

# Focus and prosody in Spanish and Quechua

## Insights from an interactive task

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This paper reports the results of a study on the prosodic marking of broad and contrastive focus in three language varieties of which two are in contact: bilingual Peruvian Spanish, Quechua and Peninsular Spanish. An interactive communicative task revealed that the prosodic marking of contrastive focus was limited in all three language varieties. No systematic correspondence was observed between specific contour/accent types and focus, and the phonetic marking of contrastive focus was weak and restricted to phrase-final position. Interestingly, we identified two contours for bilingual Peruvian Spanish that were present in Quechua, but not in Peninsular Spanish, providing evidence for a prosodic transfer from Quechua to Spanish in Quechua-Spanish bilinguals.

**Keywords:** prosody; bilingualism; Spanish; Quechua

### 1. Introduction<sup>1</sup>

An important issue within the field of language contact concerns the sensitivity of different linguistic features to cross-linguistic influence, specifically what can be

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transferred from one language to another. Recent studies on prosody in contact situations have shown that the prosodic features of a language can be affected by contact with another language (e.g., Bullock, 2009, for English and French; Colantoni & Gurlekian, 2004, for Italian and Spanish; Colantoni, 2011, for Italian and Spanish and for Guarani and Spanish; Elordieta, 2003, Elordieta & Calleja, 2005 and Elordieta & Irurtzun, this volume, for Basque and Spanish; Mennen, 2004, for Greek and Dutch; O'Rourke, 2005, 2012, for Quechua and Spanish; Romera & Elordieta, 2013 and Simonet, 2011, for Catalan and Spanish). The present study attempts to contribute to this growing body of research by investigating a case of contact between two typologically distant languages, Spanish and (Cuzco) Quechua, which have been in contact for almost 500 years. These languages are said to use different strategies to encode focus. Specifically, in Spanish focus is said to be encoded in syntax and prosody, whereas in Quechua it is said to be expressed in syntax and morphology. Crucially, it has been argued that prosody is not used as a major strategy to encode focus in Quechua (O'Rourke, 2005). It should be noted, however, that this claim is based on utterances with minimally a verb and another constituent. In the present article, we investigate whether Quechua-Spanish bilinguals use prosody to encode broad and contrastive focus in Spanish and Quechua noun phrases (NPs) like monolinguals do, or whether there is evidence for cross-linguistic influence in the prosodic domain.

Previous research on the prosodic marking of focus in Quechua and bilingual Spanish (e.g., O'Rourke, 2005) is based on contexts in which syntactic and morphological strategies are available for focus marking (i.e., main clauses). In this paper, we study NPs exclusively because syntactic and morphological strategies cannot be used to encode focus within this syntactic structure of the examined languages. The word order of the NPs in our study is fixed for both languages (noun-adjective for Spanish and adjective-noun for Quechua), and morphological focus markers cannot be used within the NP in Quechua. This specific context allows us to study the role of prosody in focus marking when other strategies are not available.

An important limitation of many previous studies on prosody and focus is that they often used highly controlled read speech produced without communicative intentions. Because of this, we still know little about how information structure affects how speakers communicate in real dialogue situations. To address this issue, our study uses an interactive task that requires verbal communication between two participants. This task, which resembles the task in Swerts, Krahmer and Avesani (2002), elicits NPs consisting of a noun and an adjective in different focus conditions: broad focus, contrastive focus on the noun, and contrastive focus on the adjective. The Quechua-Spanish bilinguals in this study did the task in their two languages. Additionally, data were collected from Peninsular Spanish speakers for

comparison.<sup>2</sup> This paper reports our preliminary findings for the Peninsular Spanish, Quechua and bilingual Peruvian Spanish data. The specific research questions that we attempt to answer are: (a) to what extent is prosody (i.e., intonation contour choice and different prosodic phonetic features) used to distinguish between broad and contrastive focus by Quechua and Spanish speakers when morphological and word order strategies for focus marking are not available (i.e. in NPs)?, and (b) is bilingual Peruvian Spanish prosody affected by language contact, and if so, how? To answer these questions, the prosody of NPs under different focus conditions was studied in the three language varieties (Quechua, bilingual Peruvian Spanish and Peninsular Spanish).<sup>3</sup>

## 2. Focus structure and prosody in Quechua

In Quechua main clauses, focus is said to be encoded in morphology via evidential/focus markers and in syntax via changes in word order (Muysken, 1995; Sánchez, 2010). This study specifically examines focus marking in NPs consisting of an adjective and a noun, in which word order is fixed (adjective-noun) and focus cannot be marked morphologically (Muysken, 1995). We are interested in whether Quechua speakers use prosody to encode focus in this context and whether the Spanish speech of bilingual speakers is affected by Quechua.

Previous research on Cuzco Quechua prosody has shown that declaratives have a falling contour (Cusihuamán, 2001; O'Rourke, 2005, 2009). O'Rourke (2005, 2009) examined the prosody of utterances in broad and narrow non-contrastive focus. She found that the majority of peaks in her data were downstepped, or lower than the previous peaks, but she also observed some upstepped peaks. The pragmatic meaning of these upstepped peaks was unclear. Additionally, all final peaks and most non-final peaks in her data were aligned early, falling within the stressed syllable. It thus seemed that neither the scaling nor alignment of F0 peaks was used to distinguish between broad and narrow non-contrastive focus. O'Rourke (2005) therefore did not find

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2. We did not select a comparison group of Spanish monolinguals from Peru, because Cuzco Spanish, and possibly Lima Spanish as well, has been affected by almost 500 years of contact with Quechua. It has been argued that Lima Spanish may have received some (indirect) influence from Quechua due to the increasing migration from the Andean highlands to Lima (O'Rourke, 2005). Importantly, the participants in our comparison group were not bilingual, and their Spanish was not affected by Quechua.

