The pattern observed for LS was explained by Elordieta (2003, 2006) and Elordieta and Calleja (2005) as the result of transfer from the speakers' native variety of Basque, namely Lekeitio Basque, a local variety of Northern Bizkaian Basque. The H target of the bitonal pitch accent in Northern Bizkaian Basque is strictly aligned with the tonic syllable in H*+L pitch accents, and the alignment of the peaks with the tonic syllable in LS could be an effect of the L1 peak alignment pattern. The fact that GS has a different H tone alignment can be explained by the fact that Goierri Basque does not have the same type of pitch accents as Lekeitio Basque. Elordieta and Hualde (2014) report rising accents in the speech of native speakers of Goierri Basque, with peaks aligned with the tonic syllable in immediate preverbal position and in narrow focus and with the posttonic syllable in all other contexts.[7] Although Elordieta and Hualde (2014) have no examples of broad

[7] To be more precise, the speech analyzed by Elordieta and Hualde (2014) was that of native speakers of Goierri Basque speaking Standard Basque. The authors assume that the pitch accents used by these speakers in Standard Basque do not differ from their native variety, or are directly transferred from it, since Standard Basque took most of its morphosyntactic and lexical features from Central Basque.

focus utterances with more than one phrase preceding the verb, there are several examples of broad focus utterances with one syntactic phrase preceding the verb (the neutral word order in Basque, as found in broad focus sentences, is SOV). The sentence in (6) is one such example (tonic syllables are indicated in boldface). A broad focus F0 contour of an utterance corresponding to this sentence is shown in Figure 7. The first accent presents a delayed peak, on the posttonic syllable, and the second accent (the one on *e**pe**la*, immediately preceding the verb) has a peak aligned with the tonic syllable (in the syllable tier under the F0 contour, tonic syllables are represented with capital letters, as in figures 1-3):

(6) ga**ra**gardo e**pe**la e**dan** du
beer lukewarm drink has
‘(S)he has drunk lukewarm beer’

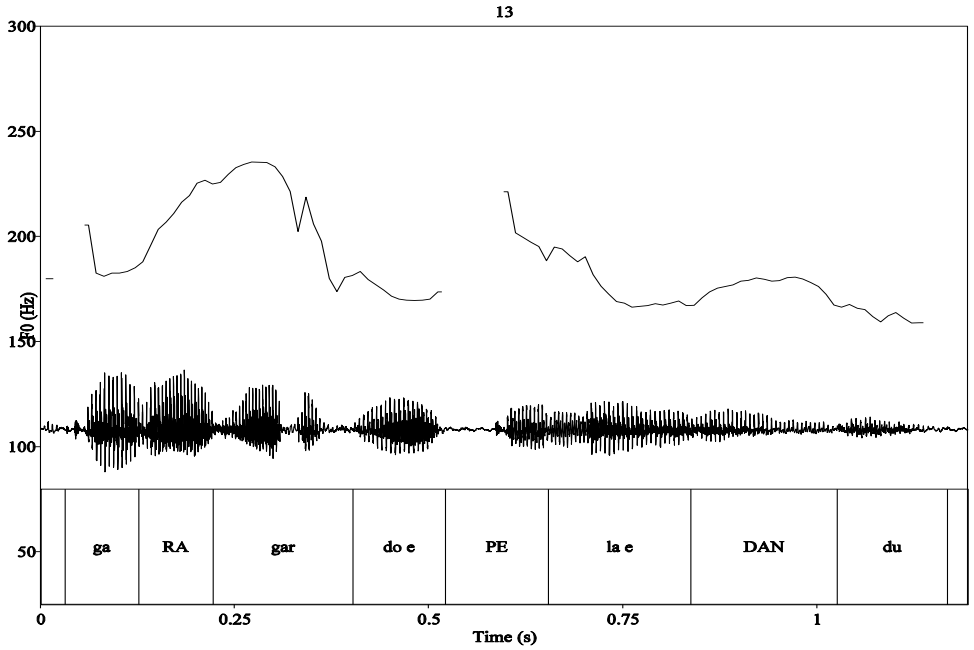

Figure 7: H tone alignment in the broad focus utterance *Garagardo epela edan du* ‘‘(S)he has drunk lukewarm beer’ (in Standard Basque) by a Goierri Basque speaker [reproduced from Figure 14.28 in Elordieta and Hualde (2014: 441)]

