Variation in Second and Heritage Languages

Crosslinguistic perspectives

Edited by
Robert Bayley
Dennis R. Preston
Xiaoshi Li

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Volume 28

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This book is dedicated to the memory of Carol Guagliardo Preston – an ESL and bilingual education teacher, teacher educator, and administrator, whose work in language reflected her dedication to social justice.

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CHAPTER 1

Variation and second language acquisition

Recent developments and future directions

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In addition to introducing the main themes of this volume, the chapter provides a brief overview of recent developments in variationist studies of second language acquisition (SLA), including work on perception. We suggest that the type of work included in this volume, which focuses on a range of features in diverse target languages in a wide variety of social contexts, contributes to broadening the scope of both SLA research and sociolinguistics more generally. While the importance of the social context for SLA has sometimes been dismissed, the studies included here offer abundant evidence that such contexts must be considered if we are to fully understand how learners may achieve not only the ability to use language correctly, but also appropriately.

Keywords: variation, social context, second languages, heritage languages, sociolinguistic competence

Introduction

The idea that structured variability, governed by both social and linguistic influences on utterances, should be considered an important property of the language of the second- or foreign-language learner (S/FLL) is not new (e.g. Dickerson 1974). It is, moreover, hardly surprising to students of language variation and change, since one of their accepted mantras is that "Language change necessitates variation (no language change can happen without it) …" (Gardiner & Nagy 2017: 78). These and other variationist principles applied to second- or foreign-language acquisition data saw a surge of activity in the late 1980s, when an entire international conference was devoted to "Variability in Second Language Acquisition" (Gass et al. 1989) and several book-length accounts appeared (Adamson 1988; Preston 1989; Tarone 1988).

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A somewhat later outline of variationist methods, a rationale for their application to SLA, responses to criticism, corrections of some misinterpretations, and examples of then current research findings were presented in Bayley and Preston (1996). So why do this all over again? In addition to the popular notion that "there is always something new under the sun," three more scientifically based justifications are suggested here.

1. More (and more) languages and more (and more) varieties

Early variationist work outside SLA had a limiting focus on the "big four" (English, Canadian French, Spanish, and Brazilian Portuguese). Similarly, Bayley and Preston's 1996 volume contained eight research chapters on variationist approaches to SLA, but only one focused on a target language (TL) other than English. Research in L2 variation can benefit from moving beyond the typical pool of WEIRD (Western, Educated speakers from Industrialized, Rich, Democratic nations) participants, a term coined by Henrich, Heine, and Norenzayan (2010), to include non- and low-literate language learners and others from isolated and often ignored communities who are often excluded from social science research. To date, most second language variationist studies draw upon data from university students, and within those studies, many focus on an even more elite group: university students who have the resources to study abroad. Thus, while the majority of what we know is based on the experiences of a privileged sector of the population, the reality is that most people who need to acquire a second or n^{th} language are not in universities, but rather represent working-class communities and may have limited literacy skills. In addition to serving such populations, Bigelow and Tarone (2004) ask the following question in calling for more focus on communities where highly developed literacy skills are not widespread: "Doesn't who we study determine what we know?" In other words, community-based studies of immigrant and other less-studied communities can not only serve them, but also allow for broader generalizations in the field.

Just as surely as there are more populations that can be profitably studied, there is also value in looking at the variability that exists in target languages themselves. Research on L2 variation has included studies examining learners' acquisition of forms that are considered obligatory in the TL, called Type 1 variation (Mougeon, Nadasdi, & Rehner 2010) or vertical variation (Corder 1967) as well as the acquisition of target language patterns of variation, or Type 2 or horizontal variation. The issue is complicated, however, by the fact that some features that are obligatory in the standard dialect of the TL may be highly variable in vernacular dialects (and, especially in the spoken language, even in different varieties of the standard or local prestige variety). As Goldstein (1987) noted more than three decades ago in a

study of Spanish-speaking youth acquiring English in New York City, the standard language is not necessarily the target for all learners, and what appears to be an error in learner speech may reflect the acquisition of a non-standard or regionally distinct dialect. For example, it is well-known that African American English is characterized by variable use of /s/-plurals and variable copula deletion (Rickford & Rickford 2000). Goldstein (1987) showed that native speakers of Spanish with greater contact with African Americans tended to exhibit higher rates of /s/-plural and copula absence than speakers with less contact. The question arises, then, is the absence of a plural morpheme or a copula the result of learner error or does it indicate successful acquisition of the variety that the learner has chosen as a target? And does variation in its use in different settings indicate instability or, in fact, native-like deployment of a social and stylistic variable in the TL? Variationist analysis provides a means to answer such questions. The patterns found in varieties that diverge from the official standard are highly systematic, and in many cases the constraints on speaker use are well documented, allowing comparison with learner patterns with those of native speakers.

