Connecting the Individual and the Community in Sociolinguistic Panel Research

Edited by Isabelle Buchstaller and Karen V. Beaman

First published 2026

ISBN: 978-1-032-41308-2 (hbk)
ISBN: 978-1-032-41309-9 (pbk)
ISBN: 978-1-003-35743-8 (ebk)

Chapter 7

Stability, change, and reversal in public speech

A longitudinal case study

Josiane Riverin-Coutlée and Jonathan Harrington

DOI: 10.4324/9781003357438-9

This work is part of the SoundAct project that is funded by the European Union (ERC, project n° 101053194). Views and opinions expressed are, however, those of the authors only and do not necessarily reflect those of the European Union or the European Research Council. Neither the European Union nor the granting authority can be held responsible for them.

Routledge
Taylor & Francis Group
NEW YORK AND LONDON

7 Stability, change, and reversal in public speech

A longitudinal case study

Josiane Riverin-Coutlée and Jonathan Harrington

7.1 Introduction

In his early work, Labov (1972: 208) introduced style as the result of "attention paid to speech," showing that speakers were able to shift between different types of speech depending on the situation and social context. While the concept of style has since been expanded and further refined, these principles still hold, and a better understanding of their interplay has been on the research agenda of many linguists for the past half-century (e.g., Eckert and Rickford 2001; Hernández-Campoy and Cutillas-Espinosa 2012; Rickford 2021; Schilling 2013).

Changes to speech across the lifespan have been attributed to numerous factors: geographic mobility (De Decker 2006; Evans and Iverson 2007; Kwon 2018; Reubold and Harrington 2015; Riverin-Coutlée et al. 2023), social mobility (Sankoff 2004; Sankoff and Blondeau 2013), sound change in progress in the community (Bowie 2005, 2015; Harrington et al. 2000, et seq.; MacKenzie and Sankoff 2010; Nahkola and Saanilahti 2004; Sankoff and Blondeau 2007; Yang et al. 2021) extreme social isolation (Harrington et al. 2019; Sonderegger et al. 2017), etc. (for a review, see Bowie and Yaeger-Dror 2015; for recent studies, see Buchstaller and Wagner 2018; Beaman and Buchstaller 2021). However, there is also some evidence that such lifespan changes are reversible (Eckert 1997; Harrington and Reubold 2021; Pichler et al. 2018; Reubold and Harrington 2018; Riverin-Coutlée and Harrington 2022; Shapp et al. 2014) and that acquiring new variants is not necessarily done by suppressing old ones (Nycz 2015; Walker 2018). This implies that speakers' linguistic resources are potentially ever growing; however, insights from research on stylistic variation also suggest that the communication situation in which speech is collected determines whether certain changes are observable or not. It is therefore not a straightforward matter to find out how the features of a specific style may change over a speaker's lifetime while factoring out every-day stylistic variation.

DOI: 10.4324/9781003357438-9

The general aim of this study is to contribute to a better understanding of lifespan changes within speech styles. In the following sections, we briefly review speaking style in public addresses (Section 7.1.1), the potential role of the audience in style construction (Section 7.1.2), and how the workplace may shape speech and style during adulthood (Section 7.1.3). We then outline a model of style production based on exemplar theories (Section 7.1.4). Finally, we summarize the main findings from a previous study upon which the current study is built (Section 7.1.5).

7.1.1 Public speech

In this chapter, we present a case study of pronunciation stability and change in public speech across the lifespan of a professional speaker (for more details about the speaker and features investigated, see Sections 7.2 and 7.3, respectively). Public speech is broadly defined here as live or pre-recorded speech delivered to an audience in the context of a professional speaker's occupation (Goffman 1981; Tucker et al. 2019). Public speech has technical advantages for research on lifespan change: in particular, the quantity of speech material available and the depth of the time span covered can hardly be matched in laboratory studies (Sankoff 2018). While the degree of variation would seem to be limited in such a codified and regulated context (Hernández-Campoy and Cutillas-Espinosa 2012) where the level of attention is high (Labov 1972), public speech by contrast has been shown to provide fresh insights into variation and change (e.g., Bowie 2005; 2015; Harrington et al. 2000, et seq.; Hay et al. 1999; Kwon 2018; MacKenzie 2017; Podesva et al. 2012; Reubold and Harrington 2015; Riverin-Coutlée and Harrington 2022; Sclafani 2017; Shapp et al. 2014; Sharma 2018; Yang et al. 2021). Most importantly, studying public speech provides empirical data that may inform important questions related to speech style and language variation and change, namely the role of the audience (Section 7.1.2) and the workplace (Section 7.1.3).

7.1.2 The audience

Given its detailed treatment of mediatic[1] speech, an influential model of style relevant for this study is Bell's (1984) audience design. The gist of the model is that speakers design their speech for other people, that is, their audience (Bell 1984, 2001). In the media, speech tends to be designed for a mass of people known to be listening but who do not participate in the conversation (auditors and overhearers), which makes it distinct from non-mediatic communication where direct interlocutors (addressees) are primarily those for whom style is designed. The target of mediatic speech is also more abstract, as public speakers can only assume who the

audience is. Whereas non-public speakers design their style in real time in *response* to the situation and feedback from the audience, public speakers design their style to *create* the situation and, consequently, to establish a certain relationship with the audience. However, this can only be achieved by drawing on "the regular association of certain styles with certain situations. Without the basis that a given style regularly *results* from a given situation type, the style could not be used as a means to *create* that type of situation" (Bell 1984: 183–184; emphasis in original). This aspect of the model could provide the basis for a mechanistic explanation of style, as will be further explained in Section 7.1.4.

On the other hand, there are limits to the benefits and success of style shifting in mediatic speech (Bell 1984). A fluctuating style may even harm a public speaker's image, especially when speeches are recorded, then listened to and compared with one another out of context, including by people who were not expected to be part of the audience (Bell's "eavesdroppers"). For example, a style shift by former American president Jimmy Carter, which was likely appropriate to the immediate situation, was judged scandalous once made public because it was deemed too informal for a sitting president (Solomon 1978). Another example is from the American politician Hillary Clinton, who was accused – post hoc – of patronizing her audience when changing certain aspects of her pronunciation while campaigning across different regions of the USA (Dowling 2007). Siegel (2021) also lists various Australian celebrities who have been criticized by the public or local media for "losing" their Australian accent over time. Morin and Grenon (2018) report that terms such as "ridiculous" and "sold" were used by Quebecers to qualify artists from Quebec having adapted their speech once in France. Indeed, early work on speech accommodation theory, on which audience design builds, suggested that there were costs – not only benefits – to accommodation, and that an optimal – rather than a maximal – threshold of accommodation had to be reached (Giles and Powesland 1975; Giles and Smith 1979; Homans 1961). There are thus constraints on the extent to which public speakers fluctuate in speeches which they know are recorded and massively disseminated (Bell 1984; Goffman 1981).

7.1.3 Speech in the workplace

The influence of the workplace and the speakers' professional occupation on speech is well known. One of the most common explanatory factors of sociolinguistic variation is the speaker's social class, which is typically defined relative to the professional occupation and income, e.g., blue vs. white collar, working vs. middle vs. upper class (Ash 2002; Labov 2001). In addition, when young adults join the workforce, the "vernacular peak"

of adolescence flattens out, as the standard becomes more relevant and valued in the workplace (Eckert 1997; Labov 2001; Sankoff and Laberge 1978; Wagner 2012). Changes in speakers' professional occupation and/or social class have also been found to coincide with phonetic change across the lifespan (e.g., Riverin-Coutlée and Harrington 2022; Sankoff 2004; Sankoff and Blondeau 2007; Shapp et al. 2014).

Bourdieu (1982) suggests that every professional milieu is a "linguistic market" in which speech is like goods that workers trade: putting the right goods in the right market enhances their value and that of the trader; that is, workers benefit from using variants that are appropriate to their position or to the immediate professional context. This applies to interactions with colleagues, employers, employees, or customers, with purposes as diverse as bonding with peers and making money from sales. Certain elements of Bourdieu's (1982) idea share similarities with the findings in Coupland's (1984) empirical study on speech in the workplace, which analyzed interactions between a travel agent and her clients within the accommodation framework. Coupland (1984) observed a shifting degree of standardization in the travel agent's speech, which was partly explained by different requirements to project competence and likeability, depending on the clients and contexts. The travel agent put aside her own personal attributes to create a persona that more appropriately matched that of her clients.

Coupland (1984) also noted that the travel agent tended to design her initial style independently from the clients' actual use of standard variants, i.e., based on expectations (see e.g., Campbell-Kibler 2016; Pickering and Garrod 2013; Wade 2022). Expectation-driven style design consists of producing a certain type of speech "that was encountered at some point in the past – not necessarily from the same talker or in the same context – and is later recalled *but not locally observed*" (Wade 2022: 64; emphasis our own). In other words, a workplace-appropriate persona was not created in response to a given client's speech, but ahead of it; the agent designed a style thought to be appropriate for the client based on experiences with previous clients. However, this could only be beneficial (Bourdieu 1982) if correctly interpreted by the client, i.e., if it relied on an existing association between speech features and social characteristics (Bell 1984).

Through Coupland's (1984) study, Bell's (1984) audience design finds support in a much broader range of speech produced out of professional duties than mediatic speech. It also shares similarities with Bourdieu's (1982) theory. In sum, speech designed in the workplace aims to project a certain persona, must draw on pre-existing associations between speech features and social characteristics to be correctly interpreted by the audience, and may be based on expectations about the nature of this audience.