In their ongoing investigation of Goierri Basque pitch accent alignment in broad focus declaratives, Elordieta and Irurtzun (in progress) include in their corpus broad focus utterances with more than one pre-verbal phrase, and preliminary results confirm that peaks are aligned with the posttonic syllable in all accents except the one preceding the verb. Hence, it seems that the most common alignment of pitch accent tonal targets in Goierri Basque is very similar to Peninsular Spanish, with H targets realized on the posttonic syllable. Strict alignment of H targets with tonic syllables are only found in the immediately preverbal position. It would thus be natural to assume that the immediately preverbal position is where the nuclear accent is realized in Goierri Basque. We would only need to assume that speakers of Goierri Basque establish a parallel between the preverbal accent of Basque (the nuclear accent in Basque) and the last accent in Spanish (the nuclear accent in Spanish) in order to obtain the GS alignment patterns. Therefore, the similarity in H tone alignment with native speakers of Spanish (DS, BS, VS and Peninsular Spanish) can easily be explained if in Goierri Basque or Central Basque the prenuclear pitch accent is L*+H or L+>H* and the nuclear accent is L+H*, both similar to Spanish. Goierri speakers would thus have no difficulty in realizing Spanish L+H pitch accents, as their native type of pitch accent would not interfere. The alignment of tonal targets in pitch accents in Basque Spanish is not divided along the lines of the L1 of the speakers (Basque or Spanish), but along the lines of the type of pitch accent that is characteristic of their L1 dialect.

As stated in section 2, our finding that native speakers of Goierri Basque do not show early alignment of peaks in pitch accents in Spanish is expected because their native dialect of Basque does not have early peaks. Moreover, at this point we do not know how widespread the features of LS pitch accent alignment are among native Basque speakers. Future investigations will have to shed light on the question of whether they are only shared by native Northern Bizkaian Basque speakers, or if they are also present in the variety of Spanish spoken by speakers of the central and southern varieties of the Bizkaian dialect. Native Spanish speakers from other areas of Spain have the impressionistic belief that the variety of Spanish spoken in the Basque Country (especially that

spoken by native Basque speakers) has a different intonational pattern from that of Standard or Central Spanish. It is necessary to investigate the nature of those differences and their distribution in the Basque Country, related to the intonational properties of each local variety of Basque.

A final issue worth discussing is the fact that peaks in GS are more delayed than in DS and BS (and VS). As the quantitative results in Table 3 show, peaks are realized 53.60 ms after the offset of the accented syllable in GS, whereas they are realized 32.18 and 35.87 ms after the offset of the accented syllable in DS and BS respectively (and 36.44 ms in VS, cf. Table 1). However, a note of caution is in order, as only two of the speakers of GS present significant differences with speakers of DS and BS. Also, the later peak alignment in GS is not significantly different from both DS and BS for all accents: for some positions in the utterance GS has significantly later peaks than DS, but for other accents GS has significant differences with BS. Hence, although the differences in peak alignment between GS and DS-BS are interesting, more data from more speakers is necessary to draw a definite conclusion. If the differences are confirmed by future work, the ongoing study by Elordieta and Irurtzun (in progress) on pitch accent phonetic alignment in Goierri Basque may provide a preliminary explanation for this difference. In this variety of Basque, peaks in prenuclear accents are often aligned with the end of the word rather than with the posttonic syllable. This is more evident in longer words, composed of four or more syllables, as the accent falls on the second syllable (following the regular stress pattern) and the peak is realized on the last syllable of the word, at least two unstressed syllables away.[8] Perhaps Goierri Basque speakers transfer this substantially late alignment of H targets to Spanish. They would then realize the H targets later than in DS, BS and VS because they would tend to align the H targets with the end of the word (i.e., the posttonic syllable, as all the words in the questionnaire were paroxytonic).

[8] Sometimes there are even two peaks, one on the posttonic syllable and another one at the end of the word. These cases would suggest that the second peak is a boundary tone at the right edge of the prenuclear word (cf. the word edge tones proposed by Estebas-Vilaplana (2000, 2003) for Catalan). Whether this boundary tone is actually the H target in cases in which only one peak is observed, or whether these are instances of pitch accents with a secondary association to the right edge of the word (cf. Prieto, D'Imperio & Gili Fivela, 2005), we cannot say at this point. A full analysis of all cases is under way.

References

Alvord, S. (2006). *Spanish intonation in contact: the case of Miami Cuban bilinguals*. (Unpublished doctoral dissertation). University of Minnesota, Minneapolis, MN.

Beckman, M., Díaz-Campos, M., McGory, J. T., & Morgan, T. A. (2002). Intonation across Spanish, in the Tones and Break Indices framework. *Probus, 14*, 9-36.

