Bilingualism: Language and Cognition 7 (2), 2004, 95–104 © 2004 Cambridge University Press DOI: 10.1017/S1366728904001452

Phonological convergence in a contracting language variety*

BARBARA E. BULLOCK
CHIP GERFEN
The Pennsylvania State University

Most work investigating the role of convergence in situations of language attrition has focused on the morpho-syntactic restructuring of the dying language variety. A central concern of such research has been untangling the factors driving the restructuring with an eye towards establishing whether the changes observed are best viewed as externally driven or, by contrast, as internally motivated. A second and equally important concern of this research attempts to define the domains of the linguistic system that may be the most permeable to external influence. The present study provides a contribution to this line of research and sheds light on its two leading concerns from the domain of phonology and phonetics. Specifically, we present the results of an instrumental study of the phonological vowel system of Frenchville French and argue that this linguistic variety is undergoing a perceptually striking process of phonetic convergence with English that is motivated by the auditory and acoustic similarity between a subset of vowels in the contact languages. An interesting consequence of our analysis is that bilingual phonologies may become particularly permeable to inter-linguistic influence precisely where they are acoustically and perceptually unstable, and where they are already congruent to some degree.

Introduction

Most researchers in bilingualism would readily agree that structural convergence is often observed between languages in contact. In cases involving language attrition, convergence is frequently adduced as a mechanism of change, where a dominant language eventually exerts an influence on and provokes a change in the structure of the contracting language (Myers-Scotton, 2002). To date, most work on the role of convergence in attrition has focused on aspects of the morpho-syntactic restructuring of the attriting language, and these studies have endeavored to investigate whether a given linguistic change is the result of externally-induced convergence or the product of internal changes alone (cf. Beniak, Mougeon and Valois, 1984/5; Silva-Corvalán, 1991, 1994/2000). Importantly, as shown by Silva-Corvalán (1986, 1991, 1994/2000), external contact is not necessarily the cause of language change; rather, such contact may merely accelerate tendencies already inherent in the language undergoing attrition. As a consequence, it must be effectively demonstrated, rather than assumed, that linguistic restructuring in attrition is indeed attributable to contact effects.

While we must accept Silva-Corvalán's cautionary note that what appears to be convergence in attrition may instead be internally motivated, few researchers would discard *a priori* any role for convergence in attrition. It is thus stunning to find such a denial in the domain of phonology where, in contrast to the better-studied areas of syntax and morphology, we have vanishing little empirical evidence upon which to base the claim that "there is no inter-linguistic confluence or convergence in language death" (Cook, 1995, p. 221). Such a strong position is useful theoretically insofar as it can be falsified by documenting a single case of structural change that is inarguably driven by contact effects. In this article, we present such evidence, analyzing an instance of phonological convergence in a dying variety of French in contact with English. Specifically, we show that the variety under examination, Frenchville French, is undergoing a process of phonetic convergence that is motivated by the perceptual and acoustic similarity between a subset of vowels in the contact languages. Based on this evidence and on theoretical considerations of the role of convergence in bilingualism, we argue contra Cook (1989, 1995) that attrition and convergence cannot, and should not, be interpreted as mutually exclusive phenomena.

We organize the presentation of our argument as follows. We begin with a discussion of the concept of convergence and its differing definitions, elaborating our own view of the minimally sufficient criteria for a convergent change. This is followed by an overview of Cook's (1989, 1995) proposal, in which he maintains that

* The authors wish to extend their appreciation to the receptive audiences for various aspects of this research at the Workshop on French in the U.S. at Indiana University and at the International Symposium on Bilingualism in Tempe, Arizona. We wish to acknowledge our debt of gratitude to Sylvie DuBois, Kees de Bot, Jeanine Brutt-Griffler, Randall Gess, Françoise Mougeon, Richard Page, Johanne Paradis, Monika Schmid and, especially, Jacqueline Toribio. We thank our Frenchville partipants and all the people of Frenchville for their good humor and for their willingness to share their language and memories with us.

Address for correspondence
Barbara E. Bullock, Department of French, 211 Burrowes Building, University Park, Pennsylvania 16802, USA
E-mail: *beb2@psu.edu*

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

convergence is a sign of the linguistic vitality of each language in a contact situation and, thus, not compatible with language death. Contra Cook, we argue that although convergence and attrition are distinct phenomena, there is no reason to assume that convergence may not accompany attrition. In fact, such a scenario is a logical and viable possibility that cannot be summarily dismissed. Our claim is supported by the examination of a case of phonological change manifested in the vocalic system of the last bilingual French-English speakers in the linguistic enclave community of Frenchville, Pennsylvania. We focus on the replacement of the mid front round French vowels [ø] and [œ] with an English rhoticized schwa, because there is strong phonetic motivation to view contact with the dominant language, English, as driving this change (Bullock and Gerfen, forthcoming). We interpret the data as a clear case of phonological convergence promoted by the acoustic and perceptual congruity between the seemingly disparate vowels in the contact languages.

Convergence

The term CONVERGENCE is defined and used in various ways by different researchers, and such variability can render it a confusing concept, rather than a useful technical term (Myers-Scotton, 2002). There is inherent in discussions of convergence a dispute over the direction of influence (i.e. whether convergence is mutual or unidirectional). For some (Silva-Corvalán, 1994/2000; Thomason, 2001), convergence is best reserved for cases in which both languages change to become structurally more like one another; that is, in which there is a mutual influence between the languages. This definition of convergence covers the diachronic cases of areal features or *Sprachbünde* in which the source language for a given feature or set of features that has spread across different languages may not be easily determined. For other researchers in language contact (Beniak et al., 1984/5; Myers-Scotton, 2002; Clyne, 2003), convergence may be more broadly defined to apply to situations in which one language in a contact situation changes under the influence of another. This is particularly the case in language attrition or in immigrant and minority language situations when a subordinate language changes under the influence of the structure of the dominant language.