3. Part of the bilingual Peruvian Spanish data were also discussed in van Rijswijk and Muntendam (2014).

evidence for a relationship between prosody and focus in Cuzco Quechua. It should be noted that she did not study contrastive focus in Quechua, as her analysis was limited to broad focus and some cases of narrow non-contrastive focus. Furthermore, she did not examine NPs, and her study did not include other potentially relevant phonetic features, such as intensity and duration.

In sum, in Quechua main clauses focus is said to be encoded in syntax and morphology. Prosodic marking of focus in Quechua has not been found in contexts where other (syntactic and morphological) strategies are available. The question arises whether focus is marked prosodically in contexts in which these other strategies are not available, such as in NPs.

### 3. Focus structure and prosody in Spanish

In Spanish main clauses, focus is said to be expressed syntactically via changes in word order (e.g., focus fronting) as well as prosodically. According to Estebas-Vilaplana and Prieto (2010), the neutral contour for Castilian Spanish declaratives is composed of prenuclear (non-final) rising accents with delayed F<sub>0</sub> peaks typically located in post-tonic syllables, and a final nuclear low accent followed by a low boundary tone. It has been claimed that for contrastive focus in prenuclear position, high accents can be produced with an F<sub>0</sub> peak within the stressed syllable rather than in the post-tonic syllable (e.g., De la Mota, 1997 for Peninsular Spanish; Face, 2001, 2002, and Vanrell, Stella, Gili-Fivela, & Prieto, 2013 for Madrid Spanish). For contrastive focus in nuclear position, it has been claimed that the stressed syllable of the focused word can be produced with a prominent high accent instead of a low accent. Moreover, it has been argued that contrastive focus can be marked by higher F<sub>0</sub> scaling (De la Mota, 1997 for Peninsular Spanish; Face, 2001, 2002 for Madrid Spanish), increased duration of the stressed syllable or word (De la Mota, 1997 for Peninsular Spanish; Face, 2001, 2002 for Madrid Spanish; Kim & Avelino, 2003 for Mexican Spanish), or higher intensity (Kim & Avelino, 2003 for Mexican Spanish).

Regarding Peruvian Spanish, O'Rourke (2005, 2012) compared the prosody of Spanish monolinguals from Lima with that of Spanish monolinguals and Quechua-Spanish bilinguals from Cuzco. Her study included broad focus utterances and utterances with contrastive focus on the subject in initial position. For Spanish monolinguals from Lima, O'Rourke found that non-final peaks were aligned in the post-tonic syllable in broad focus but within the stressed syllable in contrastive focus, as in Peninsular Spanish. Interestingly, the Quechua-Spanish bilinguals and some Spanish monolinguals from Cuzco did not use peak alignment to distinguish broad from

contrastive focus; in the data for these speakers, most peaks fell within the stressed syllable, regardless of focus type. Furthermore, for the Spanish monolinguals from Lima, a higher F0 and a wider pitch range were observed for contrastive focus than for broad focus, while the opposite pattern was observed for the Quechua-Spanish bilinguals and some Spanish monolinguals from Cuzco. O'Rourke (2005) did not observe durational differences between broad and contrastive focus. Although there was some variation among participants, Spanish monolinguals from Lima generally used more phonetic features to encode focus than Spanish monolinguals and Quechua-Spanish bilinguals from Cuzco. O'Rourke's (2005, 2012) findings therefore suggest that the prosody of bilingual Peruvian Spanish differs from that of monolingual Spanish, possibly due to contact with Quechua.

Most of the studies cited above were based on highly controlled reading tasks. Such experiments may not be ideal for the study of information structure, as participants in such studies are usually not required to communicate with a real interlocutor. This is an important issue, since information structure concerns the packaging of information (e.g., as given vs. new) precisely for the sake of communication between interlocutors (Chafe, 1976; Krifka, 2007; Lambrecht, 1994). Moreover, participants in such experiments are sometimes asked to read sentences in which specific words are capitalized (e.g., Vanrell et al., 2013), and it is not always clear whether participants are asked to produce specific intonation contours under the instructions of the experimenter (as in Prieto & Torreira, 2007), or whether they are allowed to produce their utterances freely. Although such procedures allow for better experimental control and more uniform data, they raise questions in terms of ecological validity. While such studies have shown that several prosodic strategies related to focus marking are available to Spanish speakers, they tell us little about whether and how such strategies are used in actual communicative situations. Interestingly, van Maastricht, Kraemer and Swerts (2015) recently studied the realization of contrastive focus in NPs by Dutch and Spanish speakers, and found that, while Dutch speakers consistently used accentuation to mark focus on specific words, Spanish speakers always used the same intonation pattern throughout the task regardless of the focus structure of the utterance. These findings resonate with those of Swerts et al. (2002) for Italian and Dutch, and of Turco, Dimroth and Braun (2013) for French and German. They also found that speakers of Romance languages make little or no use of prosody to mark focus in interactive communicative tasks when compared to speakers of Germanic languages, just as proposed in traditional discussions of prosodic typology (Ladd, 1996; Vallduví, 1992).

In our study, we have opted for a semi-spontaneous interactive task rather than a reading task. Although our task does not elicit purely spontaneous speech, it reflects the conditions under which language contact takes place better than the more traditional

reading tasks previously used by most studies.<sup>4</sup> Importantly, the same task was used to collect Peninsular Spanish, Quechua and bilingual Peruvian Spanish data so that the different language varieties could be compared in a valid way.

## 4. Methodology

### 4.1 Participants

Sixteen adult Quechua-Spanish bilinguals from the department of Cuzco participated in this study. Their ages ranged between 23 and 47 years (mean = 33.25). Half of the participants were male and half were female. Half were simultaneous bilinguals, having learned both languages from birth. The other half were early sequential bilinguals, with Quechua as their L1; these participants acquired Spanish around the age of four. All participants used Quechua and Spanish daily. Fourteen participants reported equal proficiency in both languages, one participant was more proficient in Spanish, and another participant reported higher proficiency in Quechua. Nine participants received higher education, whereas seven did not receive more than elementary/secondary education. Most participants were low literate in Quechua. The bilingual participants completed the task in Quechua and Spanish.