7.1.4 A mechanistic explanation of style

Style shifting in response to the audience or the workplace is often assumed to be a tool that is consciously manipulated by the speaker (cf. Eckert 2000; Le Page and Tabouret-Keller 1985). This is not necessarily our view, and it is important to note that it was not Bell's (1984) view either. In writing about the name of his model, Bell (1984: 199) said, "[the] term 'design' is not here intended to imply that speakers are conscious of the linguistic particulars of style shift, or even of the fact that they are shifting at all." While conscious manipulation is not impossible, it is cognitively "effortful and resource-heavy" (Campbell-Kibler 2016: 125) and therefore unlikely to be the main explanation for most cases of style shifting. Sharma (2018), for instance, argued that some style shifting is caused by a high cognitive demand to deal with *other* aspects of the interaction, like rapidly bringing up an argument in situations of disagreement, which leaves little to no resources for sustained conscious manipulation or monitoring.

Exemplar-based models (Drager and Kirtley 2016; Foulkes and Docherty 2006; Harrington et al. 2018; Johnson 1997; Pierrehumbert 2006, 2016 *inter alia*) allow style shifting to be automatic as a function of indexing and responding to non-linguistic features. Within these models, speech is memorized with a great deal of both linguistic and non-linguistic details. An association is formed in memory between certain types of exemplars and non-linguistic details like the communicative context after consistent exposure. This link is then activated whenever speakers are prompted to produce speech in similar contexts. The activation of this link, which does not need to be intentional or conscious, biases the sampling of exemplars in speech production towards the relevant subset of memorized exemplars (Foulkes and Docherty 2006). A shift in style thus occurs whenever exemplar selection is biased by characteristics of the communicative situation: for example, a professional speaker addressing an audience perceived as prestigious (either as a one-off event or over a prolonged period) will likely select, within a larger exemplar space, exemplars which index prestige.

Associations between speech and non-linguistic features may vary across individuals, but members of the same speech community are presumed to share at least a minimal set of associations. This is compatible with Bell's (1984) idea that a certain association between speech features and social categories or situations must exist in order for speakers to design a style that will be understood by the audience (see Sections 7.1.2 and 7.1.3). Exemplar-based models also account for how style may arise from expectations, i.e., via the activation of exemplars that are associated with characteristics expected to be encountered in the audience (e.g., Nycz 2018; Wade 2022; Walker 2019). While we adhere to this view based on existing literature, it is not the purpose of this study to propose

amendments to exemplar models. One aspect of exemplar models, however, which our study may inform is whether sampling biases (i.e., style shifts) are equally free to occur when they lead to phonetic variation vs. phonological changes (Sankoff 2004; Evans and Iverson 2007; Nycz 2013; Kwon 2018) (see Sections 7.3 and 7.4).

7.1.5 Summary of our previous study

In Riverin-Coutlée and Harrington (2022), we investigated the influence of style-shifting on longitudinal phonetic change in the public speaker Michaëlle Jean (see Section 7.2). We chose Jean because she had changed careers at different stages of her life. Her professional occupations were associated with other changes that were important for this kind of analysis: how international her audience was and the implications of being a French speaker within her professional functions. Our main prediction was that the speech of Michaëlle Jean would comprise more features of Quebec French when she was a journalist based in Quebec (between 1988–2005) than when she was secretary general of the international organization La Francophonie[2] (between 2014–2018). The motivations for our prediction were, first, that as a journalist in Quebec, her audience was mainly local, while as the head of La Francophonie, her audience was more international. Second, as a journalist in Quebec, her francophone identity was incidental: she worked in a province where French is the official and majority language and spoke French just like most people. By comparison, as the head of La Francophonie, her francophone identity was arguably enhanced: her role was to promote the French language and to represent 321 million people whose common characteristic was to speak French. Our prediction was generally confirmed: for the tense-lax split of high vowels that is typical of Quebec French (see Section 7.3), we observed that Michaëlle Jean's speech was more Quebec-like as a journalist than as secretary general at La Francophonie, but that this trend reversed after her mandate at La Francophonie was over (2019–2021). Although Riverin-Coutlée and Harrington (2022) made some progress in understanding how long-term change and style-shifting were connected, the earlier study was limited to one phonetic feature, which was perhaps particularly prone to change (see Sections 7.3 and 7.4). To gain a better understanding of lifespan changes within speech styles, in this study we extend our investigation to other features of Michaëlle Jean's speech which may inform the issue more completely.

The rest of this chapter is organized as follows: the speaker, Michaëlle Jean, is introduced in Section 7.2; the phonetic features investigated are described in Section 7.3; our questions and predictions are formulated in

Section 7.4; the methods are reported in Section 7.5; and the results are presented in Section 7.6 and discussed in Section 7.7.

7.2 The speaker

The speaker selected for this study is Michaëlle Jean[3], who was born in Haiti in 1957 and moved to Quebec at the age of 11 years old as her family fled the Duvalier dictatorship. She grew up as a French-Creole bilingual, subsequently learning other languages (English, Spanish, and Italian), though most of her public career was conducted in French. She first became known to the public in 1988 when she was a journalist for Radio-Canada, the French-speaking national television in Canada, a position she held until 2005 when she was sworn in as Governor General of Canada (2005–2010). At the time, the Canadian tradition was to alternate between French- and English-speaking governor generals, meaning that she would not have been appointed for this diplomatic function had she not spoken French. After Haiti, her country of birth, was devastated by an earthquake in January 2010, she was then chosen to be the UNESCO Special Envoy for Haiti. In parallel to her diplomatic functions at UNESCO (2010–2014), she was chancellor of the University of Ottawa (2012–2014), the largest French-English bilingual university in the world, and also served as the Great Witness[4] overseeing the appropriate use of French at the 2012 London Olympic Games. Next, as described in Section 7.1.5, she occupied the highest office at La Francophonie (2014–2018). Since 2019, she has sponsored and promoted causes such as women's rights or youth entrepreneurship and has been sporadically interviewed and invited to talk at public forums, mostly in Canada. In this last period, her activities are less international and her francophone identity is not as central to her functions as during her time at La Francophonie. Michaëlle Jean's public career can thus be divided in the following time periods:

- 1988–2005: Journalist based in Quebec
- 2005–2010: Governor General of Canada
- 2010–2014: UNESCO Special Envoy and Chancellor of University of Ottawa
- 2014–2018: Secretary general of La Francophonie
- 2019–2022: Other public-speaking events

As summarized in Section 7.1.5, how international Michaëlle Jean's audience is, as well as the implications of being a French speaker within her professional functions, change over these five time periods. Her audience is mostly local (i.e., composed of Quebecers) during the Journalist

period (1988–2005) and mostly international during her La Francophonie period (2014–2018), with the other periods of combined local and international audiences in between. Her francophone identity is incidental as a journalist (1988–2005) but becomes more relevant when she takes on diplomatic functions (Governor General, 2005–2010), when she acts as chancellor of the University of Ottawa (2012–2014), and when she is appointed Great Witness in London (2012). Ultimately, her francophone identity culminates at La Francophonie where she *represents* 361 million French speakers and 88 French-speaking states and countries.

7.3 The front unrounded oral vowels of Quebec French

Despite Michaëlle Jean being born in Haiti, the departure point for this study is Quebec French (henceforth QF), the linguistic context in which she started her public career in 1988 and was immersed from the age of 11 years. The phonological inventory of QF comprises 18 consonants, three glides, and 17 vowels (Martin 1996; Riverin-Coutlée and Roy 2022). Here, our concern is with the front unrounded oral vowels /i e ɛ a͡ɛ a/ in word-final syllables, which differ in many ways from those of standard Hexagonal French (HF), the international standard that Michaëlle Jean may target when she addresses and represents an international audience (see e.g., Chalier 2021).

First, in QF, the high vowel /i/ splits into mutually exclusive tense and lax variants [i ɪ] depending on the consonantal context[5] (Arnaud et al. 2011; Côté 2012; Dumas 1987; Paradis and Dolbec 1998; Walker 1984). In contrast, HF lacks the lax variant altogether. The tense variant appears in open syllables and in syllables closed by /v z ʒ/ or /vʁ/, and the lax variant in syllables closed by any other type of coda, e.g., *vie* 'life' [vi], *ville* 'city' [vɪl]. The lax variant [ɪ] is characterized acoustically by a higher F1 and a lower F2, i.e., it is more open and central than the tense variant [i]. This feature is widely produced in the media (Reinke 2005; Reinke and Ostiguy 2016) and is positively evaluated by QF listeners (Chalier 2021), and avoiding it is even considered snobbish (Paradis and Dolbec 1998).

The mid-high vowel /e/ is also of particular interest. In French, this vowel only appears in open syllables, e.g. *fée* 'fairy' /fe/ (Côté 2022). Thus, /e/ never appears in the same contexts as [ɪ], which only appears in closed syllables, making the contexts of appearance of [ɪ] mutually exclusive with those of both [i] and /e/. As shown in Riverin-Coutlée and Roy (2022), /e/ has a relatively low F1 and high F2 in QF, such that it is located halfway between [i] and [ɪ] in the F1×F2 space of QF speakers. The acoustic distance between QF [i] and /e/ is much smaller than that between HF /i/ and /e/, as illustrated for example in Storme (2017, figure 7)[6] (see also Vaupot 2017). However, unlike the tense-lax split, the difference between these

vowel pairs is usually not regarded as a salient marker that distinguishes QF from HF (Brasseur 2009). It is also not part of the exhaustive list of 44 phonetic phenomena of QF collated by Paradis and Dolbec (1998). Therefore, we have no further information regarding the sociolinguistic value of this feature, in particular, whether it is noticed by QF speakers and/or judged positively or not.