A second point of contention in discussions of convergence involves the interpretation of the eventual effect of the process. Some view the process as loss through reduction and simplification, because one grammar is undergoing an elimination of indigenous means of expression and adopting a form that is congruent with that of the dominant language (Beniak et al., 1984/5). The problem with equating convergence with simplification or reduction is that the resulting changes may not always be easily viewed as structurally less complex (for a discussion of this issue, see Romaine, 1995). For instance, as we discuss below, one may perceive the elimination of the arguably marked mid front rounded vowels in Frenchville French as a simplification, but their replacement by the English rhoticized schwa, also a highly marked vowel, does not directly entail any transparent structural simplification either in terms of markedness or in terms of reducing the overall segmental inventory of French.

There is, however, one defining characteristic of convergence, signaled by Thomason (2001), that renders the issue of the direction of influence largely irrelevant and that dispels the problematic notion that convergence can be equated with simplification. Specifically, in order to properly speak of convergence, the structural property that is ultimately the locus of change must already be manifested to some degree in both languages. Under this view, the result of convergence is that the languages in contact have become uniform with respect to a property that was initially merely congruent (i.e. similar), even if one language remains unchanged in the process. This is the view of convergence that we adopt here.

Convergence, bilingualism, and attrition

In a series of analyses of the consonantal inventories of Athapaskan languages, Cook (1989, 1995) advances his "nonconvergence hypothesis in language death" (Cook, 1995, p. 228). Claiming that " the convergence/confluence hypothesis has been grossly oversubscribed by those who have studied language death" (1995, p. 218), Cook seeks to demonstrate that convergence is not a property of language attrition, including within his purview a reinterpretation of some well-documented language death situations (specifically the case of Dyirbal studied by Schmidt (1985) and of East Southerland Gaelic examined by Dorian (1978, 1981)). Essentially, Cook argues that fluent speakers of a contracting language variety are relatively immune to external influence; their speech is thus conservative rather than innovative and reflects little of the variation and simplification that often is said to characterize the linguistic restructuring that accompanies language death. The simplification and reduction that is manifest in language death, he claims, is attributable instead to "semispeakers' impeded and prematurely terminated learning process" (Cook, 1995, p. 227). Further, in his view, the restructuring that occurs in the speech of semi-speakers is entirely consonant with, and can be analyzed as, internally motivated change only. It is not a product of convergence due to contact, but rather the result of a "retarded process of language acquisition" (Cook, 1989, p. 235). Accordingly, convergence between two systems is predicted to occur in the context of stable bilingualism where children are acquiring languages from fluent speakers. He concludes that the more a language

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

adapts and converges in a contact situation, the longer it will survive.

Cook's claim that convergence and attrition are mutually incompatible represents a strong – and perhaps polarizing – position within research on language attrition and one that we believe is both overstated and limiting. While we do not claim that every language attrition situation involves external convergence nor that convergence is restricted to attrition, we do envision other possibilities ruled out by Cook that are both logical and plausible. A simple binary schema, as in (1), displays the combinatory possibilities of the interplay between convergence and attrition and briefly schematizes the sociolinguistic context in which the predicted situations might arise.

(1) Combinatory possibilities within a bilingual context for convergence and attrition

	CONVERGENCE	ATTRITION	CONTEXT
a.	+	–	stable bilingualism, *Sprachbund*
b.	–	+	language/dialect death, diglossia
c.	–	–	stable bilingualism, diglossia
d.	+	+	language/dialect death

Note that Cook's "nonconvergence hypothesis" privileges only the first two situations in which convergence and attrition are mutually exclusive. Under his view, convergence without attrition, (1a), occurs where both languages that a bilingual acquires are healthy and viable. We add that this scenario also describes the various attested *Sprachbünde* phenomena wherein there is structural convergence with no attendant language death of any of the languages comprising the linguistic area. Cook further claims that language death proceeds without convergence, (1b), since structural changes that do occur in dying languages are attributable to a semi-speaker's internally motivated reanalysis and not to external influence. It is to be noted that language death without convergence, (1b), considered at the societal rather than the individual level could occur in the context of Ferguson's (1967) diglossic community without bilingualism, that is, a situation in which two or more monolingual communities are brought together under one governmental entity. Although Ferguson claims that such communities tend to maintain both languages, as depicted in (1c), where there is no convergence and no attrition, it is not difficult to imagine the rapid attrition of the Low function language at the expense of the High function language. Romaine (1995) points to the extinction of the Australian aboriginal languages as an attested example.

Finally, although excluded by Cook, the table above predicts that there are situations in which convergence accompanies attrition, (1d). In fact, at the level of the individual bilingual speaker, extant evidence suggests that convergence between his/her linguistic systems is the norm rather than the exception, enhancing the probability that (1d) more accurately reflects the attrition of a language in contact than does (1b). More specifically, the assertion that we may have individual bilinguals who show no signs of inter-linguistic convergence may depend on how deeply we delve into the structural properties of a bilingual's component languages. While bilinguals may perform like monolinguals in each of their component languages, it appears to be the case that their linguistic competencies nonetheless reflect linguistic convergence at some level or at multiple levels (see, for example, Grosjean, 1985, 1989; Coppetiers, 1987; Döpke, 2000; Müller and Hulk, 2001). Indeed, if it proves to be that there is always some degree of convergence or shared space between the two linguistic systems of bilinguals, Cook's nonconvergence hypothesis may be altogether theoretically untenable when considered at the level of the individual bilingual speaker. This means that the situations with no convergence in a bilingual context described by (1b) and (1c) above are exclusive to bilingualism interpreted as a social, rather than individual, phenomenon – that is, to contexts of diglossia only.

Research on the degree of convergence between a bilingual's grammars is still suggestive rather than conclusive and questions remain about which areas of the grammars of the component languages may be most susceptible to external interference. Therefore, in the ensuing analysis of convergence in the contracting variety of Frenchville French, we carefully unfold our argument that the phonological restructuring in evidence *is* due to convergence with English, and we address the reason why at least part of the vocalic system of French is especially permeable to external influence. Our motivation is to demonstrate that in the domain of phonology convergence with attrition, (1d), is not only possible but, indeed, attested.

