

Language Contact and Intonation: The Case of Three Generations of Francophones in Peace River Region, Alberta

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Abstract: Studies examining the intonation of French in minority settings in Canada are very limited. This preliminary study investigates the intonation of French spoken in Peace River Region (PRR), Alberta. Using principles of the Autosegmental-Metrical (AM) model, I segmented and labelled Accentual Phrases in the corpus. I compiled an inventory of tonal contours from the data collected from three generations of PRR Francophones. The findings reinforce the observation that French speakers in intense contact with English use an increasing number of falling continuations. All three generations of PRR Francophones departed from the underlying tonal pattern LHiLH* that is prevalent in Parisian French in continuation and finality contours. The youngest PRR Francophone mostly uses falling continuation contours while older PRR Francophones mostly use rising continuation patterns. These differences suggest the existence of a bilingual continuum since the youngest speaker uses more 'English-like' tonal contours while the older speakers use more 'French-like' tonal structures.

Keywords: French intonation, Language contact, Autosegmental-Metrical model, Bilingual continuum, Falling continuation

1. Introduction

Since the launch of the *Phonologie du français contemporain* project database in 1999, the body of research examining intonation of French in minority settings in Canada has continued to grow. This study looks at the intonation in a variety of Canadian French in a contact situation that has not been explored before. Because this study is situated at the intersection of dialectology, intonational variation and language contact, the theoretical and methodological challenges are considerable. In fact, because of the language contact, these challenges are doubled. So, proceeding with little steps and defining very well the methodology is crucial. This is what this study is all about.

Recent research suggests that, in minority language contact situations, English intonation is affecting the realisation of continuation contours in French. Literature, based on acoustic analyses and the Autosegmental-Metrical model (AM, Pierrehumbert 1980, Ladd 1996), reports that falling continuations occur more frequently in the speech of bilinguals from minority French regions. To my

knowledge, data from the French minority community of Peace River Region (PRR) in Alberta has not been analysed using instrumental analysis and the AM model. The preliminary results reported in this study broaden our understanding of the nature of intonation in PRR French.

1.1 French in Alberta

English and French are official languages of Canada. In the province of Alberta, French speakers represent a linguistic minority: while English is spoken by 91.2% of the population, only 1.9% speak French. About 5% of the PRR population speak non-official languages (Statistics Canada, 2012.) Situated about 500 kilometres North-West of Edmonton, Peace River Region (PRR) is home to the majority of the Francophone communities dwelling in the province of Alberta. Explorers and traders from Quebec introduced French in Alberta in the 18th century, and the language was dominant at provincial level in the 19th century. As more and more immigrants from eastern Canada, the United States and Europe settled in Alberta in the 20th century, the once-majority language became a minority one (Walker 2006: 215–216), having lost to English. Owing to the Quebec origins of the early population, PRR French shares characteristics of Laurentian French (Walker 2012: 342). The term Laurentian refers to the varieties of Canadian French other than Acadian French (Côté 2010).

1.2 Previous studies of PRR French

Most research based on PRR data focuses on phonological and morphosyntactic features as well as the realization of stress. Evidence that PRR French shares the phonological and morphosyntactic features of both Laurentian French and Canadian English has been presented in Walker's (2006, 2012) studies. At the level of segmental phonology, PRR French is characterised by Laurentian French traits such as assibilation, devoicing and vowel laxing, cluster simplification, and velarization of the consonant /ɲ/ (Walker 2012). Results from Walker's (2006: 221–222) study show that PRR French shares characteristics of Canadian English such as initial stress, vowel reduction, flapping of medial /t/ and Canadian raising. Furthermore, the research reports variation in the realization of segmental features. For example, younger-generation speakers assimilate English loanwords,

calques, and codeswitching to English segmental phonology while older-generation speakers mainly use features from Laurentian French segmental phonology (Walker 2006: 218–222). This observation points to the existence of a continuum of bilingualism. In terms of stress, Walker (2006; 2012) observes that PRR Francophones realise initial stress in English loanwords the same way it is done in English. This analysis of stress placement was based on impressionistic observations. Despite the detailed descriptions of PRR French phonology provided by Walker (2006; 2012), there is lack of empirical studies examining the intonation of PRR French as a whole. The next subsection (1.3) discusses the continuum of bilingualism and how it relates to the realization of intonation and segmental features.