QF also contrasts mid-open monophthongal /ɛ/ with diphthongal /a͡ɛ/ in words like *faite* 'done' /fɛt/ vs. *fête* /fa͡ɛt/ 'party' (Martin 1995; Riverin-Coutlée and Roy 2022; Santerre 1974; Santerre 1981). Standard HF only comprises monophthongal /ɛ/ such that *faite* and *fête* are homophonous: /fɛt/ (Fougeron and Smith 1993). In the F1×F2 space of QF speakers, /a͡ɛ/ is located close to /a/ at its onset, halfway between /a/ and /ɛ/ at its temporal midpoint and higher than /ɛ/ at its offset (Leblanc 2012; Riverin-Coutlée and Roy 2022). Diphthongal /a͡ɛ/ also has a greater duration than monophthongal /ɛ/. While common – and quasi-systematic in the case of /a͡ɛ/ (Leblanc 2012; Riverin-Coutlée and Roy 2022) – vowel diphthongization tends to be negatively evaluated by QF listeners (Chalier 2021; Deshaies-Lafontaine 1974; Lappin 1982). It tends to be avoided in all but the least formal media; the contrast between *faite* and *fête* is preserved but only through length (Bigot and Papen 2013; Reinke 2005; Reinke and Ostiguy 2016).

To summarize, differences between the oral front unrounded vowels of QF and HF include: the contextual split of /i/ into tense [i] and lax [ɪ] in QF; the acoustic location of /e/ which is closer to [i] in QF than to /i/ in HF; and a phonological contrast based on length and diphthongization between *faite* and *fête* in QF but not in HF. These three features vary in QF with respect to their sociolinguistic value: the tense-lax split is positively evaluated by the speech community; there is no evidence in the literature that the difference in the acoustic properties of /e/ is evaluated in a specific way or even noticed by QF listeners; and diphthongization tends to be negatively evaluated.

7.4 Questions and predictions

The focus in Riverin-Coutlée and Harrington (2022) was on the first feature described above, i.e., the tense-lax split, which extends to the other high vowels /y u/ (see Footnote 5). We found that from a QF-like tense-lax split of the high vowels during Michaëlle Jean's years as a journalist based in Quebec (1988–2005), the degree of split was subsequently reduced until completely merged during her years as secretary general of La Francophonie (2014–2018). A reversal of the merger was found in the last period examined (Other, 2019–2021), when her career became less international and revolved less around her francophone identity. However,

this feature was perhaps particularly prone to fluctuations. First, the mere possibility of encountering the tense-lax split in mediatic speech in Quebec is likely due to the positive attitude of the speech community towards the feature. Second, because tense and lax variants are in complementary distribution, merging them does not impede phonological contrasts. The main research question this chapter addresses is whether the two other features described in Section 7.3, the location of /e/ in the acoustic space and the phonological contrast between /ɛ/-/a͡ɛ/, have changed in a similar manner over the course of Michaëlle Jean's career.

Our general prediction remains the same as in Riverin-Coutlée and Harrington (2022): Michaëlle Jean's speech will be more QF-like in her Journalist period (1988–2005) than during her time at La Francophonie (2014–2018). Specifically, we predict that /e/ will be higher and closer to [i] in the acoustic space during her Journalist period than while she was at La Francophonie. We further predict /ɛ/-/a͡ɛ/ to be contrastive in her Journalist period, and /a͡ɛ/ to be merged with /ɛ/ during La Francophonie.

Although we observed change for the tense-lax split, this does not mean that the whole vowel system is changing. For example, social factors and the degree to which a feature is a marker of QF may also affect the degree of change. First, the location of /e/ is not an obvious and well-documented phonetic marker of QF. It is unclear whether it could contribute to Michaëlle Jean's mediatic persona, as the audience might not respond to it. Second, because diphthongization tends to be negatively evaluated by QF speakers and avoided in media like Radio-Canada, the /ɛ/-/a͡ɛ/ contrast may rely exclusively on length, i.e., [ɛ]-[ɛː], even during her early Journalist years (1988–2005). Furthermore, the predicted merging of /a͡ɛ/ (or [ɛː]) into /ɛ/ during her time at La Francophonie (2014–2018) would lead to the suspension of a phonological contrast, which might be another factor that inhibits the feature from changing.

7.5 Methods

The speech material analyzed in this study comes from audio and audio-visual recordings of Michaëlle Jean, which are available online in open access, for instance on YouTube, the Radio-Canada archives, or her official website. Recordings in languages other than French or of insufficient quality for a formant analysis (e.g., analog telephone interviews, with background music or substantial noise) were excluded. The earliest recording from her Journalist period that we could access dates back to 1989, and the most recent is from 2022. In total, we used 65 recordings of television reports, news reading, speeches, press conferences and interviews (where Jean is either the interviewer or interviewee)[7], totaling nearly five hours in length from which 3,242 vowel tokens were extracted, as shown in Table 7.1.

Table 7.1 Recordings collected for the five periods investigated ⏎

Years	*Period*	*Number of recordings*	*Total length (incl. pauses)*	*Number of words*	*Number of tokens*					
					i	ɪ	e	ɛ	a͡ɛ	a
1988–2005	Journalist	29	42 m 30 s	7224	127	145	94	82	58	88
2005–2010	Governor General	12	49 m 20 s	7284	124	98	84	97	71	91
2010–2014	UNESCO	9	45 m 56 s	6792	135	165	75	66	59	74
2014–2018	La Francophonie	7	100 m 26 s	14 852	187	174	88	121	96	153
2019–2022	Other	8	52 m 36 s	7620	91	160	120	101	89	129
Total		65	290 m 48 s	43 772	3242					

The data were processed through a series of tools from the Bavarian Archive for Speech Signals web services (Kisler et al. 2017). We first used automatic speech recognition (ASR) because there were no available orthographic transcriptions of the recordings except for a few speeches. The output of ASR was manually corrected, then turned into canonical phonological transcriptions using grapheme-to-phoneme conversion (G2P; Reichel 2012; Reichel and Kisler 2014). These phonological transcriptions were then forced-aligned with the speech signal using WebMAUS General (Schiel 1999; 2015) previously trained on (European) French data. This material was structured into an EMU database (Winkelmann et al. 2017), a speech database management system offering users a set of speech signal processing routines and query functions. Formant frequencies were calculated with the forest() function in EMU (Bombien et al. 2021), with a window shift of 5 ms and a window length of 30 ms. The boundaries marking the onset and offset of the vowels of interest were manually corrected when needed, as well as formants that had been miscalculated.

The first two formant frequencies (F1, F2) were sampled at the temporal midpoint of the 3,242 tokens of [i], [ɪ], /e/, /ɛ/, /a͡ɛ/, /a/. The data for [ɪ] and /a/ were used for visual and descriptive purposes but not further analyzed. For /a͡ɛ/, formants at ten additional equidistant sampling points between the acoustic vowel onset and offset were extracted in order to model diphthongization. The duration of /ɛ a͡ɛ/ was also measured.

Linear mixed-effect regression models were fitted to the data using the *lmerTest* package in R (Bates et al. 2015; Kuznetsova et al. 2017; R Core Team 2023). We started with the models shown in (2) and (3), then optimized the fit by removing non-significant factors or interactions using the step() function (backward elimination). Where appropriate, pairwise comparisons were made with the *emmeans* package (Lenth 2023).

In order to test for the location of /e/ in the acoustic space over the speaker's career, we ran three separate models, each with a different response variable: (1) F1 of /e/; (2) F2 of /e/; and (3) the Euclidean distance (ED) between each token of /e/ and the centroid of [i] in the F1 × F2 space. EDs were calculated for each period separately with Formula (1), while the regression models tested for this feature were coded in R as in (2):

(1) $ED(\vec{x}) = \sqrt{\| \vec{x} - \vec{c} \|^2}$
where $\vec{x}$ is a token, $\|$ denotes vector magnitude, and $\vec{c}$ is the centroid of the category relative to which the Euclidean distance ED is calculated;

(2) `lmer(response ~ Period + (1|Word))`
where response is one of the three possible response variables listed above (F1, F2, ED), Period is a five-level fixed factor (Journalist,

Governor General, UNESCO, La Francophonie, Other) and Word is a random factor.

Regarding the contrast between /ɛ a͡ɛ/, visual inspection of the trajectory of /a͡ɛ/ in the F1 × F2 space led us to restrict our statistical analyses to formant frequencies sampled at the temporal midpoint of this vowel (see Figure 7.3 and related interpretation). Three separate models of the type in (3), one for F1, one for F2, and one for the log-transformed duration, were fitted to test the acoustic differences between /ɛ a͡ɛ/ over the speaker's career.

(3) `lmer(response ~ Period*Vowel + (1|Word))`
where `Vowel` is a two-level fixed factor (/ɛ a͡ɛ/) and the other terms are identical to those in (2).

7.6 Results

7.6.1 Location of /e/

Figure 7.1 shows the location of /e/ relative to [i] and [ɪ] in five F1 × F2 spaces corresponding to each period of Michaëlle Jean's career. Most of the tokens of [i ɪ] presented in these plots were published in Riverin-Coutlée and Harrington (2022), but some additional tokens from three extra recordings (years 2001, 2021, and 2022) have been included here. The location of /e/ in the acoustic space varies across Jean's professional life, with a gradual downward trend from when she was a Journalist (1988–2005) to when she worked at La Francophonie (2014–2018), with an uptick in the final period (Other, 2019–2022). This pattern is similar to that previously observed for the tense-lax split of /i y u/, where the greatest degree of acoustic separation was observed during Jean's Journalist period, after which it progressively reduced until completely merged while she was at La Francophonie, with again some degree of separation during the Other period (Riverin-Coutlée and Harrington 2022). Compatibly, the [i]-/e/-[ɪ] series is most QF-like during her early Journalist period. In the final Other period, the acoustic spaces of /e/ and [ɪ] largely overlap, as [ɪ] unmerges from [i]. As mentioned in Section 7.3, [ɪ] only appears in closed syllables, while /e/ only appears in open syllables.

