Pre-nuclear Peak Alignment in the Spanish of Spanish-K’ichee’ (Mayan) Bilinguals

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1. Introduction

Previous research has shown that across different dialects of Spanish, the alignment of the F0 peak associated with a pre-nuclear tonic syllable in broad-focus declaratives demonstrates considerable variation (McGory & Díaz-Campos 2002; Sosa 1999; among others). While many varieties have demonstrated a pre-nuclear L+>H* pattern, with the peak occurring in a post-tonic syllable (Colantoni 2011; Face 2001, 2002, 2003; Henriksen 2012; McGory & Díaz-Campos 2002; among others), several varieties, particularly contact varieties, have been shown to display an early L+H* peak alignment pattern, with the peak occurring within the tonic syllable (Barnes & Michnowicz 2013; Colantoni & Gurlekian 2004; Elordieta 2003; Michnowicz & Barnes 2013; O’Rourke 2004, 2005) (see Figure 1).

Figure 1. Diagrams of (a) a ‘late’ or ‘delayed’ L+>H* peak occurring in a post-tonic syllable and (b) an ‘early’ L+H* peak occurring within the tonic syllable. The line represents the movement of the F0 contour, the gray box represents the tonic syllable, and the white boxes represent pre- and post-tonic syllables (adapted from Estebas & Prieto 2008).

This paper presents an acoustic analysis of peak alignment in pre-nuclear tonic syllables of broad-focus declaratives in several varieties of Guatemalan Spanish; specifically, it analyzes the speech of monolinguals and Spanish-K’ichee’ bilinguals. Previous research has shown that phonological differences between different dialects of K’ichee’ may be reflected in the Spanish spoken by the bilinguals from those dialects and that the same bilinguals may demonstrate significant between-speaker variation (Baird 2010, 2014). Nevertheless, the intonational patterns of Spanish-K’ichee’ bilinguals and of Guatemalan Spanish as a whole remain largely undocumented.

In order to quantify peak alignment among Guatemalan Spanish monolinguals and Spanish-K’ichee’ bilinguals, the following research questions are addressed: 1) how does peak alignment among these monolingual and bilingual speakers compare to other contact and non-contact varieties of Spanish?; 2) are there dialectal differences in peak alignment among the bilinguals?; and 3) are there individual speaker differences, e.g., is there any correlation between peak alignment and bilingual language dominance among the bilingual speakers? In the ensuing paragraphs of this section, previous work on peak alignment in contact and non-contact varieties of Spanish, peak alignment in K’ichee’, examples of phonological convergence among Spanish-K’ichee’ bilinguals, and the notion of...
individual speaker variation are discussed. Section 2 provides a description of the methodology for data collection and Section 3 presents an analysis of the results. These results and the implications of the present study are discussed within the realm of Spanish peak alignment research in Section 4 and concluded in Section 5 within a framework for future research on intonation patterns among Spanish-K’ichee’ bilinguals and Guatemalan Spanish in general.

1.1. Peak alignment in Spanish

Research on Spanish intonation has shown that the alignment of peaks within a pitch contour varies according to several factors, including the position within the utterance. Navarro Tomás (1944) differentiated between two positions: nuclear (final) and pre-nuclear (non-final). He noted that in Spanish declaratives, pre-nuclear peaks are often realized in a post-tonic syllable. This pre-nuclear peak alignment pattern has been sustained by recent studies among several varieties of Spanish: Peninsular (Face 2001, 2002, 2003, Henriksen 2012), Mexican (Prieto et al. 1995), Lima Peruvian Spanish (O’Rourke 2004, 2005), Western varieties of Argentine Spanish (Colantoni 2011), and others (McGory & Díaz-Campos 2002: Sosa 1999), though it is not found in all varieties (e.g., Dominican, Willis 2003).