Additionally, data were collected from eight Peninsular Spanish speakers. Seven of these participants were from Castile and León and one was from Murcia. Their ages varied between 20 and 23 years. Six participants were male and two were female. All participants were raised monolingual.

### 4.2 Materials

As explained above, we used an interactive task eliciting different focus structures, similar to the one used in Swerts et al. (2002). The task was a game played in pairs. Each participant received a pile of question and answer cards with objects in different colors. Question cards were designed to elicit different focus conditions. In this paper, we only examine three conditions: broad focus (BROAD), contrastive focus on the noun (CONTRN), and contrastive focus on the adjective (CONTRA). For the BROAD

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4. Our use of a spontaneous task is further supported by Colantoni, Cuza and Mazzaro (this volume), who found prosodic differences between long-term immigrants and heritage speakers of Spanish in the United States in a reading task but not in a more spontaneous story-retelling task. The authors concluded that more spontaneous tasks better reflect language use and that reading tasks should be used with caution.

condition, participant A was instructed to ask the question in (1a). In participant B's answer in (1b), the entire NP is new information and therefore in broad focus.

- (1) a. *¿Qué tienes?*  
 what have-PRS.2SG  
 'What do you have?'  
 b. *Tengo una luna morada.*  
 have-PRS.1SG a moon purple  
 'I have a purple moon.'

For the CONTRN condition, the question and answer cards showed different objects that were the same color. This situation elicited contrastive focus on the noun:

- (2) a. *¿Tienes una flor morada?*  
 have-PRS.2SG a flower purple  
 'Do you have a purple flower?'  
 b. *No, tengo una luna morada.*  
 no have-PRS.1SG a moon purple  
 'No. I have a purple moon.'

For the CONTRA condition, the objects on the cards were the same but the colors differed. This situation elicited contrastive focus on the adjective:

- (3) a. *¿Tienes una luna negra?*  
 have-PRS.2SG a moon black  
 'Do you have a black moon?'  
 b. *No, tengo una luna morada.*  
 no have-PRS.1SG a moon purple  
 'No. I have a purple moon.'

Some participants sometimes included a verb in their answer, whereas others did not (i.e., the answer consisted exclusively of an NP). Importantly, none of the participants elided the noun or the adjective in Spanish or Quechua; answers such as *Tengo una morada*, 'I have a purple one', or its Quechua equivalent, did not occur.

The participants took turns in asking and answering questions. By the end of the game the participants had asked and answered the same questions. In total there were 20 target NPs per condition, which yielded 60 NPs per participant (960 data points for Quechua, 960 for bilingual Peruvian Spanish, and 480 for Peninsular Spanish). The task also included 40 question-answer pairs for narrow non-contrastive focus, and 30 distractors eliciting varied answers. The question-answer cards were ordered semi-randomly. Given that both participants asked and answered the same questions, the items were repeated across participants within a session. To reduce the potential for (intonational) priming effects in repeated items, numerous items intervened between the first and second repetitions.

Prior to the experiment itself, the participants received instructions and played a practice round. The Peruvian Spanish and Quechua data were recorded with a Sony MZ-NH700 recorder and a Sony ECM-MS907 microphone. The Peninsular Spanish data were recorded in a recording booth at the Radboud University.

### 4.3 Data analysis

We first inspected the data qualitatively and noticed that a number of specific intonation contours were used in each of the language varieties. This raised the question of whether different focus conditions are associated with specific contour types. For this reason, we annotated each utterance with one of the contour labels identified for the corresponding language variety. We also took several acoustic measures using Praat (Boersma & Weenink, 2014) to investigate whether F0 scaling and alignment, duration and intensity were used to express contrastive focus. F0 scaling was measured in the middle of the stressed syllables of the adjective and noun. Although more precise measures of F0 scaling could have been obtained by measuring F0 at specific points depending on contextual factors (i.e., at F0 maxima for high accents and at F0 minima for low accents), our measure should nevertheless capture salient differences in F0 scaling between focused and unfocused words across different prosodic contexts. We also measured F0 peak alignment relative to the end of the accented stressed syllables in contours that presented prominent accentual F0 peaks. The duration of the stressed syllables of the adjective and noun were measured following a standard segmentation procedure. Finally, we measured the maximum intensity values within the stressed syllables of the adjective and noun.

To study differences across focus conditions, we computed differentials in F0 scaling, duration and intensity between the measurements taken in the stressed syllables of the first and second content word in the NP of each utterance. If any of these phonetic parameters are associated with focus, the corresponding differential should vary across focus conditions, while if the phonetic parameter is not associated with focus, it should be stable. For the statistical analysis, mixed-effect regression models were fitted in R (Baayen, 2011; Baayen, Davidson, & Bates, 2008; Bates, Maechler, & Bolker, 2011).

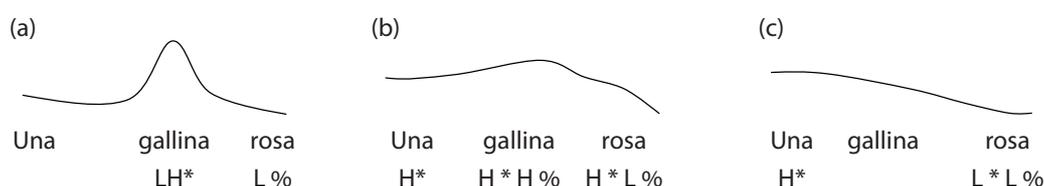
A small number of NPs that contained more than two content words were excluded from the analysis (e.g., *de color rosado* ‘of the pink color’ for *rosado* ‘pink’). Similarly, utterances with long pauses and hesitations were excluded. Moreover, for Quechua we only analyzed NPs produced without case markers, since this affected the location of primary stress. A second source of variability in the Quechua data was word order, which is relatively free in this language. Because in our data target NPs did not always occur in the same position in the sentence, to control for possible effects of phrasal position we decided to analyze NPs in sentence-final position only, since this

is the natural position for the corresponding NPs in Spanish. In the following section, the distribution of different contours (corresponding to the NP) and their realization in Peninsular Spanish, Quechua and bilingual Peruvian Spanish are discussed. In total, we analyzed 396 utterances for Peninsular Spanish, 227 utterances for Quechua, and 600 utterances for bilingual Peruvian Spanish.