The results of the statistical analyses applied separately to F1 and F2 confirm that the location of /e/ has changed over time, with a significant effect of the period on both variables (F1: $F[4, 453.74] = 10.735$, $p < 0.001$; F2: $F[4, 452.54] = 12.813$, $p < 0.001$). Details of the post-hoc analyses are presented in Table 7.2, which show that /e/ is most open during

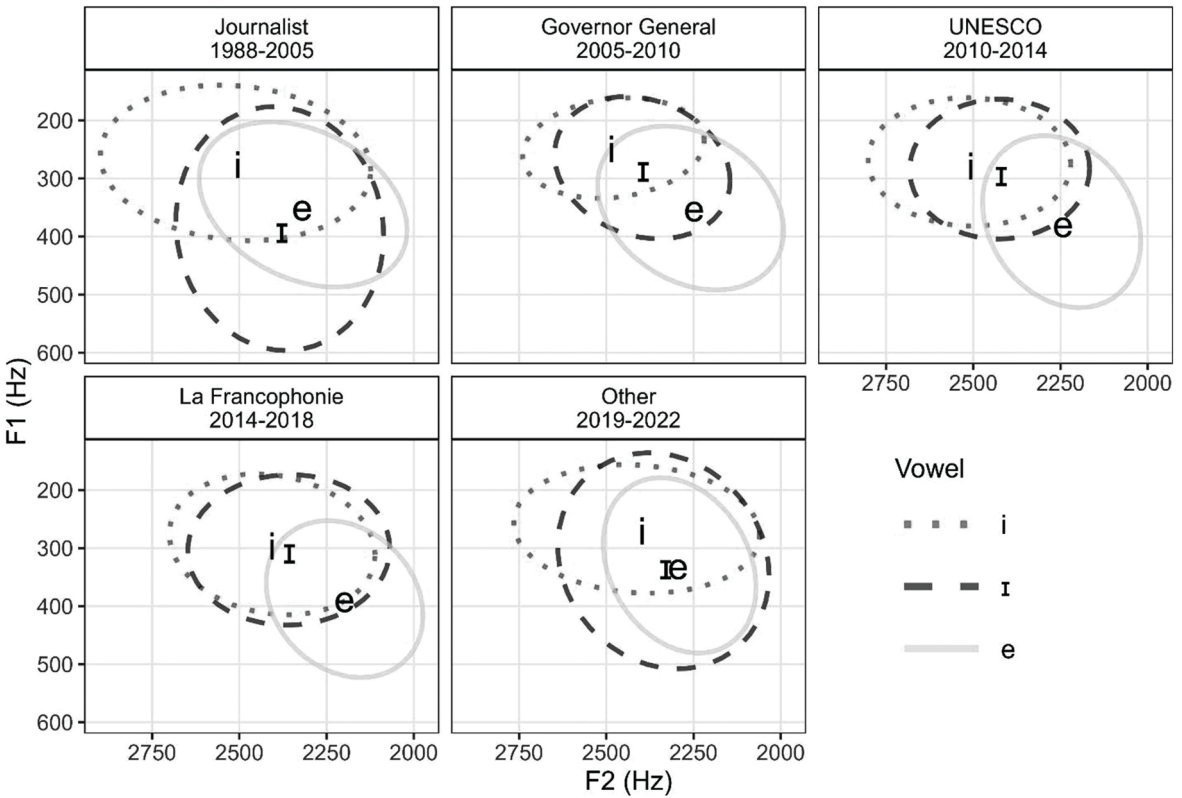

Figure 7.1 Vowel formant plots (F1 × F2) showing the distributions (95%) and centroids (phonetic symbols) of the vowels [i], [ɪ], and /e/ across different professional roles and time periods. ⏎

Table 7.2 Results of the post-hoc tests of the linear mixed-effect models on F1 and F2 of /e/ ⏎

F1 of /e/					
contrast	*estimate*	*std err*	*t.ratio*	*p.value*	*+/-*
Journalist – Governor General	-5.45	10.25	-0.531	0.9841	
Journalist – UNESCO	-29.20	10.68	-2.734	0.0507	
Journalist – La Francophonie	-36.46	10.23	-3.566	0.0037	+
Journalist – Other	19.54	9.42	2.074	0.2333	
Governor General – UNESCO	-23.75	11.02	-2.156	0.1986	
Governor General – La Francophonie	-31.02	10.50	-2.954	0.0272	+
Governor General – Other	24.99	9.71	2.575	0.0767	
UNESCO – La Francophonie	-7.26	10.92	-0.665	0.9638	
UNESCO – Other	48.75	10.21	4.775	<.0001	-
La Francophonie – Other	56.01	9.67	5.790	<.0001	-
F2 of /e/					
contrast	*estimate*	*std err*	*t.ratio*	*p.value*	*+/-*
Journalist – Governor General	82.43	18.3	4.506	0.0001	-
Journalist – UNESCO	73.91	19.1	3.866	0.0012	-
Journalist – La Francophonie	117.09	18.3	6.405	<.0001	-
Journalist – Other	33.21	16.8	1.971	0.2818	
Governor General – UNESCO	-8.52	19.7	-0.433	0.9927	
Governor General – La Francophonie	34.67	18.7	1.855	0.3432	
Governor General – Other	-49.22	17.3	-2.852	0.0366	+
UNESCO – La Francophonie	43.18	19.5	2.213	0.1769	
UNESCO – Other	-40.70	18.2	-2.232	0.1699	
La Francophonie – Other	-83.88	17.2	-4.872	<.0001	+

Notes: For each contrast shown in the left-most column, the earlier period comes first. The right-most column indicates, for significant differences only, whether formant values increase (+) or decrease (-) over time.

Jean's La Francophonie period, with a significantly higher F1 than during the other periods. She also shows a relatively open /e/ during the UNESCO period that is not significantly different from her La Francophonie period, but different from the Other period. The results for F2 show a more fronted /e/ during both her Journalist and Other periods: F2 is significantly higher during the Journalist period than Governor General, UNESCO and La Francophonie; as well as in the Other period compared to Governor General and La Francophonie.

One further analysis was made of the Euclidean distance between each token of /e/ and the centroid of [i] across periods. This was motivated by our observation in Riverin-Coutlée and Harrington (2022) (also visible in Figure 7.1) that while changes in [ɪ] are largely responsible for the

measured differences in the tense-lax split over time, some changes in [i] can also be observed. The results of this analysis show no significant effect of period (F[4, 432] = 1.503, p = 0.200): that is, the distance between [i] and /e/ remains approximately the same over time. Thus, the changes that affected /e/ also took place with [i].

7.6.2 The contrast between /ɛ/ and /a͡ɛ/

Figure 7.2 displays five F1 × F2 spaces, one per period, with tokens of /ɛ a͡ɛ a/ measured at the vowels' temporal midpoint. Figure 7.3 shows again the centroids and ellipses calculated for /ɛ/, with additional solid curves corresponding to the mean trajectory of /a͡ɛ/ from vowel onset to offset (11 measurement points in 10% increments, arrowhead marking the offset). The acoustic properties of /a͡ɛ/ observable in Figures 7.2 and 7.3 are markedly different from those of QF speakers shown in Riverin-Coutlée and Roy (2022), for whom /a͡ɛ/ has an onset similar to /a/, a closing trajectory at the midpoint of which /a͡ɛ/ is located halfway between /a/ and /ɛ/, and an offset higher than /ɛ/. Instead, the trajectory of /a͡ɛ/ in the F1 × F2 spaces shown in Figure 7.3 is very reduced and not in the expected direction. The small changes in formant frequencies that can be observed likely reflect transitions with the flanking consonants (Gottfried 1984) rather than a diphthongal quality. Based on these qualitative observations, we considered that Michaëlle Jean did not produce diphthongal vowels and we therefore restricted our further analyses of formant frequencies to the midpoint samplings (i.e., data of /ɛ a͡ɛ/ shown in Figure 7.2).

Figures 7.2 and 7.3 show that Michaëlle Jean produced tokens of /a͡ɛ/ that largely overlap with tokens of /ɛ/ at their temporal midpoint. This pattern also seems quite stable across periods. The statistical model fitted to F1 of /ɛ a͡ɛ/ (see Model 3 in Section 7.5) indicates no effect of the period (F[4, 798.28] = 1.6922, p = 0.1498), no effect of the vowel (F[1, 291.54] = 2.2826, p = 0.1319), and no interaction between the period and the vowel (F[4, 798.65] = 1.138, p = 0.2615). F1 thus had a similar value across vowels /ɛ/ and /a͡ɛ/ and time periods. For F2, there was no effect of the vowel (F[1, 328.48] = 0.0972, p = 0.7553) and no interaction between the period and the vowel (F[4, 800.11] = 0.8427, p = 0.4982), however an effect of period was found (F[4, 799.70] = 5.0695, p < 0.001). Results of the pairwise comparisons indicate that F2 was significantly lower (i.e., both vowels were more back) during Jean's time at La Francophonie than when she was a Journalist (β = 50, t[830] = 3.713, p = 0.002) and during the Other period (β = 42, t[818] = 3.627, p = 0.0028). In sum, /ɛ a͡ɛ/ had very similar formant frequencies across periods, which were also stable except for a tendency to a lower F2 during Jean's work at La Francophonie.