Phonological restructuring in Frenchville French

Frenchville is located in the center-west of the state of Pennsylvania. Parish records reveal that the village was established by French-speaking immigrants from the Haute-Marne and Haute-Saône regions of France beginning and ending in the mid-nineteenth century. This French-English bilingual community is unique in that it represents a relatively late immigration from France and is the only extant direct importation of the language from France to the United States. Other French language communities in the United States are resettlements of Acadian populations (i.e. Louisiana, Old Mines Missouri, New England; Valdman, 1979).

Informal interviews of residents of the area conducted by the first author reveal that French is moribund in the village. The last generation of bilingual speakers is now advanced in age (65+ years), and they have not passed the language down to their children. Many of the

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

current elderly residents were raised in French-speaking households; some began their education in the one-room school without knowing any English. The language of education was exclusively English, and most of the elderly residents with claim to a bilingual upbringing can neither read nor write the language and have not spoken it, aside from ritual greetings, for decades. The language of Frenchville has been the object of study among researchers with recordings collected there on several occasions in the 1970s by different linguists. However, there has been to date no published record of the language, aside from a brief description of various structural properties in Valdman (1979). This is now being remedied by Mougeon and Uritescu (forthcoming), who are analyzing the early recordings, and by the present authors (Bullock and Gerfen, 2004, forthcoming), who examine the phonology and phonetics of the current generation of speakers.

The participants in the present analysis are two brothers, KB and NB, aged 69 and 72 years. They are not literate in French. However, unlike other residents of the area, they have continued to speak French either occasionally with one another or with the primary author. Both have lived in Frenchville all of their lives, and both spoke French at home exclusively until they married and moved out of their parents' home in their early twenties. Because their wives do not speak French, English is now the language of their homes. Both brothers terminated their formal educations by the age of 14. The data referred to in this paper were collected in structured but naturalistic field interviews with the first author in 2002. The interviews were conducted in French with occasional switches into English. The data reported here derive from two taped sessions of one hour each. The first interview was with both participants, the second with NB only. These interviews were taped with a Marantz PMD 221 professional cassette recorder using a Sony omnidirectional microphone. Digitization of the recordings at a sampling rate off 44 kHz with 16 bit quantization were made on a Macintosh G4 laptop using Sound Studio©. Spectrographs of selected speech segments were made with Praat©.

The issue of attrition and incomplete acquisition among our participants

Before proceeding with a discussion of the data under analysis, it is necessary to briefly discuss the issue of loss versus incomplete acquisition relative to our participants. We cannot speak to how much French our speakers may have "forgotten" due to disuse because we have no longitudinal data on their linguistic abilities. Thus, we do not use the term attrition to refer to a decay in our speakers' performance. Rather, attrition is used as an overall descriptor for the differences we find between our participants' speech and that of the previous generation of French speakers who were recorded as elderly speakers in the 1970s by Simon Belasco and Albert Valdman. These elderly speakers, who are now deceased, were Frenchville natives who had lived in the village throughout their lifetimes. The participants of the current study recall these speakers well and report having spoken with them mostly in French.

With regard to the issue of whether or not our speakers completely acquired French, we are faced with an indeterminacy imposed partially by the vague nature of the concept "incomplete acquisition". As noted by Montrul (2004 – this volume), it is difficult to determine the degree of linguistic attainment versus loss of the heritage language among second or third generation immigrants. Our participants report that they continued to use French at home exclusively into adulthood. Given this, it would be awkward to assert that their French acquisition process was prematurely terminated because they each used the heritage language daily until they were in their early twenties, time enough, we assume, to fully acquire a grammar although perhaps not a grammar that is identical to that of their parents.

With respect to the phonological feature under investigation here, our speakers appear to be the innovating generation, accelerating change in French. Since we feel it is impossible to assert from their language histories that this is due to incomplete acquisition, we surmise, although we are in no position to prove, that what differentiates the language of our participants from that of their parents, grandparents, aunts, and uncles is that this generation is English- rather than French-dominant. This shift probably precipitated the linguistic restructuring that was already manifest to some degree in Frenchville French and, as we shall show below, a strong argument can be made that the external influence of English dramatically affected their phonological system. In sum, while we cannot say for sure whether or not our speakers ever attained a state of complete acquisition in French, we propose that they did not achieve a complete REPLICATION of the phonological system of their immediate predecessors. And if Meisel (2001) is correct, we should not expect them to because inter-generational language change occurs when one language is weaker than the other in bilingual first language acquisition.

The earlier generation of Frenchville speakers display some features consonant with "non-standard" varieties of French and with attrition. Thus, it is difficult to know whether these properties were acquired as part of the variety of French their parents/grandparents imported with them or if these properties became manifest as a result of language erosion. Such features include a gender syncretism of the demonstrative articles *ce*(*t*), masc., and *cette*, fem., to [st] (or its allomorph [ste] before

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

FRONT UNROUND		FRONT ROUND		BACK	
i	*d**i**t* 'said'	y	*l**u*** 'read'	u	*l**ou**e* 'rent'
e	*d**é*** 'dice'	**ø**	*d**eu**x* 'two'	o	*s**o**t* 'silly', m.
ɛ	*d**è**s* 'from'	**œ**	*l**eu**r* 'their'	ɔ	*s**o**tte* 'silly', f.
a	*l**a*** 'the', f.			ɑ	*l**a**s* 'tired'

Figure 1. The oral vowels of French.

consonants) as well as a neutralization of the feminine indefinite article *une* [yn] to its masculine counterpart *un* (Valdman, 1979), and an extension of the auxiliary *avoir* "to have" rather than *être* "to be" to pronominal and, especially, to unaccusative verbs (Mougeon and Uritescu, forthcoming). They also show evidence of syntactic calquing from English, an obvious contact phenomenon, as in *vous savez **comment larges** qu'eux sont* "you know **how big** that they are" (Mougeon and Uritescu, forthcoming).[1]