Colantoni (2011) states that language contact situations may result in the convergence of intonation systems, when both languages become more similar, or in the development of mixed systems, when the features of one language are transferred to another. Within the study of pre-nuclear peak alignment across different varieties of Spanish, it is often in contact situations where patterns of early peak alignment occur: Peninsular Spanish in contact with Basque (Elordieta 2003), Cuzco Peruvian Spanish among Spanish-Quechua bilinguals (O’Rourke 2004, 2005), Buenos Aires Spanish historically in contact with Italian (Colantoni & Gurlekian 2004), Mexican Spanish in contact with Yukatek-Mayan (Michnowicz & Barnes 2013) and in contact with Veneto (Barnes & Michnowicz 2013). However, this is not always the case as early peak alignment was not found in Miami Cuban Spanish in contact with English (Alvord 2010) or in Argentine Spanish in contact with Guarani (Colantoni 2011).

1.2. Stress, intonation, and peak alignment in K’ichee’

K’ichee’ is a Mayan language spoken in Western Guatemala with approximately 1 million speakers, more than any other Mayan language (England 2003). It is a non-standardized language with profuse dialectal variation (Par Sapón & Can Pixabaj 2000) that is often seen on the phonological level (Baird 2010, 2011, 2014, in press; López Ixcoy 1994, 1997).

Figure 2. Peak alignment in K’ichee’: XKAM le uMAAM iWIR ‘His/her grandfather died yesterday’. The tonic syllables are capitalized.

![Waveform and F0 graph showing peak alignment in K’ichee’](image-url)
In K’ichee’, which is a non-tonal language, stress is non-phonemic and fixed in word final position on content words (López Iccox 1997), and the most prominent acoustic correlate of stress is pitch (Baird in press). 1 Stress in pre-nuclear tonic syllables is marked by a rise in F0 that peaks within the tonic syllable, whereas in nuclear syllables, the peak is realized earlier within the tonic syllable (Nielsen 2005; Baird 2010, 2014, in press) (see Figure 2).

1.3. K’ichee’ dialects analyzed in the current study

Along with Spanish monolinguals from Quetzaltenango, the second largest city in Guatemala, two dialects of Spanish-K’ichee’ bilinguals are analyzed in this study: the municipalities of Cantel and Nahualá. Cantel is geographically closer to Quetzaltenango and has more contact with the urban area than Nahualá (see Figure 3). Whereas Cantel is a dialect of K’ichee’ that has undergone some considerable changes, the Nahualá dialect is, on the other hand, rather conservative. For example, whereas Nahualá K’ichee’ maintains the ten vowel system, with phonemic vowel length, of Proto-Mayan, Cantel has the most reduced vowel system of any K’ichee’ dialect: six vowels without phonemic vowel length (Campbell & Kaufman 1985; López Iccox 1994; Baird 2010). Furthermore, the data presented in Baird (in press) show that while pitch is consistently the most prominent acoustic cue of stress across dialects of K’ichee’, duration also appears to be a prominent cue in Cantel, which does not employ duration for phonemic vowel length. Likewise, duration was not a prominent acoustic correlate of stress in dialects that have preserved phonemic vowel length, such as Nahualá (for a further review of differences between Cantel, Nahualá, and other K’ichee’ dialects, refer to Par Sapón & Can Pixabaj 2000).

Figure 3. Map of Guatemala with the K’ichee’ municipalities and Quetzaltenango shown.

1.4. Outcomes of Spanish-K’ichee’ contact

While studies of contact situations have increased over the past few decades, these studies have largely overlooked that of Spanish and Mayan languages in Guatemala. 2 Several have noted that when Spanish words with paroxytone stress patterns are borrowed into K’ichee’, the position of Spanish stress is maintained as the tonic syllable becomes final via deletion of the post-tonic segmental

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1 There are a minute number of words in K’ichee’ where the stress falls on the penultimate syllable; refer to Henderson (2012) for an explanation of these infrequent cases.