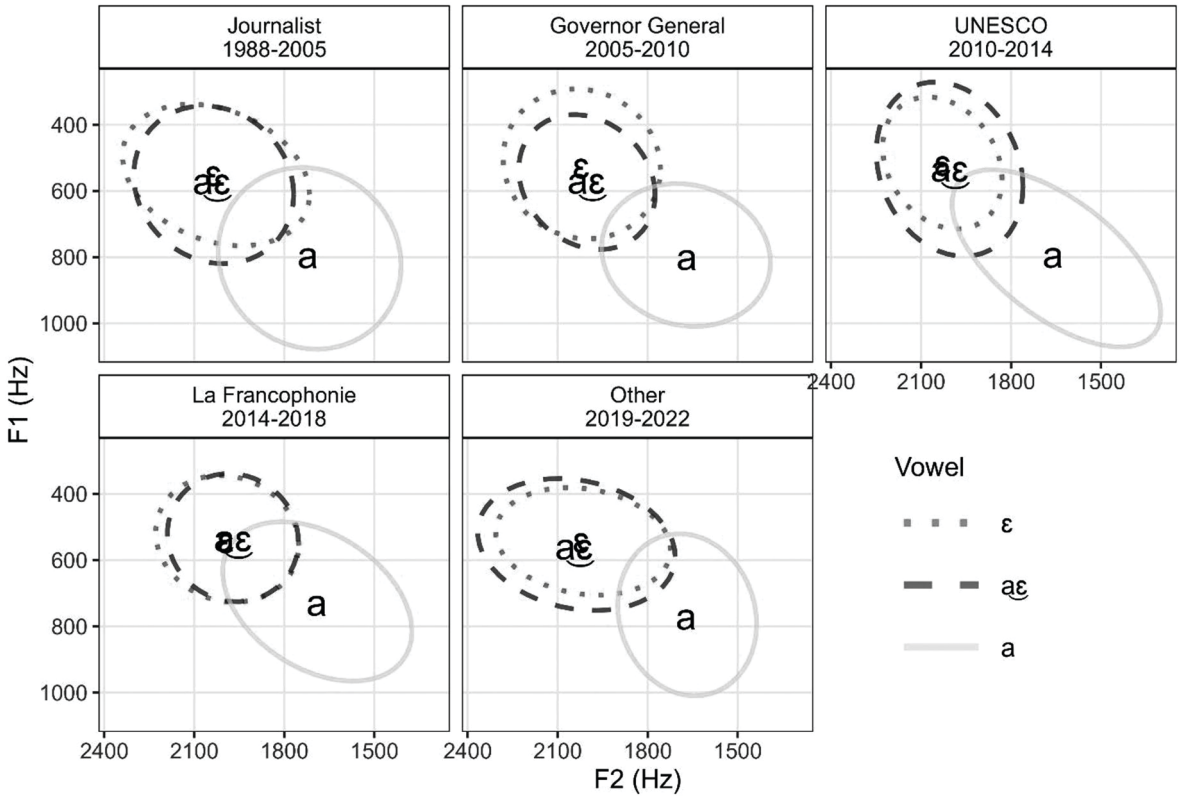

Figure 7.2 Vowel formant plots (F1 × F2) illustrating the distributions (95%) and centroids (phonetic symbols) of the vowels /ɛ/, /a͡ɛ/, and /a/ across different professional roles and time periods. ⏎

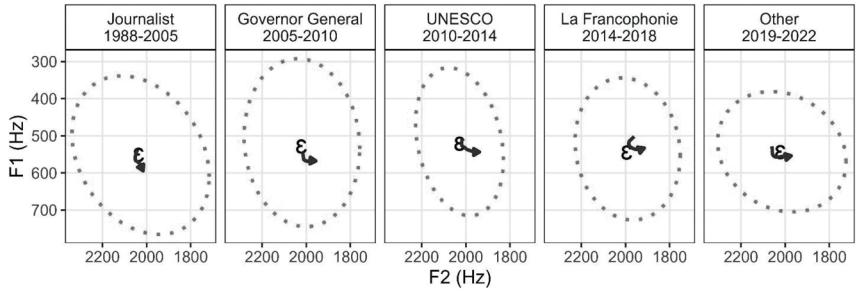

Figure 7.3 Vowel formant plots (F1×F2) showing the trajectory of /a̲ɛ̲/(solid curve) from vowel onset to offset (arrowhead) against the distribution and centroid of /ɛ/ across different professional roles and time periods. ⏎

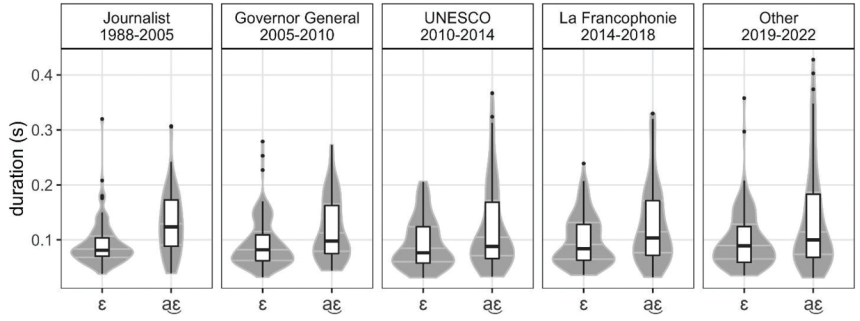

Figure 7.4 Violin and box plots showing the duration (in seconds) of the vowels /ɛ/ and /a̲ɛ̲/ across different professional roles and time periods. ⏎

Figure 7.4 presents duration data for /ɛ a̲ɛ̲/. Overall, /ɛ/ appears to have a shorter duration than /a̲ɛ̲/, which was confirmed by the statistical analysis applied to the log-transformed duration of /ɛ a̲ɛ̲/ for which a significant effect of the vowel was found (F[1, 305.20] = 36.9171, $p < 0.001$). No significant effect of the period (F[4, 802.28] = 0.3405, $p = 0.8507$) and no interaction between the period and the vowel (F[4, 802.64] = 0.2591, $p = 0.9041$) were found, suggesting stability of the length contrast across periods. Taken together, the results presented in this section suggest that /ɛ a̲ɛ̲/ remained contrastive over Michaëlle Jean's career, but through length, not vowel quality.

7.7 Discussion and conclusion

This study was concerned with variation in public speech over the career of the French-speaking public figure Michaëlle Jean. It built on the finding

in Riverin-Coutlée and Harrington (2022) that the tense-lax split of QF high vowels varied as a function of the speaker's career. As in the initial study, our general prediction was that the speech of Michaëlle Jean would be more QF-like during the Journalist period (1988–2005) than when she worked at La Francophonie (2014–2018). Two features which differ between QF and HF were investigated: the location of /e/ in the acoustic space and the contrast between /ɛ/ and /a͡ɛ/. Nearly five hours of publicly available speech spanning three decades were used to conduct this study.

The results showed some variation in the location of /e/ in the acoustic space across periods (see Section 7.6.1). In particular, differences were found for both F1 and F2 between the Journalist and La Francophonie periods, which at first sight seemed to confirm our general prediction. However, further analysis revealed that the distance between /e/ and [i] in the acoustic space remained stable over time. In other words, when /e/ was found to be more open and back, so was [i]. The [i]-/e/-[ɪ] series being more or less QF-like was thus due to changes in [ɪ] and not to the distance between [i] and /e/. The remarkable stability of the distance between [i] and /e/, despite both vowels showing some changes across periods, points to accurate preservation of the phonological contrast. On the other hand, [ɪ] was free to merge with [i] or /e/ as it is not involved in phonological contrasts with either: in word-final syllables, [ɪ] vs. [i] and [ɪ] vs. /e/ each occur in mutually exclusive contexts. Furthermore, as explained in Section 7.3, there is no indication in the literature that the location of /e/ in the acoustic space is a well-known feature marking a difference between QF and HF. In addition, there are no indications that this feature carries specific sociolinguistic meanings in the community or that the media take a normative stand towards it. Overall, this suggests an important role of phonological representations for stability over the lifespan (Chambers 1992; Kerswill 1996; Kwon 2018; Nielsen 2011).