## 5. Results

### 5.1 Peninsular Spanish

Figure 1 shows schematic representations of the three contours observed for Peninsular Spanish. The first contour has a very prominent high accent on the stressed syllable of one of the IP's non-final words, usually the noun, but sometimes the indefinite article *un* 'a'. The high accent was followed by an immediate fall to a low tone, which persisted until the end of the utterance (Figure 1a). Using AUTOSEGMENTAL-METRICAL notation, we represent this contour as [LH\* L%].<sup>5</sup> This contour has been previously described in the literature as lending contrastive focus to the word carrying the initial LH\* accent (Face, 2002; Hualde, 2005: 264).

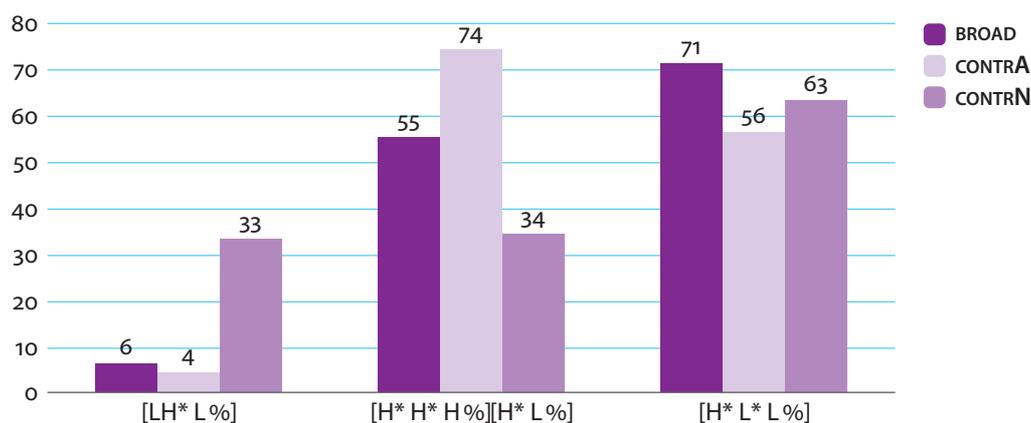


**Figure 1.** Schematic representations of the three contours observed for Peninsular Spanish for the phrase *Una gallina rosa* 'A pink chicken.'

The second contour (Figure 1b) consists of two intonational phrases. The first IP is characterized by a stretch of rising F0 leading to a high boundary tone at its right edge. The second IP starts with a slight fall to a downstepped high accent in the first stressed syllable of the second IP, and a fall to a low boundary tone. This contour is represented with the labels [H\* H\* H%][H\* L%]. It is similar to the contour described in Hualde (2005, pp. 261–263) as containing a high phrase accent (H<sup>̄</sup>) separating two phrases. According to him, this contour is typically used to separate given and new information in neutral declarative statements.

5. Our choice of AUTOSEGMENTAL-METRICAL tonal labels only serves the practical purpose of distinguishing the contours that we encountered in our data.

The third contour (Figure 1c) has a high accent on the first stressed syllable of the IP (either the indefinite article *un* ‘a’ or the word *tengo* ‘I have’), level-falling or falling F0 up to the stressed syllable of the last word of the utterance, a low accent in this same syllable, and a low boundary tone at the end of the word. In some cases, the word *tengo* ‘I have’ was produced as a separate IP ending in a high boundary tone (H%). This contour, which we represent as [H\* L\* L%], has a nuclear configuration typical of broad focus declaratives (Estebas-Vilaplana & Prieto, 2010).



**Figure 2.** Frequency of the three Peninsular Spanish contours for broad focus (BROAD), contrastive focus on the adjective (CONTRA), and contrastive focus on the noun (CONTRN)

Figure 2 presents the frequencies of the three contours in each of the focus conditions. The [LH\* L%] contour (Figure 1a) was clearly the least frequent contour ( $n = 43$ , vs.  $n = 190$  and  $n = 163$  for the [H\* L\* L%] and [H\* H\* H%][H\* L%] contours, respectively). As follows from previous descriptions in the literature, it was mostly used for the CONTRN condition ( $n = 33$ ), but it also occurred in a few cases in the BROAD and CONTRA conditions ( $n = 6$  and  $n = 4$ , respectively). Closer inspection of the data revealed that in these unexpected cases the speaker slightly hesitated immediately before producing the word carrying the prominent high accent. Another unexpected finding was that in some cases the indefinite article *un* (the first word of the NP), not the focused non-final word (the noun), carried the prominent high accent. These findings raise questions as to whether this tonal configuration always conveys contrastive focus on the word carrying the high accent, or whether it expresses a different pragmatic meaning serving a wider range of discourse functions.

The [H\* H\* H%][H\* L%] contour (Figure 1b) was used somewhat more often than the [H\* L\* L%] contour in the CONTRA condition ( $n = 74$  vs.  $n = 56$ ). This difference in frequency was statistically significant in a mixed-effects logistic regression model with contour type ([H\* L\* L%] vs. [H\* H\* H%][H\* L%]) as response, focus condition as the main predictor, and random intercepts for speaker and item ( $\beta = 1.06$ ,  $z = 2.85$ ,  $p < .005$ ).