2 A few studies (Martin 1978, 1985) have explored possible syntactic convergence between Spanish and Mayan languages.
Recently, a few acoustic studies have analyzed possible cases of phonological convergence and transfer among Spanish-K’ichee’ bilinguals. One in a series of studies reported in Baird (2010) analyzed the vowels of several K’ichee’ dialects and found that those that no longer have phonemic vowel length had a significantly more centralized vowel space than those that have preserved vowel length. These dialectal differences in vowel space were reflected in the Spanish vowels spoken by the bilinguals. In another study reported in Baird (2010), a production and a perception task showed that speakers of K’ichee’ relied on rising boundary tones while seldom using the syntactic question marking particle *la* when producing and perceiving Y/N questions and it was postulated that the apparent loss of meaning, and consequential lack of use, of the syntactic question marking particle in both the production and perception of interrogatives was evidence that K’ichee’ intonation was becoming parallel to Spanish, at least in terms of Y/N questions.

1.5. Individual speaker variation among bilinguals

Unfortunately, a common practice that arises when studying bilingual populations is the conflation of different kinds of bilinguals into a single participant group (Grosjean 1998). However, as Amengual (2013:5) notes, “[b]ilingual speakers form a heterogeneous group due to multiple factors such as age of acquisition, daily language use and language environment, and their performance in each language likewise varies.” Even simultaneous bilinguals, who continue to use both languages frequently, often have a preferred or dominant language (Cutler et al. 1992).

Though there exist multiple ways to evaluate it, we would expect bilinguals of different profiles to present different contact outcomes. For example, O’Rourke (2005, 2012) found that among Spanish-Quechua bilinguals, the ability of learners to develop intonation patterns that resemble those used by native speakers of the target, non-native, language was correlated with patterns of language use and age of acquisition, and, among Spanish-Catalan bilinguals, Simonet (2008, 2011) found that bilingual language dominance affected intonation contours in both languages.

The studies mentioned in Section 1.4 provide several descriptions of the outcomes of language contact among Spanish-K’ichee’ bilinguals and present K’ichee’ dialectal differences as a possible explanation for some, but not all of these different outcomes. Nonetheless, one feature that has remained unstudied is peak alignment in pre-nuclear tonic syllables in broad-focus declaratives. This gives cause for the research questions investigated in the present study. First, similar to most of the abovementioned studied varieties of contact Spanish, do Spanish-K’ichee’ bilinguals produce early peaks in Spanish and is the rate of early peak alignment higher than that of monolinguals? Second, are there differences in peak alignment between dialects? Third, how do individual speaker differences, particularly bilingual language dominance, affect pre-nuclear peak alignment?

2. Methodology

2.1. Participants

A total of 30 speakers participated in this study: 10 Spanish monolinguals from Quetzaltenango (6 male/4 female, ages 20-46 (M: 28.6, SD: 7.5)), 10 Spanish-K’ichee’ bilinguals from Cantel (3 male/7 female, ages 18-55 (M: 29.2, SD: 11.6)) and 10 Spanish-K’ichee’ bilinguals from Nahualá (5 male/5 female, ages 18-40 (M: 25.1, SD: 6.5)).
All bilingual participants were assessed for language dominance using the Bilingual Language Profile (BLP) (Birdsong et al. 2012). The BLP is a self-scoring assessment that interprets bilingual language dominance via language history, use, competence, and attitudes. It was used because it does not simply classify a bilingual as dominant in one language or another, but that it assigns a score on a continuum that ranges from 218 in one language to zero to 218 in the other language. Therefore, a bilingual with a BLP score of Spanish-190 would be considered a bilingual that is very ‘Spanish-dominant’ whereas another speaker with a score of K’ichee’-20 would be considered a bilingual that is more ‘balanced’ between his or her two languages.

2.2. Production task

Following previous research on peak alignment in Spanish (Face 2001; O’Rourke 2004), each speaker participated in a controlled production task. Speakers were recorded using a head-mounted Shure SM10A microphone via Audacity (44.1 kHz sampling rate) in quiet rooms in the respective dialect areas. Each speaker produced a list of 20 Spanish phrases in random order twice. Proceeding in this way, 1200 tokens were analyzed in this study (10 speakers x 3 dialects x 20 phrases x 2 repetitions).