The contemporary Frenchville speakers reveal a number of structural properties that appear to be absent from the French of their immediate predecessors. Many of these structural properties are consistent with attrition, including a substantial erosion of gender distinctions in substantives (e.g. *Elle était no' . . . no' . . . premier cousin* for *Elle était notre première cousine* "She was our first cousin");[2] a loss of verb raising (e.g. *Eux . . . eux ne peuvent parler pas comme nous* for *Ils ne peuvent pas parler comme nous* "They can't speak like we can"), and the focus of our investigation here, the loss of the mid front round vowels. Further, these two speakers who are largely each other's sole French conversation partner, display a tremendous amount of intra- and inter-speaker variation (Bullock and Gerfen, forthcoming), again an expected outcome of attrition (Dorian, 1994). Thus, we have a great deal of change, at all levels of the grammar (morphological, syntactic, and phonological) compressed within a small amount of time (one generation), with a large degree of variability – hallmarks of a language undergoing attrition where prestige norms are lacking (Schmidt, 1985; Dorian, 1994).

The data

The system of the oral vowels of standard French is normally depicted as in Figure 1. Its distinguishing characteristic is the presence of the front rounded series, generally considered to be cross-linguistically more marked than its unrounded counterpart.

The mid vowels [ø] and [œ], which are the focus of this paper, are only marginally contrastive if they contrast at all for French speakers. Their overall distribution suggests that they are most frequently found in complementary contexts. The following generalizations hold true of standard French pronunciation: in stressed (i.e. final) open syllables, only [ø] is found (e.g. *peu* [pø] "little"), in stressed closed syllables, [œ] occurs, e.g. *peur* [pœr] "fear".[3] In open unstressed syllables, the quality of the mid front round vowels varies in standard French such that either the closed or open variant is acceptable with no loss of meaning, e.g. *heureux* "happy (masc.)" [œ.rø] ~[ø.rø]. In unstressed closed syllables, as in final closed syllables, the mid front round vowel surfaces as [œ], as in *feuilleton* "magazine" [fœj.tɔ̃]. These facts suggest that [œ] and [ø] are best viewed as allophones of a single mid front rounded vowel phoneme.

The most perceptually distinctive property of the French of our participants is that they realize both of the French mid front rounded vowels [ø] and [œ] as a vowel that is impressionistically identical to the American English rhoticized schwa found in forms like *bird* [bɚd]. As described fully in Bullock and Gerfen (forthcoming), in open and closed stressed syllables and in unstressed syllables, the speakers consistently merge the French mid front rounded allophones to the English rhoticized schwa, as transcribed impressionistically in the data in (2) below.

(2) Rhoticized vowels in Frenchville French
  a. In stressed open syllables:
    [dɚ] for French [dø] *deux* "two"
    [vjɚ] for French [vjø] *vieux* "old"
  b. In stressed closed syllables:
    [ʒɚn] for French [ʒœn] *jeune* "young"
    [nɚf] for French [nœf] *neuf* "nine"
    [gɚl] for French [gœl] *gueule* "face"
  c. In unstressed syllables
    [deʒɚne] for French [deʒøne] *déjeûner* "breakfast"
    [mɚry] *meuru* analogical form of past participle *mort* "dead"

From the naturalistic interview data, we extracted every possible occurrence of the front mid round vowels in the speech of our participants regardless of whether the actual vowel production sounded noticeably rhotic. This gave us a sample size of 154 tokens of the target vowel in the various phonetic context outlined in (2).[4] 32 of these

[1] Note that *eux* is the Frenchville syncretized third person plural pronoun. This same pronoun is used in Cajun varieties of French.

[2] Note that *premier cousin* is a calque of English *first cousin.*

[3] In this environment, we have the possibility of contrast with these vowels, as in the minimal pairs: *veule* [vøl] "spineless" vs. *veulent* [vœl] "(they) want", and *jeûne* [ʒøn] "fasting" vs. *jeune* [ʒœn] "young". However, many speakers neutralize this potential contrast in favor of the lax, or lower, mid vowel [œ], mirroring the regular distributional tendencies of the language.

[4] This number excludes tokens containing schwa as the target vowel (e.g. *le* "the", *s**e**maine* "week"). Bullock and Gerfen (2004) demonstrate that schwa in both function words and lexical items in Frenchville French does not rhoticize.

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

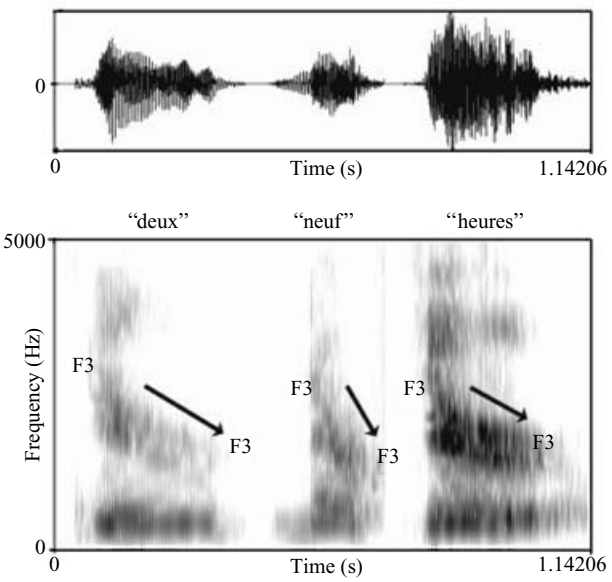


Figure 2. Rhoticization of the mid front rounded vowels.