Additionally, variationist applications to SLA can benefit from studies of heritage language learners, and such studies, in turn, can contribute to theories and approaches related to heritage language acquisition and use. For example, Chappell's (2019) matched-guise study of the perception of labiodental orthographic <v> demonstrated that Spanish heritage speakers attributed social meaning conveyed through phonetic variation in their home (and less-dominant) language and did so in a similar fashion to monolingual Spanish speakers. Based on her findings, Chappell critiques deficit perspectives toward multilingualism – those that focus on what heritage speakers lack as compared to their monolingual peers – and encourages approaches that acknowledge the depth of the implicit knowledge of bilinguals. Nagy's (2018) cross-generational study of Toronto's immigrant populations and their descendants exemplifies how community-based variationist research can broaden our understanding of multilingualism and SLA. By examining heritage speakers of multiple languages and varieties (including those of typologically distinct languages) and how their linguistic systems change as they come in contact with English and other languages, she contributes to discussions on the universality of contact-induced change while also engaging with questions of ethnic orientation and performance through linguistic variation.

Finally, by expanding our attention to the acquisition of languages beyond those most commonly learned and taught, we avoid the pitfalls of declaring this or that sort of factor a universal in SLA, and we gain the opportunity of capturing new insights from languages with different linguistic structures, social classification systems, and language ideologies, including ideologies of learning. We agree with this statement about the value of such languages to variationist research in general:

> Studies of indigenous minority languages have led to invaluable new perspectives in grammatical theory, typology, descriptive linguistics, ethnographies of communication, and countless other aspects of linguistics and anthropology. Yet such languages have received comparatively little attention in quantitative variationist sociolinguistics, i.e., the research of language variation and change that has grown out of the Labovian paradigm…. In an era of globalization and increasing cross-cultural contact, the time is ripe for more variationist sociolinguistic exploration of indigenous minority languages and the new insights they may bring.
> (Stanford & Preston 2009: 1)

2. Perception

Why would the study of perception in SLA join other areas for updating? Surely previous experimental work and theoretical speculation in speech science have been extensive (see Chu, Yang, & Liu 2019 for a review and evaluation). Perception, however, is an ambiguous term. In SLA it typically refers to failures in L2 categorization as L1 structures and factors from other sources impinge on the learner's ability to appropriately classify the acoustic signal. Recent SLA perception studies, however, are more closely related to the Third Wave approach. This research model has as perhaps its major aim the discovery of situated social meaning in the selection of variables and how those meanings establish and reinforce identity-formation and stance-taking in interaction (e.g., Eckert 2018). Although a great deal has been done in what might be called the social psychology of SLA, little of it has focused on this feature-specific level and little has been done in SLA on learners' ongoing selection of variables at their disposal for identity-marking, stance-taking, and the construction of social meaning in both their messages (for perception by others) and their personae (for self-perception). In Chapter 13, for example, Davidson shows how acquiring native-like sensitivity to a stereotyped phonetic feature but not full acquisition of its finer details allows non-native Spanish-Catalan bilinguals to demonstrate their more complex (i.e., not completely assimilated) identity. Pozzi (Chapter 8) shows how U.S. students studying in Buenos Aires quickly adopt non-stigmatized features of Argentine Spanish such as the use of *vos* rather than *tú* as a second person pronoun, but resist /s/-weakening, which is widely stigmatized throughout the Spanish-speaking world. Regan (Chapter 10) shows how attitudinal and ideological stances acquired from qualitative, discoursal data could account for an outlier respondent couple's remarkably different deletion rates of the French negative particle *ne* in spite of their nearly identical demographic histories.

Traditionally, variationist studies have relied on production data in order to link linguistic variants to specific social groups. Noticing that production studies may sometimes leave unanswered the *why* (i.e., why certain social groups produce one variant at a higher rate than another), the field has witnessed an increase in

studies that use perception data to understand how social meanings are mapped on to linguistic variants. Such research has found linguistic information to index factors such as ethnicity (Purnell, Idsardi, & Baugh 1999), nerdiness (Bucholtz 2001), intelligence or academic preparedness (Campbell-Kibler 2009; Chin 2010), and gayness (Podesva 2006). This line of research has also documented the real-world consequences that come as the result of those judgments of variant selection, such as the denial of educational, work, or housing opportunities.