The [H\* L\* L%] contour (Figure 1c) was frequently used in the BROAD condition (n = 71), as expected; interestingly, it also appeared frequently in the CONTRN condition (n = 63) and the CONTRA condition (n = 56).

After examining the distribution of contour types across focus conditions, we performed an acoustic analysis to investigate whether gradient phonetic parameters were correlated with focus type. Only utterances with the contours [H\* L\* L%] and [H\* H\* H%][H\* L%] were examined quantitatively, since only these contours occurred frequently in all conditions. Table 1 presents a summary of our regression analyses for these two contours. Regarding F0 scaling, no significant differences between focus conditions were found for either contour. As for F0 alignment, we only examined the [LH\* L%] contour. As shown in Figure 2, there were only a few cases of this contour for the BROAD and CONTRA conditions. Due to the small sample size, no statistical test was performed. However, we note that the few tokens observed in the BROAD condition were aligned later relative to the beginning of the stressed syllable than in the CONTRN condition (0.61 s vs. 0.44 s).

For duration, a small difference was found between the CONTRA condition and the other two focus conditions for the contours [H\* L\* L%] and [H\* H\* H%][H\* L%] ( $\beta = -11.35$ ,  $t = -2.00$ ,  $p < .05$ ). In the BROAD condition, the stressed syllable of the adjective was on average slightly shorter than that of the noun, but this difference was neutralized when the adjective was in contrastive focus. That is, the CONTRA condition was associated with a slightly longer duration of its stressed syllable. For intensity, no differences between the focus conditions were found for either contour.

**Table 1.** Regression predicted values for F0 scaling, duration and intensity differentials in the three focus conditions for the two most frequent Peninsular Spanish contours. Asterisks represent statistically significant differences ( $p < .05$ )

		[H* L* L%]	[H* H* H%][H* L%]
F0 scaling (sm)	BROAD	1.83	2.14
	CONTRA	1.62	2.29
	CONTRN	1.45	2.2
Duration (ms)	BROAD	7.2	7.4
	CONTRA	-9.2	0.9
	CONTRN	10.9	-1.7
Intensity (dB)	BROAD	5.6	4.9
	CONTRA	4.9	4.6
	CONTRN	5.3	4.9

Regarding the [LH\* L%] contour, which we did not include in our quantitative analysis, it impressionistically had louder and longer stressed syllables in the word

carrying the LH\* accent than in the adjective. This was the case regardless of the focus condition.

In sum, three contours were observed in for Peninsular Spanish. In agreement with the literature, the [LH\* L%] contour was mostly used in the CONTRN condition. However, although this contour was observed in all conditions, it was the least frequent within each condition and overall. Moreover, some cases of this contour had the prominent LH\* accent on the indefinite article *un* (e.g., *UN sombrero amarillo* ‘a yellow hat’), which we did not expect to carry contrastive focus. These observations raise questions as to whether this contour exclusively conveys contrastive focus on the word carrying the prominent LH\* accent, or whether it expresses a more general or different type of focus applicable to a wider range of discourse functions (e.g., self-repair after a disfluency).

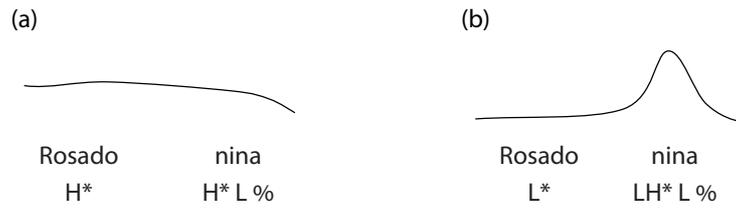
In agreement with Hualde (2005), the contour [H\* H\* H%][H\* L%] was used most often in the CONTRA condition. However, since this was only a moderate statistical tendency we cannot definitively conclude from our data that this contour primarily conveys that the first IP contains given information. Finally, the phonetic analysis of the two most frequent contours revealed one effect of focus condition: a slightly longer duration was observed in the adjective’s stressed syllable for the CONTRA condition. On the other hand, no phonetic correlates of contrastive focus were found on the noun for the CONTRN condition. Phonetic correlates of focus were therefore found only in the word in phrase-final position.

## 5.2 Quechua

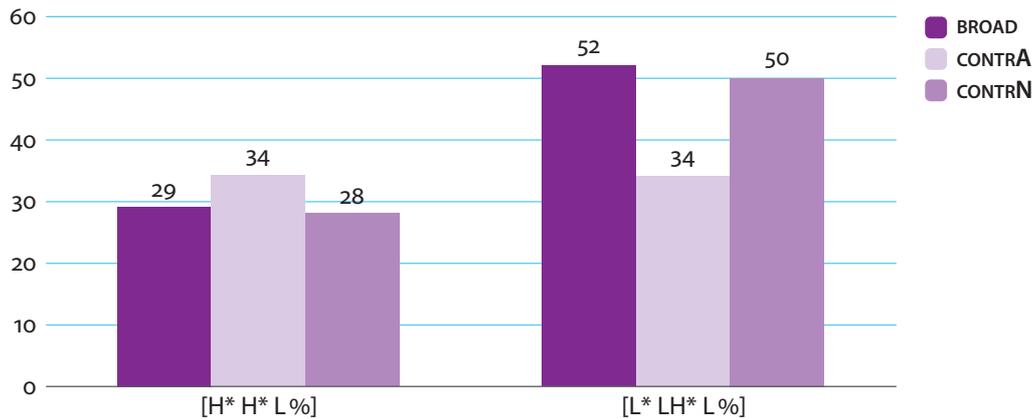
Figure 3 shows schematic representations of the two contours observed in the Quechua data. The first contour exhibited high accents on the stressed syllables of each word and a low boundary tone (Figure 3a). Although this contour was quite flat in some cases, our impression was that both stressed syllables in the NP carried high tonal prominences, since over (most of) the utterance a high pitch was maintained relative to the final low boundary tone. We represent this contour as [H\* H\* L%].