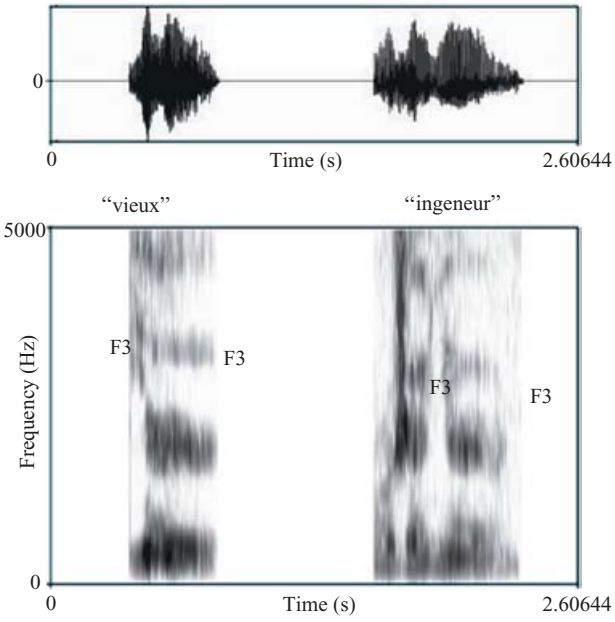


Figure 3. No rhoticization of the mid front rounded vowels in the French of the speakers recorded in 1973.

tokens contained either the phrase *un petit peu* (*de*) "a little (bit of)" or the expression *peut-être* "maybe", in which the target vowel, written <eu> was generally extremely reduced. We considered both of these expressions to be frequently occurring idioms in this variety of French (and likely in all varieties of French) and we excluded all of them from the data analysis even though some of these productions were produced with an audible degree of rhoticization. Thus, the total sample size was 122 tokens of potentially rhoticized vowels. This number is relatively small compared to the number of tokens that can be measured in controlled laboratory settings using tasks that elicit numerous repetitions. However, given that we have extracted every exemplar produced by our speakers, we feel confident that we can abstract robust generalizations regarding their spontaneous phonetic productions irrespective of the sample size.

Bullock and Gerfen (forthcoming) present a detailed discussion of the rhoticization and confirm through spectrographic analysis that these French vowels are indeed most often produced with the expected acoustic reflex of American English retroflexed r-coloring. That is, they display a sharp, signature drop in F3 with a consequent low F3 locus at the offset of the vowel. Illustrative forms from the speech of both of the brothers are provided in Figure 2. Specifically, the figure shows spectrograms for tokens of *deux* "two" and *neuf* "nine" produced by KB, together with *heures* "hours" produced by NB. For convenience, the onset and offset loci of F3 have been marked for each token, and arrows have been added to highlight the falling trajectory of F3 throughout the rhoticized vowels. Auditorily, the effect of the rhoticized vowel is as striking as it is visible in the tokens shown here.

As demonstrated in the tokens of *deux* "two" and *neuf* "nine", rhoticization occurs in both open and closed syllables, respectively. The token of *heures* "hours" is interesting in that we see (and can hear) a rhoticized schwa followed by a slightly trilled, French /r/. In contexts preceding /r/ in particular lexical items (i.e. *soeur* "sister", *coeur* "heart"), our speakers exhibit variation, ranging from a distinct French apically trilled /r/ with minimal or no English-like r-coloring on the previous vowel ([sœr]), to tokens like the form in Figure 2 with English-like rhoticization of the vowel followed by a trilled /r/, ([sə˞r] or perhaps [sœ˞r]), to English-like rhoticization accompanied by the loss of the French /r/, ([sə˞]). We suspect that there is articulatory competition between the rhoticized schwa and the trilled /r/, provoking such variation as the speakers differentially resolve the gestural conflict between the rhoticized vowel and the rhotic consonant. (See Bullock and Gerfen (forthcoming) for further discussion.) In contrast to the words *soeur* and *coeur*, the vowels in all tokens of *heures* were saliently rhoticized so it may well be that Frenchville French is undergoing a process of lexical diffusion in this particular phonetic context.

Of primary importance here is that the presence of the American English rhoticized schwa is, to the best of our knowledge, an innovation in the French of our subjects. This can be appreciated when we contrast the tokens in Figure 2 with the forms shown in Figure 3. In Figure 3, we provide spectrograms of *vieux* "old" and *ingenieur* "railroad engineer" produced by a speaker recorded in 1973. These data were extracted from a recording made

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

by Albert Valdman, Simon Belasco and Josette Caujolle. These tokens are representative of how these vowels were consistently pronounced by this speaker and by other speakers of his generation.[5] In other words, there is no noticeably audible rhoticization of any French vowels in the speech of this generation of Frenchville speakers.[6] Note, in particular in Figure 3, the relatively flat F3 in both tokens, indicating that these forms were produced without the rhoticization of the mid front rounded vowels that is characteristic of our current speakers.

In summary, our contemporary speakers exhibit a clear break with speakers recorded roughly thirty years ago. Specifically, the mid front rounded vowels of standard French, still present in the speech of Frenchville speakers in the 1970s, are produced as American English-like rhoticized schwas in the French of our current speakers. In the discussion below, we argue that this change is best understood as a case of externally motivated convergence with English.

Discussion

The data examined above reveal that our participants, unlike their immediate predecessors in Frenchville, display a perceptually salient restructuring in their vowel systems. One anonymous reviewer of this article suggests that experimenter bias may have provoked this pronunciation in that the participants may have "perceived the interviewing linguists to have a poor command of French" and then have spoken purposefully with an American accent. We can assure the reader that the primary author does not employ an American retroflex schwa in her French and our interviews confirm this in that the participants' perceive a difference between their pronunciation and the researcher's. During one exchange, the first author asks the participant to confirm that he had *deux soeurs* "two sisters", pronounced [døsœʀ]. The participant failed to understand what the interviewer had said and he asked for an English translation. Upon receiving it, he asked again for the interviewer's pronunciation of *soeur* [sœʀ] and then proudly gave his own, saying "ici on dit [sɚ]" "here we say [sɚ]". This anecdote strongly suggests that the participant is not accommodating in the least to the French of the first author.