Although variationist approaches to SLA have been dominated by production studies, perception studies are gaining momentum. In Spanish, perception of coda /s/ has received the most attention (Chappell & Kanwit 2021; Escalante 2018b; Schmidt, 2018), perhaps due to its extensive social and geographic variability in the Spanish-speaking world and the plethora of information regarding the factors influencing its use among native-speakers (NSs). Escalante (2018b) investigated the perception of /s/-weakening among 14 young adult English speakers participating in a long-term volunteer program in coastal Ecuador, exploring the participants' ability to perceive an aspirated variant as a legitimate local variable during their time in there as well as the linguistic and extralinguistic factors that play a role in its perception. Results indicated that most learners were able to acquire new mappings within their interlanguage phonological system, but that the largest gains in accurate perception of /s/ were witnessed within the first two months of immersion. Results also revealed that /s/-weakening was easier to perceive in pre-consonantal position and that there was significant individual variation in perception between participants. Schmidt (2018) explored the perception of /s/-weakening among 213 English-speaking Spanish learners across five learner levels with varying dialect contact experiences. Results indicated that learners generally improved in identifying [h] as a variant of /s/ across proficiency levels, and that experience with aspiration, either through study abroad, domestic interaction, or course material, had a positive impact on identification. Chappell and Kanwit (2021) used a matched-guise test targeting coda /s/ (realized as [s] or [h]) to explore whether Spanish learners identify speakers' social characteristics based on phonetic variants in their L2. Results revealed that the more advanced participants were able to link reduced /s/ to region of origin and social status, whereas less experienced learners did not make the same connections. Additionally, within the more advanced participant group, learners who had completed a course in phonetics were significantly more likely to identify an /s/-reducer as Caribbean than those who did not take such a course, suggesting that explicit instruction can facilitate broader sociolinguistic competence.

Perception studies have also been leveraged in variationist studies of other L1/L2 combinations, such as Spanish speaking learners of English (Escudero & Boersma 2004), English speaking learners of Quebecois and European varieties of French (Baker & Smith 2010), German speaking learners of English (Davydova

et al. 2017), English speaking learners of Northern and Austrian varieties of German (Smith & Baker 2011), and English/Spanish bilinguals (late immigrant and U.S. born) in Texas (Chappell 2019). These studies have shown that language learners (as well as native bilinguals), especially those with more exposure to the variety, can acquire the ability to perceive variation in their L2.

Such studies can reveal to what degree learners come to understand the patterns of variation of a given speech community and their decision, conscious or not, to align with certain social groups vis-à-vis their linguistic choices. However, if researchers explore sociolinguistic competence by only relying on production data – measuring, for instance, the rate at which learners use a particular local variant – they may miss the knowledge that learners possess in terms of navigating complex sociolinguistic norms. In the case of L1 English speakers encountering Spanish /s/-weakening, for example, learners must re-map a phonetically similar sound in a new phonetic context ([h] appears in English only in syllable-initial position but appears in Spanish mainly in syllable-final position), while also recognizing a sound that already exists in their L1 ([h]) as a legitimate variant of a different phonemic category, /s/ (Schmidt 2011). Learners also must notice the social groups and contextual factors that favor /s/-weakening (male, working class, informality) and the social meanings that /s/ variants carry.

While numerous production studies have found learners reluctant to produce a regional variant following an immersion period (e.g., [g] vs. [dʒ] in Egyptian Arabic [Raish 2015] or /θ/ in Peninsular Spanish [Knouse 2013; Ringer-Hilfinger 2012]), perception studies have demonstrated that the lack of use of the variant does not mean that a learner has not gained knowledge of the way that it is used in the speech community, including its social and linguistic correlates (Chappell & Kanwit 2021). In fact, research has shown that learners often perceive variants even though they do not themselves produce them (Escalante 2018a; Schmidt 2018), supporting the idea that gains can be made in understanding local patterns of variation even though there is no evidence in production.

Although there has been some use of the matched-guise technique in SLA settings (e.g., Chappell & Kanwi 2021) and the technique itself was developed in a bilingual setting (Lambert et al. 1960), perception studies that reflect learner attitudes to and ideologies of specific linguistic items have been rare and, to date, have not made use of the emerging techniques that focus on implicit rather than explicit attitudes (e.g., the "Implicit Association Test," Greenwald et al. 1998), an opportunity to explore the learned-acquired distinction (Krashen 1987) in perception and attitude as well as production.