The results for the contrast between /ɛ/ and /a͡ɛ/ showed that /a͡ɛ/ was produced with a monophthongal quality across all periods (see Section 7.6.2). Very similar F1 and F2 frequencies were measured at the midpoint of /ɛ/ and /a͡ɛ/, suggesting comparable qualities for both vowels. This monophthongal vowel quality was found to be relatively stable across periods except for a lower F2 during Jean's time at La Francophonie (2014–2018) compared to when she was a Journalist (1988–2005) and during the Other period (2019–2022). The results also showed different durations for /ɛ/ and /a͡ɛ/, the latter vowel having a longer duration. This length contrast remained stable across periods. Diphthongization of /a͡ɛ/, which did not occur in Michaëlle Jean's speech production, has recently been reported to be systematic in the laboratory speech of young university students (Riverin-Coutlée and Roy 2022). Systematic diphthongization of /a͡ɛ/ is likely an advanced stage of a change (perhaps even completed) that

occurred in the past 50 years, with gradually increasing rates of diphthongization as documented from Santerre (1974) to Martin (1995) to Leblanc (2012) to Riverin-Coutlée and Roy (2022). Michaëlle Jean grew up and started her career at a time when diphthongization of /a͡ɛ/ was not as systematic as it is today and she received her journalism training when the feature was stigmatized (Lappin 1982). In an impressionistic analysis of mediatic speech recorded in 1999–2000, Reinke (2005) noted a rate of diphthongization of /a͡ɛ/ below 5% in the type of TV broadcasts in which Michaëlle Jean would engage. The data from the Other period (2019–2022) also suggest that she is not participating in the increasing rate of diphthongization of /a͡ɛ/ observed in the community. A recent study by Chalier (2021) involving 96 QF listeners indicated that approximately 20% of the participants thought that QF broadcasters should produce /a͡ɛ/ with a diphthongal quality, while the remaining 80% preferred the non-diphthongized long variant [ɛː] (leaving a remarkable 0% choosing the short monophthongal variant typical of standard HF). The monophthongal quality of Michaëlle Jean's /a͡ɛ/ vowel could reflect that diphthongization was and is still not considered appropriate for mediatic speech in Quebec. In addition, diphthongization is absent from the other French varieties spoken by the people Jean represented in her professional functions at La Francophonie (2014–2018). The persistence of the length contrast across occupations despite its absence from standard HF suggests once more that phonological representations tend to resist change over the lifespan (Chambers 1992; Kerswill 1996; Kwon 2018; Nielsen 2011). Adhering to exemplar theory as introduced in Section 7.1.5, this suggests that certain biases in exemplar sampling (i.e., style shifts) may occur in response to the activation of indexed non-linguistic features, such as the context in which speech was produced, as in this study. However, this type of bias may be constrained by the limits of robust phonological categories built over years of experience (Foulkes and Docherty 2006; Harrington et al. 2018; Reubold and Harrington 2018).

Our main prediction that the speech of Michaëlle Jean would be more QF-like during the Journalist period (1988–2005) than during her tenure at La Francophonie (2014–2018) is not supported by the new data presented here. Unlike the tense-lax split in Riverin-Coutlée and Harrington (2022), neither the distance between [i] and /e/ in the acoustic space nor the nature of the contrast between /ɛ/ and /a͡ɛ/ changed over time. Overall, for the features investigated, the speech of Michaëlle Jean was more QF-like than HF-like across time periods, which can be seen in the maintenance of the length contrast between /ɛ/ and /a͡ɛ/ and in the relatively small distance between [i] and /e/. However, given the absence of diphthongization, Jean's speech was still slightly different from QF spoken in the wider community, which we attribute to style, i.e., mediatic speech.

Our results still point to some differences between the Journalist (1988–2005) and Other (2019–2022) periods on the one hand, and her time at La Francophonie (2014–2018) on the other (with Governor General [2005–2010] and UNESCO [2010–2014] periods in between). The differences of F1 and F2 for /e/ between periods reflected a more open /e/ during her La Francophonie period and a more fronted /e/ during the Journalist and Other periods. We can assume that similar changes occurred for [i] given that its distance to /e/ remained the same across periods. Both /ɛ/ and /a͡ɛ/ were also found to be more back during her time at La Francophonie than during the Journalist and Other periods. This suggests that parameters other than those which we chose to analyze have changed over time. This calls for further analyses of Michaëlle Jean's speech, either acoustic studies extended to other vowels (e.g., /a/ and /ɑ/), consonants, prosodic features or other types of measurements, or perception experiments that could perhaps provide a more holistic perspective on stability and change across the lifespan (e.g., Pardo et al. 2012; 2018).

Even though much remains to be clarified regarding the extent and nature of the changes occurring in Michaëlle Jean's speech, the different patterning during her Journalist years (1988–2005) vs. her years at La Francophonie (2014–2018) provides some evidence of the influence of professional occupation and audience design on speech production. Communicating news to a local audience (as a journalist) and representing millions of French speakers in front of an international audience (while at La Francophonie) are done using different features, even though both qualify as public speech. Further evidence comes from an apparent reversal of this trend in the latest years, which is signaled by differences between La Francophonie (2014–2018) and the Other (2019–2022) periods, and/or by similarities between the Journalist (1988–2005) and Other (2019–2022) periods. This reversal was observed in the quality of [i], /e/, /ɛ/ and /a͡ɛ/, but also in the tense-lax split in Riverin-Coutlée and Harrington (2022). The reversal occurred after the pressure to represent and perform for an international audience reached its peak, suggesting the role of the workplace and audience in the observed patterns of change, in addition to maintaining a certain phonetic flexibility more generally across the lifespan (Sankoff 2018). Taken together, the results from this and the previous study suggest that style is an integral component of personas designed by workers seeking to benefit from the different linguistic markets with which they engage at different stages of their careers (Bell 1984; Bourdieu 1982). The current study shows that designing a style for the workplace is constrained both phonologically and socially, as evidenced through phonological stability (acoustic distance between [i] and /e/, length contrast between /ɛ/ and /a͡ɛ/) and avoidance of a stigmatized feature (diphthongization of /a͡ɛ/).

Focusing on public speech reduced the likelihood that any pattern observed could be due to style-switching (Rickford 2021). However, the range of variants and styles that Michaëlle Jean is able to produce is obviously wider and richer than that typically observed in the restricted context of public speech. Our conclusions should be interpreted while taking into consideration that the small fraction of Jean's linguistic resources available to us might not reflect her private language use. Similarly, public speech is only one of the many stylistic layers that compose a variety or language, and an individual is only one of the many speakers in a speech community. Beyond the issue of generalization, an unresolved issue concerns the timepoint at which the variants that make up a style are acquired: this can be more difficult to identify than, for example, the moment when speakers start acquiring a second dialect which can be more easily tied to the time when geographical relocation took place (Nycz 2015). Adult speakers do design styles based on the sociolinguistic experience acquired during childhood and adolescence, but they also likely learn and acquire more stylistic variation as they navigate their careers.

Acknowledgments

This research was supported by a post-doctoral grant from the Fonds de recherche du Québec – Société et culture to the first author (https://doi.org/10.69777/270174). We thank Karen Beaman, Isabelle Buchstaller, two anonymous reviewers, and the audience at *Methods XVII* (Mainz, Germany) for helpful feedback at different stages of this work.

Notes

1 The term *mediatic* is used throughout this chapter to mean "relating to the media."
2 La Francophonie is an organization and institution "promoting the French language and political, educational, economic and cultural cooperation" (Organisation internationale de la francophonie 2023). It comprises 88 French-speaking member states and countries, and represents over 321 million French speakers worldwide (Organisation internationale de la francophonie 2023).
3 Biographic details were retrieved from Michaëlle Jean's website: www.michaellejean.ca/
4 Rule 23 of the Olympic charter states that Olympic Games have two official languages: French and English (Comité International Olympique 2021; see also Vessey 2018). At each edition since 2004, a Great Witness (*Grand Témoin*) is appointed to observe and report on whether French is used appropriately at the opening ceremony, on the website, in signposting, in commentaries, etc.

5 The same rule applies to the high vowels /y u/, i.e., they split into tense [y u] and lax [ʏ ʊ] depending on the consonantal context in QF but not in HF. Our previous study (Riverin-Coutlée and Harrington 2022) investigated the tense-lax split of the three high vowels /i y u/.
6 While this is not the only vowel space of HF that has been published, it is particularly interesting because it shows the acoustic characteristics of /i/ in contexts that would yield tense and lax variants in QF. It is obvious from Storme (2017, Figure 7) that HF does not differentiate between tense and lax variants, and that /e/ is more distant from /i/ in HF than from [i] in QF.
7 Given this diverse range of speech situations, style shifting within periods may have occurred. However, it does not seem to have affected the speech features investigated here (see Riverin-Coutlée and Harrington 2022: 45 for statistical evidence).

References

Arnaud, Vincent, Caroline Sigouin and Johanna-Pascale Roy. 2011. "Acoustic description of Quebec French high vowels: First results." In *Proceedings of the XVIIth International Congress of Phonetic Sciences*. Hong Kong: International Phonetic Association. 244–247.

Ash, Sharon. 2002. "Social class." In *The Handbook of Language Variation and Change*, 1st ed. J. K. Chambers, Peter Trudgill and Natalie Schilling-Estes (eds.). Oxford: Blackwell. 402–422.

Bates, Douglas, Martin Maechler, Ben Bolker and Steve Walker. 2015. "Fitting linear mixed-effects models using lme4." *Journal of Statistical Software* 67(1):1–48.

Beaman, Karen V. and Isabelle Buchstaller (eds.). 2021. *Language Variation and Language Change across the Lifespan: Theoretical and Empirical Perspectives from Panel Studies*. London: Routledge.

Bell, Allan. 1984. "Language style as audience design." *Language in Society* 13(2):145–204.

Bell, Allan. 2001. "Back in style: Reworking audience design." In *Style and Sociolinguistic Variation*. Penelope Eckert and John R. Rickford (eds.). Cambridge: Cambridge University Press. 139–169.

Bigot, Davy and Robert A. Papen. 2013. "Sur la 'norme' du français oral au Québec (et au Canada en général)." *Langage et société* 146(4):115–132.

Bombien, Lasse, Raphael Winkelmann and Michel Scheffers. 2021. wrassp: An R wrapper to the ASSP Library. https://CRAN.R-project.org/package=wrassp.

Bourdieu, Pierre. 1982. *Ce que parler veut dire. L'économie des échanges linguistiques*. Paris: Fayard.

Bowie, David. 2005. "Language change over the lifespan: A test of the apparent time construct." *University of Pennsylvania Working Papers in Linguistics* 11(2):45–58.