1.3 Continuum of bilingualism in PRR French

Research involving language data collected from bilinguals in minority language communities is met with methodological challenges. One of the challenges is how to take into account the relationship between age and proficiency. To this end, researchers seeking to understand societal bilingualism place bilingual speakers on a continuum of bilingualism (Silva-Corvalán 1991: 151). The continuum of bilingualism is also known as the proficiency continuum (Dorian 1981: 114), the age-and-proficiency continuum (Dorian 2010: 15), the continuum (Elías-Olivares (1979: 120), or the oral proficiency continuum (Silva-Corvalán 2002: 11). This concept implies that bilingual speakers can be positioned at different locations on a continuum depending on their degree of dominance in either the majority language or the minority language. During the course of their life, individuals may move to different points on the bilingual continuum (Silva-Corvalán 2002: 11). This assertion suggests that, depending on circumstances, bilinguals may be dominant in different languages at different stages of their lives.

Methodologies employed for placing speakers on a bilingual continuum vary from researcher to researcher. While most researchers use results from proficiency tests as a basis for deciding a bilingual speaker's dominant language, methodologies of measuring the proficiency vary. On the one hand, some researchers use translation exercises (Dorian 1981: 117) and evaluation of

conservatism versus innovation in the use of grammar and lexical items in speech data (Dorian 2010: 15) to measure proficiency. On the other hand, other research works look at the distribution of linguistic varieties that bilinguals chose to use in a number of social interactions (Elias-Olivares 1979: 122). Results from the latter study show that first-generation speakers are dominant in Popular Spanish while second- and third-generation bilinguals use predominantly English or Caló (Elias-Olivares 1979: 126–7)

Silva-Corvalán (2002: 63) provides a more detailed method she used to measure proficiency in English and Spanish in the data collected from Los Angeles. The researcher measures proficiency using the following criteria: mode of delivery, code-switching, evaluative techniques, clause complexity, use of referents and topic reference continuation, and the verb system. In the case of PRR Francophones, speakers are positioned on the bilingual continuum based on the amount of codeswitching they employ and the extent to which they assimilate English loanwords and calques to English or French segmental phonology features. Walker (2006) observes that three generations of PRR speakers vary in the ways they assimilate English sounds to either English or French phonology. For example, younger-generation speakers assimilate English loanwords and calques to English segmental phonology while older speakers realize English loanwords and calques using features of French segmental phonology. On an English and French bilingual continuum, older-generation PRR speakers are relatively more dominant in French while younger-generation speakers are considered to be relatively more dominant in English. It remains to be seen whether the nature of language dominance among these PRR bilingual speakers observed by Walker (2006) could translate into differences in the way these Francophones realise French intonation.

What is lacking in these studies of language contact situations is information concerning the realization of intonational systems in contact. One of the studies that reports on the realization of intonation by bilinguals in a minority language setting was conducted by Cichocki and Lepetit (1986). The goal of that study is to examine the realization of declination by Francophone students in

Welland, Ontario. Based on the students' responses on a language background questionnaire about English or French use in various situations, the speakers are placed on a bilingual continuum. The first group comprises Franco-dominant students while the second group is made up of balanced French and English bilinguals. Anglo-dominant students make up the third group. The study provides evidence that the highest occurrence of "more English-like" declination instances is found in the speech data collected from balanced bilinguals (Cichocki and Lepetit 1986: 245). The present study, however, does not focus on the realization of declination by PRR Francophones

Besides the analysis of declination, researchers examining speech data obtained from bilinguals from minority French communities have analysed realization of tonal contours. Situated within the AM framework, these studies are based on speech data collected from Ontarian and Acadian Francophones. Those research works present evidence that French continuation contours are characterised by final low tones rather than final high tones attested in Parisian French data reported in Jun and Fougeron (2002). For example, Kaminskaïa (2010) reports finding relatively higher frequency of occurrence of falling continuations in the speech data collected from younger-generation Ontarian Francophones. Cichocki (2002: 150–151) analyzes the realization of tones in Accentual Phrases (AP) and Intonational Phrases (IP) in Acadian French. Findings from that analysis reveal the occurrence of low tones (L) in AP-final positions instead of high tones (H) that mostly occur in AP-final positions in Parisian French