2.3. Materials

The materials used in this study are also based on previous studies of peak alignment in broad-focus declaratives (Face 2001; O’Rourke 2004). In each phrase, the target word was a paroxytone placed near the center of the phrase and the structure of the tonic syllable was always /CV/. In order to avoid microperturbations or voicelessness in the F0 track of the tonic and post-tonic syllables of the target word, all consonants in the target word were sonorants, with the exception of the word-final /s/ in two cases. Furthermore, in order to avoid tonal clash effects (Alvord 2010; Face 2002; Henriksen 2012; Prieto et al. 1995), the target word was always followed by four syllables in each phrase and these four syllables always had an order of atonic, atonic, tonic, atonic. Examples are seen in (2), with the target word italicized, and the entire list of phrases can be found in the Appendix.

(2) Veo a la *nana* de mis hijos. Quiero la *banana* de la chica.

2.4. Analysis

All tokens were analyzed in Praat (Boersma & Weenink 2012). In order to normalize the effects of speech rate on peak alignment, each token received a Relative Peak Alignment Score, which was calculated following the formula in (3).

\[
\text{Relative Peak Alignment Score} = \frac{\text{duration from syllable onset to pitch peak (ms)}}{\text{total duration of syllable (ms)}}
\]

Following the methodology set forth in previous studies that have employed a Relative Peak Alignment Score (Henriksen 2012; Lickley et al. 2005; Xu 1999; Xu & Xu 2005) the pitch peak, or H, was defined as the F0 maximum in the relevant section of the contour. Consequently, a Relative Peak Alignment Score less than one would indicate an early peak that occurred within the tonic syllable whereas a score greater than one signifies that a peak occurred in a post-tonic syllable.

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5 As pointed out by an anonymous reviewer, this methodology differed from several previous studies of Spanish peak alignment in which the distance from the end of the syllable to the peak (either positive for peaks after the end of the syllable, or negative for peaks before the end of the syllable) is measured in ms as opposed to the relative peak alignment scores given here. A relative peak alignment score is used in this study to normalize the effects of speech rate, as seen in the analysis of peak alignment in various languages (Lickley et al., 2005; Xu, 1999; Xu & Xu 2005), including Spanish (Henriksen 2012).

6 An anonymous reviewer asked that I indicate how the L tones were defined in this study. However, as this study only examines the variation in the location of the H tones, a discussion of the L tones is not included. For an analysis of the L tones among this population, see Baird (2014).
3. Results

3.1. Group analyses

Sample pitch tracks of four speakers are presented in Figure 4. All speakers in these sample pitch tracks are male and the target word in each example is baNAna.

Of the sample pitch tracks presented in Figure 4, only the speaker in (d) demonstrates an early peak alignment whereas the other two bilinguals, in (b) and (c), demonstrate late peaks similar to that of the monolingual in (a). The data from all 30 speakers is presented in boxplots in Figure 5; the dashed line represents a Relative Peak Alignment Score of 1, or the end of the tonic syllable. Subsequently, all data points to the left of the dashed line are early peaks whereas those to the right are late peaks that occurred in a post-tonic syllable. The data presented here demonstrates that the peak was aligned in a post-tonic syllable in the majority of the tokens analyzed in this study. In fact, of all 30 speakers, only three produced early peaks regularly; all three were from Nahualá. A one-way ANOVA of all the speakers revealed a main effect of dialect ($F_{(2, 1197)} = 174.114$, $p < .001$) and a Tukey post-hoc showed that, as a group, Spanish-K’ichee’ bilinguals from Nahualá produced peaks in Spanish that were significantly earlier than the peaks of the bilinguals from Cantel ($t = 6.75$, $p < .001$) and the monolinguals from Quetzaltenango ($t = 6.63$, $p < .001$). There were no statistically significant differences between the bilingual speakers from Cantel and monolinguals from Quetzaltenango ($t = .49$, $p = .863$).