Bowie, David. 2015. "Phonological variation in real time: Patterns of adult linguistic stability and change." In *Language Development: The Lifespan*

Perspective. Annette Gerstenberg and Anja Voeste (eds.). Amsterdam: John Benjamins. 39–58.
Bowie, David and Malcah Yaeger-Dror. 2015. "Phonological change in real time." In *The Oxford Handbook of Historical Phonology*. Patrick Honeybone and Joseph Salmons (eds.). Oxford: Oxford University Press. 603–618.
Brasseur, Annie. 2009. *Les marqueurs phonétiques de la perception de l'accent québécois*. MA dissertation. Québec: Université Laval.
Buchstaller, Isabelle and Suzanne Evans Wagner. 2018. "Introduction: Using panel data in the sociolinguistic study of variation and change." In *Panel Studies of Variation and Change*. Suzanne Evans Wagner and Isabelle Buchstaller (eds.). New York: Routledge. 1–18.
Campbell-Kibler, Kathryn. 2016. "Towards a cognitively realistic model of meaningful sociolinguistic variation." In *Awareness and Control in Sociolinguistic Research*. Anna M. Babel (ed.). Cambridge: Cambridge University Press. 123–151.
Chalier, Marc. 2021. *Les normes de prononciation du français. Une étude perceptive panfrancophone*. Berlin: De Gruyter.
Chambers, J. K. 1992. "Dialect acquisition." *Language* 68(4):673–705.
Comité International Olympique. 2021. "Charte olympique." https://olympics.com/cio/charte-olympique.
Côté, Marie-Hélène. 2012. "Laurentian French (Quebec): Extra vowels, missing schwas and surprising liaison consonants." In *Phonological Variation in French: Illustrations from Three Continents*. Randall Gess, Chantal Lyche and Trudel Meisenburg (eds.). Amsterdam: John Benjamins. 235–274.
Côté, Marie-Hélène. 2022. "French." In *Manual of Romance Phonetics and Phonology*. Christoph Gabriel, Randall Gess and Trudel Meisenburg (eds.). Berlin: De Gruyter. 669–708.
Coupland, Nikolas. 1984. "Accommodation at work: Some phonological data and their implications." *International Journal of the Sociology of Language* 1984(46):49–70.
De Decker, Paul. 2006. "A real-time investigation of social and phonetic changes in post-adolescence." *University of Pennsylvania Working Papers in Linguistics* 12(2): 65–76.
Deshaies-Lafontaine, Denise. 1974. *A Socio-Phonetic Study of a Québec French Community: Trois-Rivières*. PhD thesis. London: University College London.
Dowling, Tim. 2007. "The mystery of Hillary Clinton's changing accent." *The Guardian*. www.theguardian.com/world/2007/may/02/hillaryclinton.uselections2008.
Drager, Katie and Joelle Kirtley. 2016. "Awareness, salience, and stereotypes in exemplar-based models of speech production and perception." In *Awareness and Control in Sociolinguistic Research*. Anna M. Babel (ed.). Cambridge: Cambridge University Press. 1–24.
Dumas, Denis. 1987. *Nos façons de parler. Les prononciations en français québécois*. Québec: Presses de l'Université du Québec.
Eckert, Penelope. 1997. "Age as a sociolinguistic variable." In *The Handbook of Sociolinguistics*. Florian Coulmas (ed.). Oxford: Blackwell. 151–167.

Eckert, Penelope. 2000. *Language Variation as Social Practice: The Linguistic Construction of Identity in Belten High*. Oxford: Wiley-Blackwell.

Eckert, Penelope and John R. Rickford (eds.). 2001. *Style and Sociolinguistic Variation*. Cambridge: Cambridge University Press.

Evans, Bronwen G. and Paul Iverson. 2007. "Plasticity in vowel perception and production: A study of accent change in young adults." *Journal of the Acoustical Society of America* 121(6): 3814–3826.

Fougeron, Cécile and Caroline L. Smith. 1993. "French." *Journal of the International Phonetic Association* 23(2):73–76.

Foulkes, Paul and Gerard Docherty. 2006. "The social life of phonetics and phonology." *Journal of Phonetics* 34(4):409–438.

Giles, Howard and Peter F. Powesland. 1975. *Speech Style and Social Evaluation*. London: Academic Press.

Giles, Howard and Philip Smith. 1979. "Accomodation theory: Optimal levels of convergence." In *Language and Social Psychology*. Howard Giles and Robert N. St Clair (eds.). Oxford: Basil Blackwell. 45–65.

Goffman, Erving. 1981. *Forms of Talk*. Philadelphia: University of Pennsylvania Press.

Gottfried, Terry L. 1984. "Effects of consonant context on the perception of French vowels." *Journal of Phonetics* 12(2):91–114.

Harrington, Jonathan, Michele Gubian, Mary Stevens and Florian Schiel. 2019. "Phonetic change in an Antarctic winter." *Journal of the Acoustical Society of America* 146(5): 3327–3332.

Harrington, Jonathan, Felicitas Kleber, Ulrich Reubold, Florian Schiel and Mary Stevens. 2018. "Linking cognitive and social aspects of sound change using agent-based modeling." *Topics in Cognitive Science* 10(4):707–728.

Harrington, Jonathan, Sallyanne Palethorpe and Catherine I. Watson. 2000. "Monophthongal vowel changes in Received Pronunciation: An acoustic analysis of the Queen's Christmas broadcasts." *Journal of the International Phonetic Association* 30(1–2):63–78.

Harrington, Jonathan and Ulrich Reubold. 2021. "Accent reversion in older adults: Evidence from the Queen's Christmas broadcasts." In *Language Variation and Change Across the Lifespan: Theoretical and Empirical Perspectives from Panel Studies*. Karen V. Beaman and Isabelle Buchstaller (eds.). New York: Routledge. 119–137.

Hay, Jennifer, Stefanie Jannedy and Norma Mendoza-Denton. 1999. "Oprah and /ay/: Lexical frequency, referee design and style." In *Proceedings of the XIVth International Congress of Phonetic Sciences*. San Francisco International Phonetic Association. 1389–1392.

Hernández-Campoy, Juan Manuel and Juan Antonio Cutillas-Espinosa. 2012. "Introduction. Style-shifting revisited." In *Style-Shifting in Public: New Perspectives on Stylistic Variation*. Juan Manuel Hernández-Campoy and Juan Antonio Cutillas-Espinosa (eds.). Amsterdam: John Benjamins. 1–18.

Homans, George Caspar. 1961. *Social Behavior: Its Elementary Forms*. New York: Harcourt, Brace and World.

Johnson, Keith. 1997. "Speech perception without speaker normalization: An exemplar model." In *Talker Variability in Speech Processing*. Keith Johnson and John W. Mullennix (eds.). San Diego: Academic Press. 145–165.

Kerswill, Paul. 1996. "Children, adolescents, and language change." *Language Variation and Change* 8(2):177–202.

Kisler, Thomas, Uwe D. Reichel and Florian Schiel. 2017. "Multilingual processing of speech via web services." *Computer Speech and Language* 45:326–347.

Kuznetsova, Alexandra, Per B. Brockhoff and Rune H. B. Christensen. 2017. "lmerTest package: Tests in linear mixed effects models." *Journal of Statistical Software* 82(13):1–26.

Kwon, Soohyun. 2018. "Phonetic and phonological changes of Noam Chomsky: A case study of dialect shift." *American Speech* 93(2):270–297.

Labov, William. 1972. *Sociolinguistic Patterns*. Philadelphia: University of Pennsylvania Press.

Labov, William. 2001. *Principles of Linguistic Change: Social Factors*, Vol. 2. Oxford: Blackwell.

Lappin, Kerry. 1982. "Évaluation de la prononciation du français montréalais." *Revue québécoise de linguistique* 11(2):93–112.

Le Page, Robert Brock and Andrée Tabouret-Keller. 1985. *Acts of Identity: Creole-Based Approaches to Language and Ethnicity*. Cambridge: Cambridge University Press.

Leblanc, Guillaume. 2012. *Une étude acoustique des voyelles orales susceptibles d'être diphtonguées en français québécois*. Québec: Université Laval masters thesis.

Lenth, Russell. 2023. *emmeans: Estimated marginal means, aka least-squares means*. https://CRAN.R-project.org/package=emmeans.

MacKenzie, Laurel. 2017. "Frequency effects over the lifespan: A case study of Attenborough's r's." *Linguistics Vanguard* 3(1):20170005.

MacKenzie, Laurel and Gillian Sankoff. 2010. "A quantitative analysis of diphthongization in Montreal French." *University of Pennsylvania Working Papers in Linguistics* 15(2):91–100.

Martin, Pierre. 1995. "L'opposition entre /ɛ/ (bref) et /ɛ:/ (long) en français actuel du Québec." *La Linguistique* 31(2):33–45.

Martin, Pierre. 1996. *Éléments de phonétique avec application au français*. Québec: Presses de l'Université Laval.

Morin, Rose-Aimée Automne T. and Marie-Anne Grenon. 2018. "Faut-il se 'déquébéciser' pour plaire en France?" *Urbania*. https://urbania.ca/article/nouveau-quebecois-culture.

Nahkola, Kari and Marja Saanilahti. 2004. "Mapping language changes in real time: A panel study on Finnish." *Language Variation and Change* 16(2):75–92.

Nielsen, Kuniko. 2011. "Specificity and abstractness of VOT imitation." *Journal of Phonetics* 39(2):132–142.

Nycz, Jennifer. 2013. "Changing words or changing rules? Second dialect acquisition and phonological representation." *Journal of Pragmatics* 52:49–62.

Nycz, Jennifer. 2015. "Second dialect acquisition: A sociophonetic perspective." *Language and Linguistics Compass* 9(11):469–482.