The impact of the sound change under examination is the loss of the allophonic or surface distinction between the mid front rounded vowels, which have merged into a single surface variant, the rhoticized schwa as depicted in Figure 4.

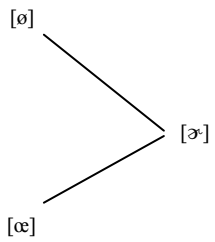


Figure 4. Merger of allophones.

Of interest here is the question of whether this change is best understood as internally or externally motivated. At first blush, the loss of the mid front rounded vowels in Frenchville French could be considered to be an internally motivated process, involving no inter-linguistic influence. Support for such a position might be adduced, for example, from the widely attested absence of front round vowels in most French creoles, regardless of the languages with which they may be found in contact. In such cases, the front round vowels merge with their unrounded counterparts, such that [y] → [i], [ø] → [e], [œ] → [ɛ] (Aub-Buscher, 1995, p. 208). There are acoustic and perceptual reasons that both motivate this neutralization and explain why the front round vowels are less preferred cross-linguistically than their unrounded counterparts. It is well known, for example, that lip rounding elongates the vocal tract. A consequence of lip rounding is thus the lowering of the second formant (F2), which correlates roughly with the front/back articulatory dimension (Stevens, 1998). Specifically, since backness is associated with a low F2, lip rounding enhances the backness of vowels. The mutually enhancing properties of roundness and backness can thus be used to account for the cross-linguistic tendency for languages to restrict roundness to back vowels, i.e. to implement roundness on only those vowels for which is is enhancing. At the same time, the backness–roundedness relationship provides an explanation for the loss and concomitant merger of the front round vowels with their non-rounded counterparts in most French creoles. That is, roundness is eliminated on vowels for which it is non-enhancing.

In a related sense, we can view the loss of front round vowels in French creoles through the lens of dispersion theory (see Lindblom, 1986, 1990; Flemming, 1995 on dispersion theory). The fundamental logic behind dispersion theory is that languages prefer to maximize distinction along contrastive acoustic dimensions. Thus, in the case of vowels, linguistic systems prefer to disperse their vowels throughout the available vowel space and preserve those features that enhance vowel contrasts along particular acoustic dimensions. Since the effect of rounding in the F2 dimension is to enhance the contrast

[5] We are grateful to Edouard Beniak via Françoise Mougeon for providing us with other recordings of Frenchville speakers, made in the 1980s. One of the speakers on the Beniak tape also appears on the Valdman, Belasco and Caujolle recording of 1973.

[6] Our thanks go to Albert Valdman for sharing a copy of this recording with us.

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

between front and back vowels, rounding is ideally restricted to back vowels. The neutralization of front round vowels with the front unround vowels maximizes a salient perceptual distance between front and back vowels with respect to the F2 dimension.[7] Given this, the loss of the round front vowels in French creoles can reasonably be viewed as an internal process, motivated by the desire to maximize the perceptual difference between front and back contrastive vowels. Since rounding is only enhancing for back vowels, it is eliminated in front vowels, simultaneously reducing the vowel inventory and maximizing contrast.

Crucially, however, the Frenchville merger depicted in Figure 4 above cannot be similarly interpreted as an internally motivated process. First, this variety of French maintains the high front round phoneme [y]. Of the 59 words in which the phoneme [y] could be produced in our corpus, only one token was produced with rhoticization.[8] Thus, the change in progress in Frenchville does not categorically target the entire front round series for replacement. Rather, it targets the mid vowels. This suggests that the motivation for the restructuring in this particular variety is not to globally enhance contrast along the front-back dimension. Secondly, it must be understood that by merging [ø] and [œ] with [ɚ], these speakers have, in effect, PRESERVED rather than neutralized the auditory and acoustic reflex of rounding. As is well documented, American English speakers employ either a "bunched-r", characterized by constrictions in the low pharynx and mid-palatal regions, or an alveolar or post-alveolar (retroflex) approximant, each of which has a syllabic variant. As noted by Ladefoged and Maddieson (1996, p. 235), American English speakers "combine several articulatory mechanisms to produce a low third formant for whichever variety of this segment they employ" (see also Delattre and Freeman, 1968; Stevens and Blumstein, 1975). In other words, American **r**s, whether consonantal or syllabic, correlate acoustically with a drop in F3. Similarly, front round vowels are also characterized by a lowering of F3 with respect to their unrounded counterparts (Stevens, 1998). Thus, the pattern of merger observed in Frenchville French is one in which the acoustic and perceptual correlates associated with the rounding of front vowels have been preserved rather than lost, even if the articulatory mechanism used to produce a low F3 has dramatically changed.

It is important, then, to underscore what these speakers maintain both phonetically and phonologically in this vowel merger process. First, the effect of rounding is still salient in their restructured system, both acoustically and gesturally. Rounding not only has the acoustic reflex outlined above, it is also VISUALLY salient. Listeners can tell by looking as well as hearing that a sound is produced with lip rounding. By replacing the mid front round vowels with [ɚ] both the visual cue and the auditory percept of rounding are preserved. Second, there is a conservation of phonological contrast as these speakers maintain mid front unround vowels, mid back vowels, and [ɚ]. Third, since [ø] and [œ] were arguably allophonic variants in the original system, the subsequent merger to a single allophone allows for the transmission of a largely intact PHONOLOGICAL inventory in Frenchville French. Finally, the introduction of [ɚ] in Frenchville French preserves an equal or perhaps more pronounced degree of "markedness" in the French vocalic system since rhoticized vowels such as these are extremely rare, estimated to occur in less than one percent of the world's languages (Maddieson, 1984). Although the change under investigation strikes the listener as a dramatic one in the French vocalic system, it is nonetheless relatively conservative from an acoustic and perceptual point of view.