These results demonstrate that although the speakers from Cantel are bilingual in K’ichee’, they still produced peaks similar to those produced by the Spanish monolinguals from Quetzaltenango. Furthermore, bilinguals from Nahualá, as a whole, produced significantly earlier peaks, even though there were only three speakers that regularly produced peaks that were aligned within the tonic syllable. However, as seen in Figure 5, there was a substantial amount of between-speaker variation, particularly in Nahualá. Indeed, separate one-way ANOVAs for each dialect revealed significant main effects of speaker in both Cantel ($F_{(9, 390)} = 6.511$, $p < .001$) and Nahualá ($F_{(9, 390)} = 41.331$, $p < .001$) and the results of the Tukey post-hocs separated the 10 bilinguals from Cantel into three homogenous subsets and the 10 bilinguals from Nahualá into seven homogenous subsets, suggesting that it may be
more felicitous to view the results from individual bilinguals as opposed to grouping them together according to dialect.

Figure 5: Boxplots of peak alignment for all 30 speakers. The dashed line represents the end of the tonic syllable: data points to the left are early peaks whereas data points to the right are late peaks.

3.2. Individual speaker factors - bilingual language dominance

As mentioned in Section 2.1, the 20 bilingual speakers analyzed in this study were assessed for language dominance by the BLP: their BLP scores, average Relative Peak Alignment and other metadata are presented in Table 1. Of note, all bilinguals from Cantel (C) were assessed by the BLP as being Spanish-dominant (S) whereas all bilinguals from Nahualá (N) were assessed as being K’ichee’-dominant (K). Moreover, the three bilinguals that regularly produced early peaks (N1, N6, N9) were assessed as being three of the four most K’ichee’-dominant bilinguals and the speaker from Cantel with the earliest peak alignment (C10) was assessed as being the second-least Spanish-dominant bilingual. The results of a Pearson correlation analysis (two-tailed) reveal a significant relationship between BLP score and average Relative Peak Alignment Score among these bilinguals ($r^2 = .508, p < .001$), meaning that there is a tendency for K’ichee’-dominant bilinguals to have earlier peaks in pre-nuclear tonic syllables than Spanish-dominant bilinguals, though these earlier peaks are not always aligned within the tonic syllable (see Figure 6).

7 An Independent Samples t-test demonstrates that this difference in language dominance between the two dialects is significant: $t_{(18)} = 6.77, p < .001$. 
Table 1. BLP scores, average Relative Peak Alignment, and other metadata from the bilingual speakers. Key: (C)antel, (N)ahualá, (S)panish-dominant BLP score, (K)’ichee’-dominant BLP Score.

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Gender</th>
<th>Age</th>
<th>Relative Peak Alignment</th>
<th>BLP Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Female</td>
<td>18</td>
<td>1.589</td>
<td>S-88.7</td>
</tr>
<tr>
<td>C2</td>
<td>Female</td>
<td>30</td>
<td>1.640</td>
<td>S-18.3</td>
</tr>
<tr>
<td>C3</td>
<td>Female</td>
<td>18</td>
<td>1.563</td>
<td>S-18.8</td>
</tr>
<tr>
<td>C4</td>
<td>Female</td>
<td>19</td>
<td>1.566</td>
<td>S-36.1</td>
</tr>
<tr>
<td>C5</td>
<td>Female</td>
<td>28</td>
<td>1.750</td>
<td>S-41.4</td>
</tr>
<tr>
<td>C6</td>
<td>Female</td>
<td>24</td>
<td>1.823</td>
<td>S-42.8</td>
</tr>
<tr>
<td>C7</td>
<td>Male</td>
<td>41</td>
<td>1.404</td>
<td>S-116.2</td>
</tr>
<tr>
<td>C8</td>
<td>Male</td>
<td>55</td>
<td>1.636</td>
<td>S-7.3</td>
</tr>
<tr>
<td>C9</td>
<td>Male</td>
<td>27</td>
<td>1.610</td>
<td>S-44.9</td>
</tr>
<tr>
<td>C10</td>
<td>Female</td>
<td>32</td>
<td>1.281</td>
<td>S-8.7</td>
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<td>N1</td>
<td>Male</td>
<td>22</td>
<td>0.949</td>
<td>K-72.1</td>
</tr>
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</tr>
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<td>21</td>
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<td>K-58.0</td>
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<td>1.233</td>
<td>K-20.3</td>
</tr>
</tbody>
</table>

Figure 6: Correlation of Relative Peak Alignment Score and BLP Score. The dashed line represents the end of the tonic syllable: data points to the left are early peaks whereas data points to the right are late peaks.
4. Discussion

The goal of this study was to analyze the alignment of the pitch peak in pre-nuclear tonic syllables in several varieties of Guatemalan Spanish according to factors such as bilingualism, dialect, and individual speaker language dominance. The research questions posed at the beginning of this study and the results of the analyses are summarized below.