3. New ways to count things up

The types of data, both categorical and numeric, used in studies of variation are subject to multiple constraints and are often unbalanced. Statistical procedures commonly used in experimental studies, such as ANOVA, are therefore unsuitable, and for many years, one or another version of the program known as VARBRUL, a specialized application of logistic regression (for details, see Bayley 2013) was adopted. It has, however, a number of limitations. First, it can only handle categorical variables. However, many variables of interest, e.g. vowel formants, are continuous. Second, the dependent variable must be binary, yet many variables, e.g. English relative pronouns, have three or more variants. Finally, it cannot handle random effects, perhaps especially interesting in SLA in attending to individual differences (see Kennedy Terry, chapter 11). To overcome these limitations, in recent years variationists have turned to mixed effects logistic regression and other multivariate models such as Rbrul (Johnson 2009), commercial software packages, or the open-source statistical program R. This statistical advance not only allows the investigation of types and numbers of both dependent and independent variables not open to VARBRUL but also permits readers from allied fields more familiar with the coefficient output of regression analysis than the "weights" used in the VARBRUL program to read and interpret the research. Many of the chapters presented here make use of this newer tool, while others rely on the open-source statistical program R (R Core Team 2020).

Broadening the scope of second language acquisition

In this volume you will find as much as we could gather to help bring you into the newest wave of variationist studies in SLA. The volume includes studies of seven different target or heritage languages: Cantonese, Catalan, French, Italian, Korean, Mandarin, and Spanish. Speakers' L1s include Catalan, English, Japanese, Korean, Mandarin, Polish, Russian, and Spanish. The studies included here also focus on a range of variables at different levels of linguistic structure. They include fine-grained studies of phonological variation, as in Tse's study of vowel changes in heritage speakers of Cantonese in Toronto (Chapter 5), Escalante and Wright's study of rhotic variation by U.S. volunteers working at a social justice organization in Ecuador (Chapter 6), Pozzi's study of the production of voiced and voiceless postalveolar fricatives by U.S. students in Buenos Aires (Chapter 8), and Kennedy Terry's study of schwa deletion by American students in France (Chapter 11). While a number of chapters focus on the acquisition of native speaker patterns of

phonological variation, two chapters also examine L2 speakers' avoidance of widely used but stigmatized target language variants. Pozzi (Chapter 8), for example, found that only four out of 23 U.S. students in Buenos Aires produced weakened /s/, a feature that is common in Buenos Aires Spanish but stigmatized throughout the Spanish-speaking world. Davidson examined variation in the production of light and dark /l/ by L1 and L2 speakers of Catalan (Chapter 13) and found that the L2 speakers produced the velarized variant, which is stigmatized in Spanish, at a lower rate than the L1 Catalan speakers; however, the production of both groups was conditioned by the same linguistic and social constraints.

Studies of morphosyntactic variation are also prominently featured. They include Li, Bayley, Zhang, and Cui on the acquisition of the multifunctional morphosyntactic particle *-le* by Americans, Japanese, Koreans, and Russians living in China (Chapter 2) as well as Geeslin and Fafulas' study of progressive and habitual marking in the written Spanish of U.S. learners (Chapter 7), and Pozzi's work on the acquisition of the second person singular informal pronoun *vos* and the attendant irregular verb forms, a characteristic of Argentine Spanish, by students in study abroad programs in Buenos Aires (Chapter 8). Other work on morphological and/or syntactic variation includes Rehner, Mougeon, and Mougeon's study of variation in the use of prepositions with place names in Ontario French (Chapter 9), Regan's study of the influence of language attitudes and ideology on rates of *ne* deletion (the first particle of negation in French) by Polish migrants in France (Chapter 10), and Di Salvo and Nagy's comparison of differential object marking by homeland and Toronto heritage Italian speakers (Chapter 12).

In addition to studies of particular variables, this volume also includes work on children's production and evaluation of different Chinese varieties in Singapore and a comparison of the role of cross-linguistic influence on third language acquisition in speech and writing. Starr (Chapter 3) compares Mandarin sociolinguistic development by expatriate children enrolled in international schools with that of children enrolled in local schools. She reports that children who attend international schools tend to orient towards Mainland varieties, while children who attend local schools acquire more local patterns. Nevertheless, as demonstrated by both an occupational judgment task and a production task, the children in international schools do not demonstrate sociolinguistic knowledge comparable to that of local children. Park (Chapter 4) examines the effects of formal L2 learning experience, L2-L3 typological proximity, and a number of linguistic factors on argumentation in the speech of learners of Korean as an L3 in Singapore. In contrast to Park and Starr's (2020) findings about written L3 Korean, she reports that in speech L1 influence overrides the effects of formal L2 experience and typological proximity in L3 speech.