In sum, there is no convincing motivation for the merger to [ɚ] to be considered an internally motivated sound change in Frenchville French. Given the low frequency of [ɚ] in the world's language, it is highly improbable that a rhoticized schwa would arise in a process of sound change without some external influence. Significantly, we know of no attested case outside of contact situations with English in which a language spontaneously introduced [ɚ] into their vocalic system. In contrast, there are some patently clear reasons why French-English bilinguals would CONVERGE on [ɚ] as a close perceptual map for French [ø] and [œ]. Both English [ɚ] and the French mid front vowels are produced with lip rounding. Rounding the front vowels lowers their F2 and makes them perceptually closer to back vowels. In a contact situation, the closest perceptual map for mid vowels that are both rounded and centralized would be [ɚ]. In essence, it is possible that our participants from Frenchville are not creating a separate phonetic category (in the sense of Flege, 1987, 1988) for the French mid front vowels but instead recruiting the perceptual space allotted to their English [ɚ]. The rhoticization of the vowel permits them to maintain the acoustic and visually salient properties of rounding that are present on standard French non-back vowels.

Under this scenario, the transfer of the English vowel into the French system is one of convergence. The shared

[7] Further, the vowels that are most peripheral in the hypothetical vowel space of linguistic systems [i, e, æ, o, u] are, according to Stevens (1998, p. 294), "more stable in that they represent extreme displacements from some neutral configuration and they are stable and reproducible without undue precision in positioning the tongue body". This does not hold true of other vowels (i.e. front round, back unround, and central vowels).

[8] The form with salient rhoticization, *meureu*, cited in (1c) above, is already suspect since it is a spontaneous derivation of the past participle of the verb *mourir* "to die", which in standard French should be *morte* (feminine). Our speaker seems to have possibly assimilated this verb to the conjugation class that takes a [-y] participle but whether or not this is the case is not entirely clear.

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

structural properties across French-English that are at the locus of this change are similarities in vowel height, roundness, and position along the front-back articulatory dimension. The two languages' vocalic categories for phonetically non-back, mid, round vowels were thus congruent before the change occurred. These speakers have shifted toward categorizing these vowels uniformly, as instances of the vowel [ɚ] found in the dominant language. The direction of influence, English to French, is consonant with the overall shift in language dominance and the greater frequency of use of English in the community and by these individuals.

Conclusion

As we note above, much work on convergence in situations involving language attrition has focused on issues involving morpho-syntactic restructuring in the dying language variety. A central concern of such investigations has been untangling the factors driving the restructuring with an eye towards establishing whether the changes observed are best viewed as externally driven or, by contrast, as internally motivated. At the same time, we have pointed out that there exists debate regarding whether or not convergence itself has any role to play in situations involving language attrition, reviewing in particular the hypothesis that convergence is indicative of language vitality and thus incompatible with attrition contexts. In focusing on phonology and phonetics rather than morpho-syntax, our data enable us to speak to both issues. One direct result is that we provide clear evidence that convergence does indeed occur in dying languages. It is both too restrictive and, in fact, simply inaccurate to claim that all change in attrition situations is internally caused by and attributable to semi-speakers' "retarded language acquisition" (Cook, 1989). And although Silva-Corvalán's (1994/2000) work is insightful in arguing that convergence often accelerates changes that were already inherent in a language in contact, the Frenchville data indicate that convergence can impact languages in contact in areas of the grammar which show no previous restructuring and for which internal motivation for the resultant change is lacking. This is not to say that there is no internal motivation for a change to affect the mid front round vowels which, as we have argued, are in some sense instable. Rather internal motivation is lacking for the particular direction of the change taking place in Frenchville French.

An interesting consequence of our analysis is that bilingual phonologies may become particularly permeable to inter-linguistic influence precisely where they are acoustically and perceptually unstable, and where they are already congruent to some degree. In the case of the convergence of the mid front rounded vowels in Frenchville French with the English rhoticized schwa, we have argued that the phonetically non-optimal (i.e. marked) mid front rounded vowels of French – vowels which have been shown to be vulnerable to loss in many French Creoles – exhibit a degree of acoustic and articulatory congruence with the rhoticized schwa in English. We have hypothesized that this congruence has permitted our bilingual speakers to recruit the acoustic (and articulatory) space allotted to the rhoticized schwa in English into their French, thus yielding the merger of the two mid front rounded vowel allophones of standard French with the American English rhoticized schwa. Though we cannot *a priori* know whether such a situation will necessarily result in the pattern of convergence that we have described in this particular case, we do predict that such situations provide the best or most likely candidates for convergence. In fact, the difference between internally versus externally motivated phonological changes in attrition contexts such as the one described here may reduce to the presence or absence of sufficient congruence along some relevant dimension. For example, the non-convergent loss of the front round vowels in many French creoles can be viewed as internally motivated by issues of markedness, while the convergence pattern targeting mid front rounded vowels in Frenchville French can be understood in terms of the confluence of factors involving markedness in the affected language and congruence between the two contact languages.

Finally, our data demonstrate that convergence cannot be equated with loss or with simplification. To the contrary, it is particularly interesting to note that the pattern of convergence described here preserves the separate category of mid front rounded vowels of standard French by replacing it with the rhoticized vowel of American English. In a sense, one might argue that there is a degree of simplification in that two mid front round vowel allophones are reduced to a single allophonic variant for our Frenchville speakers, but at the level of contrast, the change leaves the set of vowel contrasts in the French of our speakers intact. Overall, the system of contrast is not simplified as a result of the convergence. In the same sense, it is impossible to argue that this case of convergence is phonetically simplifying, where simplifying is construed to mean markedness reducing. If anything, the replacement of the mid front rounded vowels with the cross-linguistically odd American English rhoticized schwa represents the convergence of a subset of marked vowel allophones in French with an even more marked vowel in English. It is, in short, difficult to view the process as markedness reducing. On a more general level, then, we conclude that while simplification may play a central role in the broad issue of language attrition, it is erroneous to view simplification as either a requisite component or a goal of the separate phenomenon of convergence, even in attrition contexts.