In the second contour there was a flat stretch of low or slightly rising pitch throughout the first element of the IP (the adjective) and a very prominent F0 peak on the stressed syllable of the second word (the noun) (Figure 3b). This contour is represented as [L\* LH\* L%]. Figure 4 shows the frequency of these two contours in Quechua.

The second contour, [L\* LH\* L%], was more frequently used for the BROAD (n = 52) and CONTRN conditions (n = 50) than the first contour (n = 29 and n = 28, respectively) (Figure 4). Moreover, both of the observed contours were used equally for the CONTRA condition (n = 34 for both contours). This difference between the CONTRA condition and the other conditions was statistically significant ( $\beta = -0.77$ ,  $z = -2.11$ ,  $p < .05$ ).



**Figure 3.** Schematic representations of the two contours observed for Quechua for the phrase *Rosado nina* ‘Pink fire.’



**Figure 4.** Frequency of the two Quechua contours for broad focus (BROAD), contrastive focus on the adjective (CONTRA), and contrastive focus on the noun (CONTRN)

Regarding our quantitative phonetic analysis, no differences were found between the conditions for F0 scaling (Table 2). We also examined the alignment of the prominent F0 peak in [L\* LH\* L%] contours and found that it tended to be produced slightly earlier in the CONTRN condition than in the other two conditions (CONTRA:  $\beta = -0.074$ ,  $t = -2.13$ ,  $p < .05$ ; BROAD:  $\beta = -0.087$ ,  $t = -2.27$ ,  $p < .05$ ).

For duration, differences were observed between the noun (in phrase-final position) and the adjective. The noun tended to be longer than the adjective in general, and this difference increased when the [L\* LH\* L%] contour was used, regardless of the focus condition ( $\beta = -12.21$ ,  $t = -1.96$ ,  $p < .05$ ). This difference also increased when the noun was in contrastive focus ( $\beta = -14.38$ ,  $t = -2.25$ ,  $p < .05$ ). No statistically significant difference between the CONTRA and BROAD conditions was found for either contour.

For intensity, a statistically significant difference was found between the two contours, regardless of the focus condition in which they were used. The intensity difference increased when the [H\* H\* L%] contour was used ( $\beta = -2.98$ ,  $t = -5.72$ ,  $p < .05$ ).

In summary, Quechua speakers employed two contour types in our task: [H\* H\* L%] and [L\* LH\* L%]. Similar to Peninsular Spanish, we found a statistical correlation, but not a systematic correspondence, between contour type and focus condition.

**Table 2.** Regression predicted values for F0 scaling, duration and intensity differentials in the three focus conditions for the two Quechua contours. Asterisks represent statistically significant differences ( $p < .05$ )

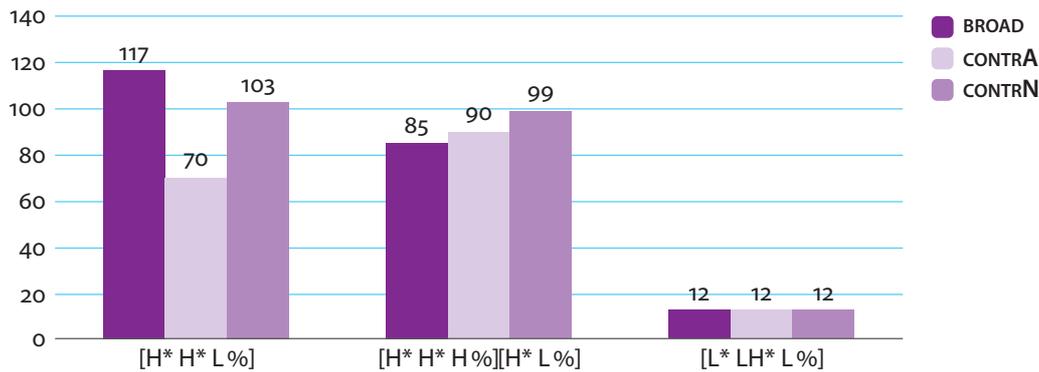
		[H*H*L%]	[L*LH*L%]
F0 scaling (sm)	BROAD	0.68	-1.07
	CONTRA	0.62	-1.03
	CONTRN	0.59	-0.97
Duration (ms)	BROAD	-10.4	-29.6
	CONTRA	-24.7	-28.7
	CONTRN	-36.8	-40.7
Intensity (dB)	BROAD	3.3	-0.3
	CONTRA	2.9	0.1
	CONTRN	2.2	-0.3

Regarding the phonetic implementation of these contours, focus type affected duration when contrast was placed on the word in final position (noun), mirroring findings for Peninsular Spanish. In the case of the [L\* LH\* L%] contour, we found that the F0 peak corresponding to the LH\* accent was earlier in the CONTRN condition than in the other two focus conditions.

### 5.3 Bilingual Peruvian Spanish

For bilingual Peruvian Spanish, three different contours were observed, each corresponding to a contour observed in one of the other two language varieties. The first contour was similar to the [H\* H\* L%] contour found for Quechua (Figure 3a), and is represented with the same tonal labels. The second contour, on the other hand, was similar to the [H\* H\* H%][H\* L%] contour in Peninsular Spanish (Figure 1b). Finally, we also observed instances of the [L\* LH\* L%] contour, which was also found in Quechua (Figure 3b). Use of this contour was not distributed evenly across speakers, with more than half of the cases (22 out 36) produced by one speaker. Interestingly, this speaker ranked second among all speakers in the usage of this contour in the Quechua data. Figure 5 shows the frequency of the three contours observed in bilingual Peruvian Spanish divided by focus condition.