The first research question addressed whether peak alignment in these varieties of Guatemalan Spanish was similar to other varieties of contact Spanish. While it is not always the case, the general pattern found in previous studies is that non-contact varieties tend to display late L+H* peak alignment (Colantoni 2011; Face 2001; Henriksen 2012; McGloin & Díaz-Campos 2002) whereas early L+H* peak alignment is often found in contact varieties of Spanish (Barnes & Michnowicz 2013; Colantoni & Gurlekian 2004; Elordieta 2003; Michnowicz & Barnes 2013; O’Rourke 2004, 2005). The results presented in this study show that late peak alignment was found in the majority of the speakers analyzed (27 of 30). The monolingual Spanish speakers from Quetzaltenango regularly produced peaks aligned in a post-tonic syllable and this suggests that Western Guatemalan Spanish follows the pattern of pre-nuclear peak alignment found in other varieties of non-contact Spanish. However, it should be noted that while the speakers from Quetzaltenango are monolingual, their Spanish should not be considered a non-contact variety as the city and surrounding areas, which were under K’ichee’ rule before the Spanish conquest, continue to be home to numerous bilinguals and interactions between Spanish monolinguals and bilinguals in Quetzaltenango are an everyday occurrence (England 2003). Furthermore, most bilinguals in this study produced late peaks at a similar rate to the monolinguals. Overall, these results support findings in Alvord (2010) and Colantoni (2011), which show that, while early peak alignment in pre-nuclear tonic syllables is frequent across several varieties of contact Spanish, it is not necessarily a feature of all contact varieties.

The second research question was whether or not there were any dialect differences between bilingual speakers. Similar to Baird (2010, 2014), the results in this study demonstrate differences in the Spanish spoken by bilinguals from different dialects of K’ichee’: overall, bilinguals from Nahualá had a significantly earlier peak alignment than Cantel bilinguals. Previous work on bilingual communities that exhibit early peak alignment has demonstrated that the alignment of the pitch peak within a pre-nuclear tonic syllable is a common characteristic of the other language spoken by the bilinguals and that the peak alignment in their Spanish is likely due to influence from their other language (Barnes & Michnowicz 2013; O’Rourke 2004, 2005). However, there are no reported structural differences in the alignment of pre-nuclear pitch peaks between Nahualá K’ichee’ and Cantel K’ichee’: pre-nuclear peaks have been reported to occur in the tonic syllable in both dialects (Baird 2014, in press). Consequently, the differences in Spanish peak alignment between these two groups of bilingual speakers are not due to structural differences in their respective dialects of K’ichee’. There were, however, non-structural differences found between these bilinguals: the results of the BLP demonstrate that the Nahualá bilinguals were significantly more K’ichee’-dominant than the Cantel bilinguals. Accordingly, the results of this specific feature of Spanish-K’ichee’ bilingual speech support the claim of Thomason & Kaufman (1988:35) that “it is the sociolinguistic history of the speakers, and not the structure of their language, that is the primary determinant of the linguistic outcome of language contact.”