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press

References

Aub-Buscher, G. (1995). French and French-based creoles: The case of the Caribbean. In C. Sanders (ed.), *French today: Language and its social context*, pp. 199–214. Cambridge: Cambridge University Press.

Beniak, E., Mougeon, F. & Valois, D. (1984/5). Sociolinguistic evidence of a possible case of syntactic convergence in Ontarian French. *Journal of the Atlantic Provinces Linguistic Association*, 6/7, 73–88.

Bullock, B. E. & Gerfen, C. (2004). The preservation of schwa in a converging phonological system. Ms., The Pennsylvania State University.

Bullock, B. E. & Gerfen, C. (forthcoming). Frenchville French: A case study in phonological attrition. *International Journal of Bilingualism.*

Clyne, M. (2003). *Dynamics of language contact*. Cambridge. Cambridge University Press.

Cook, E.-D. (1989). Is phonology going haywire in dying languages? Phonological variations in Chipewyan and Sarcee. *Language in Society*, 18 (2), 235–255.

Cook, E.-D. (1995). Is there convergence in language death? Evidence from Chipewyan and Stoney. *Journal of Linguistic Anthropology*, 5 (2), 217–231.

Coppieters, R. (1987). Competence differences between native and non-native speakers. *Language*, 63 (3), 544–573.

Delattre, P. & Freeman, D. C. (1968). A dialect study of American r's by x-ray motion picture. *Linguistics*, 44, 29–68.

Döpke, S. (2000). *Cross-linguistic structures in simultaneous bilingualism*. Philadelphia: John Benjamins Publishing Company.

Dorian, N. (1978). The fate of morphological complexity in language death. *Language*, 54 (3), 590–609.

Dorian, N. (1981). *Language death: The life cycle of a Scottish Gaelic dialect*. Philadelphia: University of Pennsylvania Press.

Dorian, N. (1994). Varieties of variation in a very small place: social homogeneity, prestige norms, and linguistic variation. *Language*, 70, 631–696.

Ferguson, J. (1967). Bilingualism with and without diglossia; diglossia with and without bilingualism. *Journal of Social Issues*, 23, 29–38.

Flege, J. (1987). The production of 'new' and 'similar' phones in a foreign language: Evidence for the effect of equivalence classification. *Journal of Phonetics*, 15, 47–65.

Flege, J. (1988). The production and perception of speech sounds in a foreign language. In H. Winitz (ed.), *Human communication and its disorders: A review*, pp. 224–401. Norwood, NJ: Ablex.

Flemming, E. (1995). *Auditory representations in phonology*. PhD dissertation, University of California, Los Angeles.

Grosjean, F. (1985). The bilingual as a competent but specific speaker-hearer. *Journal of Multilingual and Multicultural Development*, 6, 467–477.

Grosjean, F. (1989). Neurolinguists, beware! The bilingual is not two monolinguals in one person. *Brain and Language*, 36, 233–274.

Ladefoged, P. & Maddieson, P. (1996). *The sounds of the world's languages*. Malden, MA: Blackwell Publishers.

Lindblom, B. (1986). Phonetic universals in vowel systems. In J. J. Ohala & J. J. Jaeger (eds.), *Experimental phonology*, pp. 13–43. Orlando: Academic Press.

Lindblom, B. (1990). Models of phonetic variation and selection. *PERILIUS* [Phonetic Experimental Research Institute of Linguistics, University of Stockholm], 11, 65–100.

Maddieson, I. (1984). *Patterns of sounds*. Cambridge: Cambridge University Press.

Meisel, J. (2001). *From bilingual acquisition to theories of language change*. Plenary talk, 3rd International Symposium on Bilingualism, Bristol.

Montrul, S. (2004). Subject and object expression in Spanish heritage speakers: A case of morphosyntactic convergence. *Bilingualism: Language and Cognition*, 7 (2), Special Issue: *Bilingualism and Linguistic Convergence*, 125–142.

Müller, N. & Hulk, A. (2001). Crosslinguistic influence in bilingual language acquisition: Italian and French as recipient languages. *Bilingualism: Language and Cognition*, 4, 1–21.

Myers-Scotton, C. (2002). *Contact Linguistics: Bilingual encounters and grammatical outcomes*. Oxford: Oxford University Press.

Mougeon, F & Uritescu, D. (forthcoming). Les derniers Français de Frenchville. *La Linguistique*.

Romaine, S. (1995). *Bilingualism* (2nd edn.). Malden, MA: Blackwell.

Schmidt, A. (1985). *Young people's Dyirbal: An example of language death from Australia*. Cambridge: Cambridge University Press.

Silva-Corvalán, C. (1986). Bilingualism and language contact. *Language*, 62, 587–608.

Silva-Corvalán, C. (1989). Past and present perspectives on the language change in US Spanish. *International Journal of the Sociology of Language*, 79, 53–66.

Silva-Corvalán, C. (1991). Spanish language attrition in a contact situation with English. In H. Seliger & R. Vago (eds.), *First language attrition*, pp. 151–171. Cambridge: Cambridge University Press.

Silva-Corvalán, C. (1994 / 2000). *Language contact and change*. Oxford: Clarendon Press.

Stevens, K. (1998). *Acoustic phonetics*. Cambridge, MA: MIT Press.

Stevens, K. & Blumstein, S. (1975). Quantal aspects of consonant production and perception: A study of retroflex consonants. *Journal of Phonetics*, 3, 215–233.

Thomason, S. G. (2001). *Language contact: An introduction*. Washington, DC: Georgetown University Press.

Valdman, A. (1979). Créolisation, français populaire et le parler des isolats francophones d'Amérique du Nord. In A. Valdman (ed.), *Le français hors de France*, pp. 181–197. Paris: Champion.

Received December 1, 2003
Revision received February 14, 2004
Accepted February 22, 2004

https://doi.org/10.1017/S1366728904001452 Published online by Cambridge University Press