The literature reviewed so far argues that bilingual speakers in minority settings can be placed on a bilingual continuum depending on their dominant language. Further research based on French speech data collected from minority language contact communities indicates that French intonation presents final low tones in continuations instead of final high tones. Kaminskaïa (2010: 35) attributes the presence of final low tones in continuations to the convergence between English and French intonational systems. What is missing from previous PRR French studies is an intonational study that will not only examine the

presence of final low tones in continuations but that will also use these findings to position PRR Francophones on a bilingual continuum.

The goal of this article is to provide a preliminary analysis of PRR French intonation using data from three generations of PRR Francophones. Like Ontarian Francophones, PRR Francophones originally came from Quebec. Therefore, we expect the data to show similarities between these two varieties of Canadian French and Quebec French in terms of intonational grammar. Like other varieties of Canadian French in contact with English, PRR French is expected to provide evidence of a relatively higher distribution of final low tones in continuations or non-final contours. The third question addresses the relationship between tonal realization and placement of a speaker on a bilingual continuum. Depending on the distribution of final low tones in the PRR data, we attempt to place the three PRR Francophones on a bilingual continuum.

The next subsection 1.3 reviews the AM-based model that applies to the study of French intonation.

1.4 Jun and Fougeron's (1995, 2000, 2002) model of French intonation

For the purposes of this study, I adopt Jun and Fougeron's (1995, 2000, 2002) model of French intonation. This model adapts the Autosegmental-Metrical (AM) model of intonational phonology to the analysis of French intonation. The name of this model of intonational phonology was coined by Ladd (1996) in reference to the theory developed by Pierrehumbert (1980), Beckman and Pierrehumbert (1986), and Pierrehumbert and Beckman (1988).

Jun and Fougeron's model stipulates that French has tonal targets such as H and L which either associate with stressed syllables or demarcate a prosodic unit. Tones that are associated with stressed syllables are indicated as H* or L*. Prosodic units in French are hierarchically organised in accordance with the Strict Layer Hypothesis (Selkirk 1986, Nespor and Vogel 1986) which states that a higher prosodic unit wholly contains the immediately lower prosodic unit. Therefore, Jun and Fougeron (1995) propose the Intonational phrase (IP) and the Accentual phrase (AP) as French prosodic units. The underlying tonal structure of the AP is LHiLH*. I am going to present detailed descriptions of the AP as

outlined by Jun and Fougeron (2002). Such descriptions will eventually help to highlight differences between the AP structures found in Jun and Fougeron (2002) and the AP features from PRR French data. The major characteristic of Parisian French intonation is that its APs are demarcated by an initial rise (LHi) and a final rise (LH*). These rising pitch movements are termed as secondary and primary stress, respectively. The rising pitch movement LH* marks the AP final boundaries, while LHi demarcates the initial boundary of an AP. The most common AP tonal structure is LHiLH*. Not all the tones making up the underlying tonal pattern are realized on the surface. When time or space is lacking, some tones may not be realized at all. Variants of the underlying tonal pattern include LH*, LLH*, LHiH*, HiLH* and LHiL* (Jun and Fougeron 2002: 153–154). Either L or Hi can mark initial boundary. Hi is an initial rise while H* is associated with the final full syllable of a phrase. APs that contain fewer than four syllables mostly have LH*, LLH*, and LHiH* tonal structures (Jun and Fougeron 2002: 156). Jun and Fougeron (2002: 156) observe that the LHiL* tonal structure occurs less frequently in Parisian French data and may be a continuation or a finality contour. In terms of AP length, Jun and Fougeron (2000) note that the average number of syllables in an AP ranges from 3.5 to 3.9 syllables.