Nycz, Jennifer. 2018. "Stylistic variation among mobile speakers: Using old and new regional variables to construct complex place identity." *Language Variation and Change* 30(2):175–202.

Organisation internationale de la francophonie. 2023. "*The Francophonie in brief*." www.francophonie.org.

Paradis, Claude and Jean Dolbec. 1998. "*PHONO: les principales caractéristiques phonétiques du français parlé au Québec*." http://phono.uqac.ca/.

Pardo, Jennifer S., Rachel Gibbons, Alexandra Suppes and Robert M. Krauss. 2012. "Phonetic convergence in college roommates." *Journal of Phonetics* 40(1):190–197.

Pardo, Jennifer S., Adelya Urmanche, Sherilyn Wilman, Jaclyn Wiener, Nicholas Mason, Keagan Francis and Melanie Ward. 2018. "A comparison of phonetic convergence in conversational interaction and speech shadowing." *Journal of Phonetics* 69:1–11.

Pichler, Heike, Suzanne Evans Wagner and Ashley Hesson. 2018. "Old-age language variation and change: Confronting variationist ageism." *Language and Linguistics Compass* 12(6):1–21.

Pickering, Martin J. and Simon Garrod. 2013. "An integrated theory of language production and comprehension." *Behavioral and Brain Sciences* 36(4):329–347.

Pierrehumbert, Janet B. 2006. "The next toolkit." *Journal of Phonetics* 34(4):516–530.

Pierrehumbert, Janet B. 2016. "Phonological representation: Beyond abstract versus episodic." *Annual Review of Linguistics* 2(1):33–52.

Podesva, Robert J., Lauren Hall-Lew, Jason Brenier, Rebecca Starr and Stacy Lewis. 2012. "Condoleezza Rice and the sociophonetic construction of identity." In *Style-Shifting in Public: New Perspectives on Stylistic Variation*. Juan Manuel Hernández-Campoy and Juan Antonio Cutillas-Espinosa (eds.). Amsterdam: John Benjamins. 65–80.

R Core Team. 2023. *R: A Language and Environment for Statistical Computing*. www.R-project.org.

Reichel, Uwe D. 2012. "PermA and Balloon: Tools for string alignment and text processing." In *Proceedings of Interspeech 2012*. Portland, USA: International Phonetic Association. 1874–1877.

Reichel, Uwe D. and Thomas Kisler. 2014. "Language-independent grapheme-phoneme conversion and word stress assignment as a web service." In *Elektronische Sprachverarbeitung. Studientexte zur Sprachkommunikation*. Rüdiger Hoffmann (ed.). Dresden: TUD Press. 42–49.

Reinke, Kristin. 2005. *La langue à la télévision québécoise: aspects sociophonétiques*. Québec: Office québécois de la langue française.

Reinke, Kristin and Luc Ostiguy. 2016. *Le français québécois d'aujourd'hui*. Berlin: Walter de Gruyter.

Reubold, Ulrich and Jonathan Harrington. 2015. "Disassociating the effects of age from phonetic change: A longitudinal study of formant frequencies." In *Language Development: The Lifespan Perspective*. Annette Gerstenberg and Anja Voeste (eds.). Amsterdam: John Benjamins. 9–38.

Reubold, Ulrich and Jonathan Harrington. 2018. "The influence of age on estimating sound change acoustically from longitudinal data." In *Panel Studies of Variation and Change*. Suzanne Evans Wagner and Isabelle Buchstaller (eds.). London: Routledge. 129–151.

Rickford, John R. 2021. "Stylistic variation in panel studies of language change: Challenge and opportunity." In *Language Variation and Language Change across the Lifespan: Theoretical and Empirical Perspectives from Panel Studies*. K. V. Beaman and I. Buchstaller (eds.). London: Routledge. 77–97.

Riverin-Coutlée, Josiane and Jonathan Harrington. 2022. "Phonetic change over the career: A case study." *Linguistics Vanguard* 8(1):41–52.

Riverin-Coutlée, Josiane and Johanna-Pascale Roy. 2022. "A descriptive account of the Quebec French diphthong FÊTE." *Journal of the International Phonetic Association* 52(2):228–245.

Riverin-Coutlée, Josiane, Johanna-Pascale Roy and Michele Gubian. 2023. "Using Mahalanobis distances to investigate second dialect acquisition: A study on Quebec French." *Language and Speech* 66(2):291–321.

Sankoff, David and Suzanne Laberge. 1978. "The linguistic market and the statistical explanation of variability." In *Linguistic Variation: Models and Methods*. David Sankoff (ed.). New York: Academic Press. 239–250.

Sankoff, Gillian. 2004. "Adolescents, young adults, and the critical period: Two case studies from 'Seven Up.'" In *Sociolinguistic Variation: Critical Reflections*. Carmen Fought (ed.). Oxford: Oxford University Press. 121–139.

Sankoff, Gillian. 2018. "Language change across the lifespan." *Annual Review of Linguistics* 4(1):297–316.

Sankoff, Gillian and Hélène Blondeau. 2007. "Language change across the lifespan: /r/ in Montreal French." *Language* 83(3):560–588.

Sankoff, Gillian and Hélène Blondeau. 2013. "Instability of the [r] ~ [ʁ] alternation in Montreal French: An exploration of stylistic conditioning in a sound change in progress." In *Rhotics. New Data and Perspectives*. Lorenzo Spreafico and Alessandro Vietti (eds.). Bozen-Bolzano: Bozen-Bolzano University Press. 249–265.

Santerre, Laurent. 1974. "Deux E et deux A phonologiques en français québécois: étude phonologique, articulatoire et acoustique des oppositions de timbre et de durée." *Cahier de linguistique* 4:117–145.

Santerre, Laurent. 1981. "Stabilité et variation des oppositions ɛ/ɜ et a/ɑ en français de Montréal." *Logos Semantikos* 5:375–384.

Schiel, Florian. 1999. "Automatic phonetic transcription of non-prompted speech." In *Proceedings of the XIVth International Congress of Phonetic Sciences*. San Francisco, USA: International Phonetic Association. 607–610.

Schiel, Florian. 2015. "A statistical model for predicting pronunciation." In *Proceedings of the XVIIIth International Congress of Phonetic Sciences*. Glasgow, UK: International Phonetic Association.

Schilling, Natalie. 2013. "Investigating stylistic variation." In *The Handbook of Language Variation and Change*, 2nd ed. J. K. Chambers and Natalie Schilling (eds.). Chichester: Wiley-Blackwell. 325–349.

Sclafani, Jennifer. 2017. *Talking Donald Trump: A Sociolinguistic Study of Style, Metadiscourse, and Political Identity*. London: Routledge.

Shapp, Allison, Nathan LaFave and John Victor Singler. 2014. "Ginsburg v. Ginsburg: A longitudinal study of regional features in a Supreme Court Justice's speech." *University of Pennsylvania Working Papers in Linguistics* 20(2):149–158.

Sharma, Devyani. 2018. "Style dominance: Attention, audience, and the 'real me.'" *Language in Society* 47(1):1–31.

Siegel, Jeff. 2021. "Identity, authenticity and dialect acquisition: The case of Australian English." In *Sociolinguistic Variation and Language Acquisition across the Lifespan*. Anna Ghimenton, Aurélie Nardy and Jean-Pierre Chevrot (eds.). Amsterdam: John Benjamins. 277–294.

Solomon, Martha. 1978. "Jimmy Carter and Playboy: A sociolinguistic perspective on style." *Quarterly Journal of Speech* 64(2):173–182.

Sonderegger, Morgan, Max Bane and Peter Graff. 2017. "The medium-term dynamics of accents on reality television." *Language* 93(3):598–640.

Storme, Benjamin. 2017. "The *loi de position* and the acoustics of French mid vowels." *Glossa: A Journal of General Linguistics* 2(1):64–89.

Tucker, Barbara, Kristin Barton, Amy Burger, Jerry Drye and Cathy Hunsicker. 2019. *Exploring Public Speaking*, 4th ed. Dalton, GA: Communication Open Textbooks.

Vaupot, Sonia. 2017. "Phonetic and phonological characteristics of French spoken in Europe and Quebec." *Linguistica* 57(1):331–342.

Vessey, Rachelle. 2018. "Language policy and planning and the Olympic Games." In *The Routledge Handbook of Language and Superdiversity: An Interdisciplinary Perspective*. Angela Creese and Adrian Blackledge (eds.). New York: Routledge. 227–240.

Wade, Lacey. 2022. "Experimental evidence for expectation-driven linguistic convergence." *Language* 98(1):63–97.

Wagner, Suzanne Evans. 2012. "Real-time evidence for age grad(ing) in late adolescence." *Language Variation and Change* 24(2):179–202.

Walker, Abby. 2018. "The effect of long-term second dialect exposure on sentence transcription in noise." *Journal of Phonetics* 71:162–176.

Walker, Abby. 2019. "The role of dialect experience in topic-based shifts in speech production." *Language Variation and Change* 31(2):135–163.

Walker, Douglas C. 1984. *The Pronunciation of Canadian French*. Ottawa: University of Ottawa Press.

Winkelmann, Raphael, Jonathan Harrington and Klaus Jänsch. 2017. "EMU-SDMS: Advanced speech database management and analysis in R." *Computer Speech and Language* 45:392–410.

Yang, Cathryn, Pittayawat Pittayaporn, James Kirby and Sujinat Jitwiriyanont. 2021. "Change and stability in the tonal contours of King Rama IX of Thailand, 1959–1997." In *Proceedings of the 1st International Conference on Tone and Intonation*. Denmark: University of Southern Denmark. 66–70.