The final research question addressed in this study was how individual speaker differences, particularly bilingual language dominance, affected pre-nuclear peak alignment in Spanish. As mentioned in Section 1.5, bilingual speakers display different profiles due to a variety of reasons and these varying profiles exhibit different outcomes in contact situations. While the notion of individual speaker variation in bilingual research is quite understudied, some previous research has demonstrated the phonological outcomes of individual speaker factors in bilingual speech (Amengual 2013; Bullock 2009; Guion 2003). In contrast to the previous work that has documented either early or late pre-nuclear peak alignment in different varieties of Spanish, the results of the bilinguals presented in this study demonstrate that there is individual speaker variation as both early and late peak alignment patterns were found in the data and these patterns were correlated with bilingual language dominance: K’ichee’-dominant bilinguals were more likely to display earlier peaks than Spanish-dominant bilinguals. However, there is even an overlap in the data as some of the Nahualá bilinguals produced late peaks that were similar to those produced by bilinguals from Cantel and monolinguals from Quetzaltenango (see Figures 5 and 6).
Finally, in the treatment of pre-nuclear peak alignment in the literature, and even in this study, peak alignment is often labeled as categorical, meaning that a pre-nuclear peak is either an early L+H*, or a late L+>H*. Though this categorical classification is useful, particularly in phonological analyses and descriptions of intonational contours, it should be stated that peak alignment is gradient throughout the tonic and post-tonic syllables and that there may be different phonetic implementations of the same phonological category. This gradient interpretation of peak alignment is particularly beneficial among several of the K’ichee’-dominant bilinguals in this study who produced earlier peaks than most Spanish-dominant bilinguals and Spanish monolinguals but still did not produce peaks that were early enough to be aligned within the tonic syllable, and, as a result, would still be considered a late L+>H* peak. As a whole, the K’ichee'-dominant Nahualá bilinguals had significantly earlier peaks than the Spanish-dominant Cantel bilinguals, even though only three of ten Nahualá bilinguals consistently produced early, L+H* peaks.8

5. Conclusion

The present study explores pre-nuclear peak alignment in understudied varieties of contact Spanish. Whereas peak alignment patterns vary among different varieties of Spanish, especially in contact situations, the results presented in this study demonstrate that this variance can also occur within speakers of the same variety of Spanish. Overall, the results presented in this study show differences in peak alignment among bilingual speakers that are possibly due to influence from K’ichee’, lower levels of Spanish language dominance, or a combination thereof. When compared to the peak alignment of Spanish-dominant bilinguals and Spanish monolinguals, the K’ichee’-dominant bilinguals demonstrate a tendency to produced earlier, but not necessarily early, peak alignment in pre-nuclear tonic syllables. These results reveal that structural differences between languages do not necessarily result in variations in the alignment of pre-nuclear peaks in contact Spanish and that examining individual speaker factors may be more felicitous than grouping speakers together, especially among bilingual communities.

Among Spanish-K’ichee’ bilinguals, future work is needed in order to more fully quantify peak alignment and analyses of spontaneous speech would prove to be beneficial (cf. Face 2003). Aside from peak alignment in pre-nuclear tonic syllables, a more thorough investigation of more diverse intonational contours, including, but not limited to, valleys, slopes, etc., is warranted.

In conclusion, the present study contributes to the literature on peak alignment and intonational contours across contact and non-contact varieties of Spanish. The results of this study illustrate that more variables, particularly individual speaker differences, need to be included in the analysis of contact-induced changes in peak alignment and in all intonational contours in general, as evidenced by previous work (O’Rourke 2005, 2012; Simonet 2008, 2011).

Appendix

List of phrases used in production task, target word in italics.

1. Ella es una *nena* importante.
2. Que le *daba* el dinero.
3. Que le *daba* lo difícil.
4. Quería la *mano* de su hija.
5. Todos se *daban* un abrazo.
6. Manolo *miraba* la lunita.
8. Quiero la *banana* de la chica.
9. Lo termina la *nana* de los niños.
10. Está la *doña* de la casa.
11. Yo comí la *dona* de mi hija.
12. Nunca recibo un *bono* de trabajo.
13. Hay muchas *llamas* en el monte.
14. Termina la *banana* de mi primo.
15. Ella es la *dama* de la casa.
16. Éste es el *niño* importante.
17. Tiene una *mano* muy pequeña.
18. Aquí está la *dona* con azúcar.
19. Veo a la *nana* de mis hijos.
20. Ahora la *luna* es bonita.

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8 An anonymous reviewer inquired how these findings might be elaborated within Sp_ToBI. However, as there is not system-wide data presented here, a Sp_ToBI approach was not undertaken in this particular study.
References