This AP discussion is based on the analysis of data collected when Parisian French speakers read sentences and a story in a laboratory setting. Research investigating the realization French AP tonal patterns in natural speech production and by Francophones from minority settings is very scarce. My study attempts to broaden our understanding of the realization of AP tonal patterns using French data collected from French and English bilinguals. To achieve this objective, I established an inventory of realizations of the LHiLH* tonal pattern and its variants using data collected from PRR bilinguals. That inventory was compared with tonal realizations outlined in Jun and Fougeron's model of French intonation.

1.5 AM model and Canadian French Intonation

This section reviews literature that shows methods of data analysis used by researchers interpreting Laurentian French data using the AM model principles.

One of the earliest attempts at applying the principles of AM model to Laurentian French was made by Poiré et al. (1990: 95). In that research, investigators segmented APs using melodic variations associated with pitch accents and boundary tones. In addition, the principles of the AM model are applied to Quebec French in a study examining intonational contours and the duration of the Intonational Phrase (Poiré and Cedergren 2002). Unlike the data used by Jun and Fougeron (2002) this study is based on spontaneous speech data. The major research contribution from that study is the procedure for coding hesitations and interrupted speech within the spontaneous data. Although these findings were conducted in Quebec French which is the majority language at provincial level, there is a growing interest in applying the AM model to the analysis of French intonation in settings like Ontario and Acadia where French is in intense contact with English.

In subsection 1.3, I reported Jun and Fougeron's (2002) observation that rising pitch patterns characterise non-final APs. On the contrary, recent research provides evidence that the falling pitch patterns are on the increase in varieties of French that are in intense contact with English such as Ontarian French (Kaminskaïa 2010) and Acadian French (Cichocki 2002). Falling continuations such as HiL* and LHiL* occur in relatively large numbers in the Ontario French corpus (Kaminskaïa 2010: 3). The researcher attributes the increase in the use of the falling continuations such to the convergence between French and English intonation grammars. Similarly, Cichocki (2002) observes that accented syllables in Acadian French do have a fall as in HiL* and LHiL* tonal contours as opposed to rising tonal contours observed in Parisian French data by Jun and Fougeron (2002). The analysis of PRR French data will help examine frequency of these tonal realizations in the data.

2. Methods

2.1 Data and participants

The PRR French data used in this research comes from the *Phonologie du français contemporain* project database (Durand et al. 2009). The original corpus is comprised of recorded spontaneous speech of eleven PRR French speakers.

However, my study is limited to the data from three generations of PRR Francophone males from the same family used in Walker (2006). The speakers are FRP1, FRP2 and FRP3. FRP1 is FRP2's son while FRP3 is FRP2's father-in-law. At the time of the oral interviews the youngest speaker, FRP1, was 14 years old while the oldest speaker was 72 years old. FRP2 representing the middle-generation was 51 years old. Walker (2006: 221–222) notes that younger-generation speaker (FRP1) realizes English loan words using initial stress as opposed to word-final stress characteristic of French intonation system. That conclusion is based on impressionistic observations. The present study re-analyses the data collected from these three Francophones using Praat in order to establish the distribution of tonal contours as outlined by Jun and Fougeron (2002). Furthermore, my research seeks to verify whether falling continuations previously observed in Ontarian and Acadian French data have a high distribution in PRF data.

2.2 Data segmentation and F0 measurements

The data was analysed using Praat (Boersma and Weenink 2009). I used EasyAlign (Goldman 2008) to segment some of the utterances into phones and syllables. Because the spontaneous speech data contains hesitations, repetitions, syllable deletions and interrupted speech, some utterances could not be segmented using EasyAlign. Instead, I manually corrected the data segmentation using waveforms and the spectrogram to ensure that the SAMPA transcriptions in EasyAlign are aligned with the actual syllables produced by the speakers.