Boersma, P., & Weenink, D. (2013). Praat: doing phonetics by computer [Computer program]. Version 5.3.52, retrieved 12 June 2013 from http://www.praat.org/

Colantoni, L., & Gurlekian, J. (2004). Convergence and intonation: historical evidence from Buenos Aires Spanish. *Bilingualism: Language and Cognition, 7*, 107-119.

D'Imperio, M., Elordieta, G., Frota, S., Prieto, P., & Vigário, M. (2005). Intonational phrasing in Romance: The role of syntactic and prosodic structure. In S. Frota, M. Vigário & M. J. Freitas (Eds.), *Prosodies* (pp. 59-97). Berlin: Mouton de Gruyter.

Elejabeitia, A., Iribar, A., & Pagola, R. M. (2005). Notas sobre la prosodia del castellano en Bizkaia. *Estudios de Fonética Experimental, XIV*, 247-272.

Elejabeitia, A., Iribar, A., & Pagola, R. M. (2007). Aproximación a la prosodia del castellano de Araba: Oraciones sin y con expansión en el sintagma verbal. In M. González González, E. Fernández Rei & B. González Rei (Eds.), *Actas del III Congreso de Fonética experimental* (pp. 249-260). Santiago de Compostela: Xunta de Galicia.

Elejabeitia, A., Iribar, A., Pagola, R. M., & Feijóo, B. (2007). Rasgos prosódicos del castellano de Araba. In J. Dorta (Ed.), *La prosodia en el ámbito lingüístico románico* (pp. 245-269). Madrid: La Página Ediciones.

Elejabeitia, A., Iribar, A. & Pagola, R. M. (2008). La prosodia del castellano en tres ciudades vascas: Oraciones con y sin expansión. *Language Design, 10*, 147-154.

Elordieta, G. (1998). Intonation in a pitch accent variety of Basque. *ASJU - International Journal of Basque Linguistics and Philology, 32*, 511-569.

Elordieta, G. (2003). The Spanish intonation of speakers of a Basque pitch-accent dialect. *Catalan*

Journal of Linguistics, 2, 67-95.

Elordieta, G. (2006). Spanish pitch accent alignment by Northern Bizkaian Basque speakers. In B. Fernandez & I. Laka (Eds.), *Andolin Gogoan. Essays in Honour of Profesor Eguzkitza* (pp. 269-290). Bilbao: UPV/EHU.

Elordieta, G. & Calleja, N. (2005). Microvariation in accentual alignment in Basque Spanish. *Language and Speech*, *48*, 397-439.

Elordieta, G., Frota, S., Prieto, P., & Vigário, M. (2003). Effects of constituent weight and syntactic branching on intonational phrasing in Ibero-Romance. In M-J. Solé, D. Recasens & J. Romero (Eds.), *Proceedings of the 15th International Congress of Phonetic Sciences* (pp. 487-490). Barcelona: Causal Productions Pty Ltd.

Elordieta, G., & Hualde, J. I. (2014). Intonation in Basque. In S-A. Jun (Ed.), *Prosodic Typology II: The Phonology of Intonation and Phrasing* (pp. 405-463). Oxford: Oxford University Press.

Elordieta, G., & Irurtzun, A. (2012). Estudio comparativo de alineamiento tonal en el castellano de Bilbao. In B. Camus-Bergareche & S. Gómez-Seibane (Eds.), *El Castellano del País Vasco* (pp. 119-137). Bilbao: University of the Basque Country UPV/EHU.

Elordieta, G., & Irurtzun, A. (In progress). Pitch accent tonal alignment in Goierri Basque. Ms, University of the Basque Country UPV/EHU and CNRS-IKER.

Estebas-Vilaplana, E. (2000). *The use and realization of accentual focus in Central Catalan*. (Unpublished doctoral dissertation). University College London, London.

Estebas-Vilaplana, E. (2003). Catalan pre-nuclear accents: Evidence for word-edge tones. In M.-J. Solé, D. Recasens & J. Romero (Eds.), *Proceedings of the XIII International Congress of Phonetic Sciences* (pp. 1779-1782). Barcelona: Causal Productions Pty Ltd.

Estebas-Vilaplana, E., & Prieto, P. (2010). Castilian Spanish intonation. In P. Prieto & P. Roseano (Eds.), *Transcription of Intonation of the Spanish Language* (pp. 17-48). Munich: Lincom Europa.

Eusko Jaurlaritza. (2009). *2006: IV Mapa Soziolinguistikoa*. Gasteiz: Euskal Autonomia Erkidegoko

Administrazioa, Kultura Saila.

Face, T. (2002). *Intonational Marking of Contrastive Focus in Madrid Spanish*. Munich: Lincom-Europa.