[H\* H\* L%] was the most frequently used contour in the BROAD and CONTRN conditions ( $n = 117$  and  $n = 103$ , respectively), while the contour [H\* H\* H%][H\* L%] was most frequent in the CONTRA condition ( $n = 90$ ). A mixed-effects logistic regression model with contour type ([H\* H\* L%] vs. [H\* H\* H%][H\* L%]) as response, focus condition as the main predictor, and random intercepts for speaker and item



**Figure 5.** Frequency of the three bilingual Peruvian Spanish contours for broad focus (BROAD), contrastive focus on the adjective (CONTRA), and contrastive focus on the noun (CONTRN)

revealed a statistically significant difference between the CONTRA and BROAD conditions ( $\beta = 0.57$ ,  $z = 2.67$ ,  $p < .01$ ). However, the comparison between the two contrastive focus conditions did not reach statistical significance ( $p = .17$ ). As for the [L\* LH\* L%] contour, it was used equally in all conditions ( $n = 12$ ). That is, as in Quechua, it was not associated with any particular focus condition.

For the phonetic analysis we focused only on the first two contours, since the third did not provide a sufficient amount of cases for an adequate quantitative analysis (Table 3). Regarding F0 scaling, we observed a small difference for both contours in the CONTRA condition. Specifically, the F0 scaling of the accent on the adjective was on average half a semitone higher than the initial high accent in the CONTRA condition ([H\* H\* L%]:  $\beta = -0.39$ ,  $t = -2.20$ ,  $p < .05$ ; [H\* H\* H%][H\* L%]:  $\beta = -0.42$ ,  $t = -1.96$ ,

**Table 3.** Regression predicted values for F0 scaling, duration and intensity differentials in the three focus conditions for the two most frequent bilingual Peruvian Spanish contours. Asterisks represent statistically significant differences ( $p < .05$ )

		[H*H*L%]	[H*H*H%][H*L%]
F0 scaling (sm)	BROAD	2.3	2.1
	CONTRA	1.98	1.67
	CONTRN	2.26	2.03
Duration (ms)	BROAD	7.1	7.3
	CONTRA	-8.8	0.9
	CONTRN	10.2	-1.8
Intensity (dB)	BROAD	5.6	4.9
	CONTRA	5.0	4.6
	CONTRN	5.9	4.8

$p < .05$ ). That is, contrastive focus on the final word was associated with a somewhat higher F0.

For duration, we found a statistically significant difference between the CONTRA condition and the other conditions in [H\* H\* L%] contours. In particular, the adjective was longer than the noun when it was in contrastive focus ( $\beta = 19.03$ ,  $t = 2.42$ ,  $p < .05$ ) and in broad focus ( $\beta = 15.9$ ,  $t = 2.02$ ,  $p < .05$ ). No other effects of focus type were observed.

Regarding the [L\* LH\* L%] contour, which we did not study quantitatively, the word with the LH\* accent appeared to be more prominent than the one with the L\* accent in terms of duration and intensity as well as tonal cues. Interestingly, as in Quechua and as for the [LH\* L%] contour in Peninsular Spanish, this appeared to be the case regardless of the focus condition. Counter-intuitively, therefore, utterances with this contour in bilingual Peruvian Spanish had the greatest phonetic prominence on the adjective even when there was contrastive focus on the noun.

In sum, speakers of bilingual Peruvian Spanish used F0 scaling and duration to lend prominence to the adjective when it was in contrastive focus. However, no differences were found for contrastive focus on the noun. As in the other two language varieties, only the word in final position exhibited phonetic prominence related to focus.

## 6. Discussion and conclusion

In this paper we have examined the prosodic marking of focus in Peninsular Spanish, Quechua and bilingual Peruvian Spanish via a communicative task. Our aims were to examine the extent to which prosody is used in these language varieties to distinguish between broad and contrastive focus in NPs produced in an interactive setting, and whether the prosody of bilingual Peruvian Spanish speakers is affected by language contact.

Regarding the first question, we observed that specific intonation contours were used more in some focus conditions than in others. For instance, in Peninsular Spanish and bilingual Peruvian Spanish the contour [H\* H\* H%][H\* L%] was used more often for the CONTRA condition, with given and new information produced in separate phrases as observed by Hualde (2005). In Peninsular Spanish, we also found that the contour [LH\* L%], which has been found to convey contrastive focus in prenuclear position (Face, 2002; Hualde, 2005), was used more often for the CONTRN condition than in the other two conditions. These statistical trends are in agreement with previous proposals on the prosodic marking of focus in Spanish. However, we would like to stress that *all* contour types occurred in *all* focus conditions within each language variety. It is therefore possible that contour choice in Spanish and Quechua declarative utterances is not directly related to the marking of information structure. For

instance, although speakers of Spanish might tend to produce given and new information in separate IPs as a common speech planning strategy, it is unlikely that this strategy conveys any specific information structure by itself since it is very common across focus conditions in our data. Regarding the Peninsular Spanish [LH\* L%] contour, we note that it occurred in all conditions, and not just for the CONTRN condition as previous research would suggest. Moreover, in some cases the indefinite article *un* 'a', rather than the noun that followed it, carried the prominent LH\* accent in this contour. This suggests that this contour may have a broader pragmatic function than that of marking narrow contrastive focus on the word carrying the LH\* accent. Further research, preferably based on (semi-)spontaneous speech data and considering communicative functions other than the few focus types traditionally investigated, should investigate this issue.

In the analysis of phonetic parameters we observed some effects of focus type on the phonetic realization of the focused words. Interestingly, these effects were restricted to phrase-final position. In the three language varieties, the difference in phonetic prominence between the two content words in the IP tended to be slightly more marked when contrastive focus was on the final word. In Peninsular Spanish and Quechua differences were observed for duration, while in bilingual Peruvian Spanish differences were found for both F0 scaling and duration. However, these effects were relatively weak. For instance, the observed mean differences in duration due to contrastive focus were all in a range of 10 to 30 ms. The small size of these effects contrasts with the fact that some contours (i.e., [LH\* L%] in Peninsular Spanish and [L\* LH\* L%] in bilingual Peruvian Spanish and Quechua) lend very salient phonetic prominence to words in specific phrasal positions (medial or final, depending on the contour) regardless of the focus condition in which these words are produced.