After completing the segmentation of the speech data into phones and syllables, I proceeded to phrase the data into APs. In some cases an AP was demarcated by a pause. In other cases, the final full syllable of a content word demarcated an AP because it carries stress in French. If the speaker was interrupted by the interviewer, only the sound that was uninterrupted was transcribed and its pitch was measured in Hz. Following Poiré and Cedergren (2002), I used the label *-h* to indicate truncated words with relatively high fundamental frequency values. The label *-b* was used for truncated words with relatively low fundamental frequency values. These two labels were also used to

mark hesitations. If a word was repeated, only the first instance was retained. In cases where speakers omitted certain syllables from the words produced, I transcribed and segmented the actual syllables they produced not what they intended to say. At last, when compiling the distribution of AP tonal patterns I dropped the labels such as -h and -b only to retain tones like L, Hi, L* and H* prescribed in literature. Low tones were marked as L or L*. The early peak was indicated by Hi while the final peak of an AP was marked as H*.

By determining functions of the APs, I separated continuation from finality contours and established the distribution of tonal patterns. For Jun and Fougeron (2002: 156), the LHiL* tonal pattern is the least common AP in Parisian data. On the contrary, Kaminskaïa (2010: 3) observes that LHiL* and HiL* tonal patterns have a relatively higher distribution in continuation contours. That is to say, the data collected from bilingual speakers in intense contact with English shows that the speakers use LHiL* and HiL* tonal patterns more frequently. This paper reports the distribution of the tonal patterns realized by three generations of PRR Francophones. I exclude cases in which Praat did not give any measure of pitch (in Hz) on the last full syllable.

The following procedures were employed for the measurement of pitch values. The first step was to place the cursor on the stable and middle part of the vowel in order to limit the effects of consonants on the fundamental frequency (f0) measures. Then, I selected 'Get Pitch' (F5 on a PC) in order to collect information regarding the maximum and minimum f0 values for each AP. If the maximum f0 is located on the final full syllable, it is labelled as H*. If a high f0 is found on the vowel associated with the secondary stress, it is labelled as Hi. Figure 1 shows a pitch contour and a Textgrid of 'Les grands-parents' the grandparents. The Textgrid shows tiers containing information such as tonal contour label, number of syllables, AP position in the utterance, f0 measures, SAMPA transcription, and the normal text.

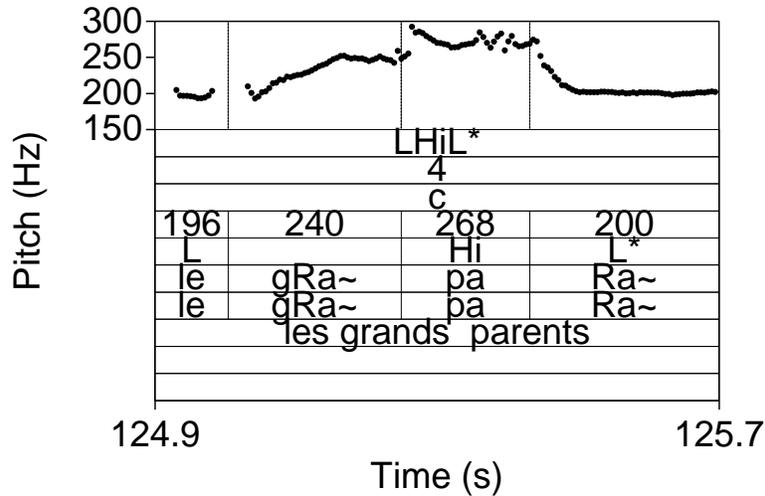


Figure 1.
Example of the sound signal annotated in Praat

3. Results

Having segmented and labelled all APs, I transferred all this information onto Microsoft Excel. Later, I copied this information onto IBM SPSS Statistics 21 Data editor for further analysis. Within the SPSS data editor, I analysed the data using the Crosstabulation command which produced a table comparing the distribution of APs realized by each speaker in both continuation and finality contours. This report only presents results from the realizations of continuation contours.

3.1 Summary results of Crosstabulation

Table 1 provides the total number of continuation APs and the average number of syllables. The youngest speaker is FRP1 and the oldest speaker is FRP3.