Face, T., & Prieto, P. (2007). Rising accents in Castilian Spanish: A revision of Sp_ToBI. *Journal of Portuguese Linguistics, 6-7,* 117-146.

Frota, S., D'Imperio, M., Elordieta, G., Prieto, P., & Vigário, M. (2007). The phonetics and phonology of intonational phrasing in Romance. In P. Prieto, J. Mascaró & M-J. Solé (Eds.), *Segmental and prosodic issues in Romance phonology* (pp. 131-153). Amsterdam and Boston: John Benjamins.

Hualde, J. I. (1999). Basque accentuation. In H. van der Hulst (Ed.), *Word-Prosodic Systems in the Languages of Europe* (pp. 947-993). Berlin: Mouton de Gruyter.

O'Rourke, E. (2005). *Intonation and language contact: a case study of two varieties of Peruvian Spanish*. (Unpublished doctoral dissertation). University of Illinois, Urbana-Champaign, IL.

Prieto, P, D'Imperio, M., & Gili Fivela, B. (2005). Pitch accent alignment in Romance: primary and secondary associations with metrical structure. *Language and Speech, 48,* 359-396.

R Development Core Team. (2008). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. Online: http://www.R-project.org.

Robles-Puente, S. (In press). Two languages, two intonations? Statements and yes/no questions in Spanish and Basque. In R. Campos-Astorkiza & J. A. Franco (Eds.), Supplements of *ASJU - International Journal of Basque Linguistics and Philology.*

Romera, M., & Elordieta, G. (2013). Prosodic accommodation in language contact: Spanish intonation in Majorca. *International Journal of the Sociology of Language, 221,* 127-151.

Simonet, M.. (2008). *Language contact in Majorca: an experimental sociophonetic approach*. (Unpublished doctoral dissertation). University of Illinois, Urbana-Champaign, IL.

Sosa, J. M. (1999). *La Entonación del Español: Su Estructura Fónica, Variabilidad y Dialectología*. Madrid: Cátedra.

Appendix

Within the prenuclear accents, there is also a tendency for the peaks in the accents in the subject phrase (i.e., the 1st or the 2nd accent) to present an even later alignment than the other prenuclear accents. Thus, a comparison of peak alignment across prenuclear accents shows that in GS and DS the differences in H alignment are statistically significant between the 2nd accent and the 3rd accent, i.e., the last accent of the subject phrase and the accent on the verb (GS: $F(4, 271)=54.737$, $p<0.033$; DS: $F(4, 276)=80.909$, $p=0.005$). In BS, on the other hand, it is the 1st accent on the subject that distinguishes itself from the other prenuclear accents in presenting a later peak alignment ($F(4, 283)=52.146$, $p<0.001$ between the 1st accent and the 2nd and 4th accents, and $p=0.005$ between the 1st accent and the 3rd accent). The later alignment of peaks in the final accent of the subject phrase was also observed for LS by Elordieta (2003) and Elordieta and Calleja (2005), who hypothesized that it was due to the presence of a boundary tone at the end of subjects in Peninsular Spanish, possibly H-. As was already mentioned above, Elordieta et al. (2003), D'Imperio et al. (2005) and Frota et al. (2007) have reported the consistent presence of a prosodic boundary between the subject and the verbal phrase in broad focus SVO sentences in Peninsular Spanish, especially when the subject is composed of more than one word (cf. note 4). This boundary could well be an Intermediate Phrase.

For the alignment of accentual L targets, some differences were also found per accent, but it is difficult to establish any clear pattern from them. Taking the three varieties together, the two factors have a significant effect ($F(4, 844)=5.944$, $p<0.001$ for 'Accent' and $F(2, 844)=4.354$, $p=0.013$ for 'Variety'), and there is also an interaction between them ($F(8, 844)=2.401$, $p=0.015$). Once each variety is taken into account, different patterns emerge. In GS, although on average L targets are aligned shortly after the onset of the tonic syllable (cf. Table 3), L is aligned with the pretonic syllable in the 1st accent (i.e., the 1st accent in the subject phrase). There are significant differences in the alignment of L between the 1st accent and the 2nd accent ($p=0.020$), the 1st and

the 4th accent ($p=0.008$) and the 1st and the 5th accent ($p<0.001$). In DS, there are no significant differences per position. In BS, although on average L targets are aligned with the pretonic syllable, shortly before the onset of the stressed syllable (cf. Table 3), the alignment of L targets in the second accent in the object (i.e., the last accent in the utterance) occurs within the tonic syllable, significantly different from the first and second accents in the subject ($p=0.002$ and $p=0.021$, respectively).