Given that the use of prosody to encode focus in these languages seems rather limited, the question arises whether Spanish and Quechua speakers can perceive different focus types based on prosodic information. To this respect, it should be noted that Swerts et al. (2002) compared the prosodic marking of focus in Italian and Dutch using a communicative task similar to ours, and found that only Dutch speakers, but not Italian speakers, produced and perceived prosodic differences in connection with focus structure. Specifically, Italian listeners were not able to reconstruct the previous focus context of utterances (which *wh*-question elicited the utterance) based on their phonetic realization. A similar perception study would be needed to examine whether Spanish and Quechua listeners are sensitive to the phonetic effects of contrastive focus observed in our data.

We now turn to the second aim of our study, that is, to investigate whether the prosody of NPs of bilingual Peruvian Spanish speakers is affected by language contact. Some speakers of bilingual Peruvian Spanish produced intonation contours that they also used in Quechua, and that were not observed for Peninsular Spanish, which is

indicative of contact effects. The most frequent contour in bilingual Peruvian Spanish, [H\* H\* L%], is superficially similar to a rising-falling contour observed in Peninsular Spanish ([H\* L\* L%]). However, in bilingual Peruvian Spanish, as in Quechua, the final accent was high, not low like in Peninsular Spanish. This Peruvian Spanish contour was also the most frequently observed contour in Quechua, suggesting a prosodic influence from Quechua in Spanish.

Secondly, the [L\* LH\* L%] contour observed for bilingual Peruvian Spanish further suggests a prosodic influence from Quechua in this variety, as it also occurred in Quechua but not in Peninsular Spanish. That these two contours were observed in bilingual Peruvian Spanish and Quechua, but not Peninsular Spanish, seems to indicate a certain degree of cross-linguistic prosodic influence similar to that observed in O'Rourke (2005, 2012) and other cases of language contact (e.g., Colantoni & Gurlekian, 2004; Elordieta, 2003; Elordieta & Calleja, 2005; Elordieta & Irurtzun, this volume; Simonet, 2011).<sup>6</sup>

Regarding the direction of cross-linguistic influence, it is worth noting that the observed influence is unidirectional: Spanish adopts prosodic features from Quechua but not the other way around. Even though our Quechua-Spanish bilinguals had variable language proficiency levels, no instances of Spanish contours were observed in our Quechua data; however, numerous instances of Quechua contours were observed in the bilingual Peruvian Spanish data. These findings are in line with previous studies on prosody and language contact, which generally show prosodic transfer from the bilingual speakers' first language to their second language (Romera & Elordieta, 2013).<sup>7</sup> The question is whether the influence from Quechua into bilingual Peruvian Spanish is direct or indirect, through contact with Quechua-influenced Spanish. Romera and Elordieta's (2013) study showed indirect transfer at early stages of language contact in Majorca. In their study, Spanish monolinguals who had recently arrived in Majorca adopted prosodic features of Majorcan Catalan in their Spanish through contact with the Spanish spoken by Majorcan Catalan-Spanish bilinguals. The authors argue that this prosodic transfer can be explained by linguistic accommodation; Spanish monolinguals shifted their speech in the direction of the Spanish spoken by Majorcan Catalan-Spanish bilinguals. The present study concerns a situation of long-term

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6. A reviewer suggests that, although we did not find these contours in our modern Peninsular Spanish data, they may reflect an older form of Peninsular Spanish or monolingual Peruvian Spanish. It should be noted, however, that previous studies on Lima Spanish (e.g., O'Rourke, 2005) do not mention these contours. Furthermore, the bilingual Peruvian Spanish contour [L\* LH\* L%] was most frequently used by a speaker who frequently used this contour in Quechua as well.

7. As a reviewer pointed out, the only evidence for prosodic transfer from the speakers' second language to their first language comes from Mennen (2004).

contact, in which the influence from Quechua into Spanish may be direct or indirect, or both. For Quechua-dominant speakers, who speak a variety of Spanish that is heavily influenced by Quechua (including its prosody), the influence from Quechua into Spanish may be direct, or indirect through the input of a Quechua-influenced variety of Spanish at the time of acquisition. For Spanish-dominant speakers, this influence may be indirect: Spanish-dominant speakers may accommodate to the Quechua-influenced variety spoken by Quechua-dominant speakers and, as a result, adopt Quechua features in their Spanish.<sup>8</sup>

In sum, the use of prosody to mark contrastive focus within NPs in an interactive communicative situation was limited in Peninsular Spanish, Quechua and bilingual Peruvian Spanish. At the phonetic level, the marking of contrastive focus was weak and restricted to phrase-final position. Moreover, although some contour types were more frequent in some focus conditions than in others, no systematic correspondence was observed between specific contour and focus types. Our findings therefore suggest that the contours observed, both in Quechua and Spanish, are not directly associated with the marking of specific focus structures. Further research is needed to better determine their pragmatic meaning.

Interestingly, two contours were found for bilingual Peruvian Spanish that were present in Quechua but not in Peninsular Spanish, suggesting Quechua influence on bilingual Peruvian Spanish in the prosodic domain. Our findings do not only lend further support to the claim that prosody is sensitive to cross-linguistic influence, but also show the type and direction of cross-linguistic influence in this situation of language contact. Specifically, Quechua-Spanish bilinguals adopt Quechua patterns in their Spanish (rather than the other way around), while also maintaining some Spanish patterns.

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8. We are thankful to a reviewer for drawing our attention to linguistic accommodation and prosodic transfer through indirect contact.

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