Table 1.
Summary of Continuation Contour Patterns

| Speaker | Number of continuation APs | Average number of syllables |
|--------------|----------------------------|-----------------------------|
| FRP1 | 244 | 3 |
| FRP2 | 361 | 3.3 |
| FRP3 | 274 | 3.45 |
| Total | 879 | |

The average number of syllables in PRR French data ranges from 3 to 3.45 per continuation contour while in European French data the range is from 3.5 to 3.9 syllables (Jun and Fougeron 2000). FRP1, the youngest speaker, realized the APs with the smallest number of syllables. In general, his speech was characterised by relatively short utterances. The number of APs realized by each speaker varies. The youngest speaker has the smallest number of non-final APs followed by the oldest speaker. The middle-generation speaker has the largest number of APs. The variation in total number of APs realizations is related to the duration of the recording of spontaneous speech.

For the purpose of this research, I compare the contour realizations in terms of percentages. First, I compare the contour realization percentages within a single speaker's data as seen in Table 2. Secondly, I compare the distribution of a single contour pattern across the three generations of PRR Francophones.

Table 2.
Distribution of APs within Speaker Data

| Speaker | Distribution | Contour pattern | | | | | | | | Total |
|---------|------------------|-----------------|-------|--------------|-------|--------|------|--------------|--------------|---------------|
| | | L* | LLH* | LH* | LHiL* | LHiLH* | H* | HiL* | HiLH* | |
| FRP1 | Count | 1 | 14 | 25 | 46 | 17 | 13 | 91 | 37 | 244 |
| | % within speaker | .4% | 5.7% | 10.2% | 18.9% | 7.0% | 5.3% | 37.3% | 15.2% | 100.0% |
| FRP2 | Count | 0 | 71 | 91 | 24 | 20 | 17 | 53 | 85 | 361 |
| | % within speaker | 0.0% | 19.7% | 25.2% | 6.6% | 5.5% | 4.7% | 14.7% | 23.5% | 100.0% |
| FRP3 | Count | 2 | 31 | 68 | 25 | 28 | 7 | 53 | 60 | 274 |
| | % within speaker | .7% | 11.3% | 24.8% | 9.1% | 10.2% | 2.6% | 19.3% | 21.9% | 100.0% |
| Total | Count | 3 | 116 | 184 | 96 | 64 | 37 | 197 | 182 | 879 |
| | % within speaker | .3% | 13.2% | 20.9% | 10.9% | 7.3% | 4.2% | 22.4% | 20.7% | 100.0% |

Eight continuation contour patterns (L*, LLH*, LH*, LHiL*, LHiLH*, H*, HiL* and HiLH*) were identified during the analysis. Table 2 shows the distribution of each AP within data collected from each speaker. It shows which contour pattern occurred the most or the least. For instance, data collected from FRP1 the youngest-generation speaker shows that HiL* has the highest distribution of all contour types realized by this speaker at 37.3%. In this

particular case, a contour type ending with an L tone is the most frequent. The contour type with the second highest distribution is LHiL* standing at 18.9% while HiLH* comes in the third position at 15.2%. The continuation contour LHiLH* has one of the least frequent distributions in the data collected from FRP1.

Results from the analysis of data from middle-generation and older-generation PRR Francophones (FRP2 and FRP3 respectively) differ in some aspects from youngest-generation speaker's realizations of AP contours. For example, the continuation contour LH* has the highest distribution in the data collected from FRP2 and FRP3. Furthermore, the HiLH* contour type has the second highest distribution. For speaker FRP2 the contour type with the third highest distribution is LLH*, yet another contour with a final rising pitch. This means that contour types with final rising pitch patterns are most frequent in the data collected from FRP2 and FRP3. However, data collected from FRP3 shows that HiL* has the third most frequent distribution standing at 19.3%. At 5.5% and 10.2% for FRP2 and FRP3 respectively, the LHiLH* contour type has one of the lowest contour pattern distributions.

Table 3.
Distribution of APs within Contour Pattern

| Speaker | Distribution | Contour pattern | | | | | | | | Total |
|---------|--------------------------|-----------------|--------------|--------------|--------------|--------------|--------|--------------|--------------|---------------|
| | | L* | LLH* | LH* | LHiL* | LHiLH* | H* | HiL* | HiLH* | |
| FRP1 | Count | 1 | 14 | 25 | 46 | 17 | 13 | 91 | 37 | 244 |
| | % within Contour pattern | 33.3% | 12.1% | 13.6% | 48.4% | 26.0% | 35.1% | 46.2% | 20.3% | 27.8% |
| FRP2 | Count | 0 | 71 | 91 | 24 | 20 | 17 | 53 | 85 | 361 |
| | % within Contour pattern | 0.0% | 61.2% | 49.5% | 25.0% | 31.3% | 45.9% | 26.9% | 46.7% | 41.1% |
| FRP3 | Count | 2 | 31 | 68 | 25 | 28 | 7 | 53 | 60 | 274 |
| | % within Contour pattern | 66.7% | 26.7% | 37.0% | 26.0% | 43.8% | 18.9% | 26.9% | 33.0% | 31.2% |
| Total | Count | 3 | 116 | 184 | 96 | 64 | 37 | 197 | 182 | 879 |
| | % within Contour pattern | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Table 3 compares the distribution of each contour for all three speakers. Data from FRP1 contains the highest distribution of falling contours: 48.4% (LHiL*) and 46.2% (HiL*). When comparing the distribution of rising patterns

across the three generation of speakers, one notices that the youngest participant FRP1 demonstrates the lowest occurrences: 12.1% (LLH*), 13.6% (LH*), 26% (LHiLH*) and 20.3% (HiLH*). In contrast with the FRP1 dataset, FRP2's data set registers the largest distribution of contour types with final rising pitch patterns such as LLH* (61.2%), LH* (49.5%), HiLH* (46.7%), and H* (26.9%). Just like FRP2, FRP3's data set is characterised by a large distribution of final rising contour types. The FRP3 data indicates that the following contour patterns have relatively large distributions, namely: LLH* (26.7%), LH* (37%) and HiLH* (33%). In addition, the LHiLH* contour that characterises Parisian French occurs more frequently in FRP3's dataset (43.8%) followed by FRP2's dataset (31.3%). Both FRP2 and FRP3 have small distributions of LHiL* (26%) and HiL* (26.9%) contour patterns.

4. Discussion and conclusion

The distribution of falling continuations such as LHiL* and HiL* is relatively high in the data collected from FRP1, the youngest-generation Francophone. This finding is in contrast with the tonal contour distribution in Parisian French which is characterised by rising pitch movements. FRP1 rarely realized the default tonal pattern LHiLH*, the most frequent in Parisian French (Jun and Fougeron, 2002). Thus, the distribution of the falling tonal pattern HiL* (37.3%) for FRP1 is five times greater than that of the LHiLH* tonal contour (7%). In addition, the distribution of HiL* is twice greater than that of the rising contours in the data collected from the youngest speaker.

Unlike the large distribution of falling continuations in FRP1's data, tonal contours from FRP2 and FRP3's data are mainly characterised by rising contours such as LLH* and HLH*. The observation that LLH* occurs frequently in French data is supported by previous studies of French intonation (Jun and Fougeron 2002: 156, Kaminskaïa 2013: 116).

Going by Jun and Fougeron's (2002) observation that French intonation is characterised by rising pitch contours, differences between the younger-generation PRR Francophone and middle-generation and older-generation PRR

Francophones stand out. Results from the analysis of FRP2 and FRP3's data indicate that rising tonal patterns occur more frequently than falling continuation patterns. On the contrary, falling continuations such as LHiL* and HiL* occur more frequently in the data collected from FRP1. This finding can be used to place the three generations of PRR Francophones on a bilingual continuum depending on the realisation or non-realisation of rising pitch contours. Previous research notes that an increase in use of LHiL* and HiL* tonal contours suggests convergence between English and French tonal systems (Kaminskaia 2010: 3). In that connection, the FRP1 tonal patterns tend to be more 'English-like' while tonal contours realized by FRP2 and FRP3 tend to be more 'French-like'. Thus, results from the intonational analysis of PRR French data indicates that there exists a bilingual continuum among the three generations of PRR Francophones.

Further research including data from more speakers is needed to verify our preliminary findings. Additional research may need to examine declination, tonal alignment, and double tones.

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