Studies such as those in this volume, which encompass a wide variety of typologically distinct languages, speakers who are diverse in age, background, and

goals, and communities that differ widely in social structure, can provide the basis to address major outstanding issues in SLA and the study of bi-/multilingualism and language contact. The most obvious question for SLA studies with a sociolinguistic orientation concerns how the social context and the position of the learner within that context influence acquisition. The last question, in particular, was often dismissed as irrelevant by many in SLA, perhaps most explicitly in the following statement:

> Remove a learner from the social setting, and the L2 grammar does not change or disappear. Change the social setting altogether, e.g., from street to classroom, or from a foreign to a second language environment, and, as far as we know, the way the learner acquires does not change much either, as suggested, e.g., by comparisons of error types, developmental sequences, processing constraints, and other aspects of the acquisition process in and out of classrooms…. (Long 1998: 93)

Statements such as Long's offer a set of hypotheses that can be tested by the types of variationist research contained in this volume. Several of the studies provide strong evidence that learners, including children and adolescents, are sensitive to the social meanings of variable forms. Starr (Chapter 3), for example, used matched guise stimuli in an occupation judgement task to investigate the attitudes of students in Singapore towards different Mandarin varieties: mainland standard Mandarin, northern Mandarin, standard Singapore Mandarin, colloquial Singapore Mandarin. Students listened to speech samples and were shown cartoon animals with background representing teacher or a coffee shop worker. She found that students enrolled in local schools strongly associated standard Mandarin with teachers' speech – that is, with a prestigious occupation. In contrast, guises using colloquial Singapore Mandarin were least likely to be considered teachers by students attending local and international schools.

Several studies in the volume highlight the importance of the social context in facilitating the acquisition of native speaker patterns of variation. Kennedy Terry (Chapter 11), for example, shows that even a full academic year of study abroad is not sufficient to guarantee that learners will acquire native-like patterns of variation. Rather, as in her earlier work on /l/ elision (Kennedy Terry 2017), her results for the acquisition of patterns of schwa deletion show that involvement in local social networks is correlated with the acquisition of informal sociolinguistic variants. However, while Kennedy Terry shows the impact of learners' social network on the acquisition of informal variants, results for the acquisition of the Mandarin multi-functional morphosyntactic particle *-le* (了) in Li et al. (Chapter 2), like Li's (2010) previous study of the morphosyntactic particle *de* (的), e.g. *wǒ de péngyǒu* 我的朋友, 'my friend', illustrate the overwhelming importance of teachers' speech. Students who have spent from one to four years in China and regularly interact with

Chinese peers use both optional *-le* and *de* at rates that are closer to the formal classroom language of their Chinese teachers than to the rates of their Chinese peers.

While the social context clearly has an impact on speakers' use of sociolinguistic variables, Regan's analysis of *ne* deletion in the French of two Polish immigrant couples (Chapter 10) shows that individual orientations and ideologies also make a difference. While husband and wife deleted *ne* at similarly low rates in one couple, the other couple diverged sharply, with the husband, Henri, exhibiting a very high rate of deletion and the wife a rate similar to the rate of the other couple. Regan shows that the three participants with low deletion rates spoke extensively about the importance of learning French and the opportunities offered to their daughters in the French educational system. Henri, however, had very little to say about the importance of French or the educational system. Instead, he spoke most volubly about visits with friends and trips to Australia. The kind of close attention to the details of interactions exemplified in Regan's study allows us to understand why some speakers diverge from what otherwise is a common pattern.

As argued, both earlier in this chapter, and elsewhere (e.g. Bayley & Escalante 2022), SLA research needs to broaden its focus to include language acquirers beyond the university if we are to generalize our results. A number of the studies in this volume contribute toward that goal. Starr, for example, examines children in multilingual Singapore, while Tse and Di Salvo and Nagy study heritage speakers of Cantonese and Italian respectively. In their study of variation in preposition choice with place names, Rehner et al. include university students, but they also include a broad sample of high school students from Quebec City and several different cities in Ontario. Escalante and Wright focus on volunteers for a non-governmental organization working with economically marginalized families in coastal Ecuador while Davidson examines the speech of a diverse range of speakers in Barcelona. Studies such as these, which focus on a range of speakers of different ages and social backgrounds not only illustrate the relevance of the social context to the acquisition of second languages and the maintenance of heritage languages, but also contribute to broadening the scope of SLA.

Conclusion

While the questions discussed above are important for SLA and the study of multilingualism, as stated in Bayley and Preston (1996), this is not a one-way street; what we find out about variation in the fast-track of language change in SLA will lead SLA is no little sibling. Perhaps the fast-track of language change in SLA will lead to some understandings that are closed to real-time studies. Perhaps the enormous variability among languages, dialects, and varieties that exists in many parts of the

less-studied world will give us some insights not available in more monolingual or frequently studied zones. Perhaps the study of immigrant and heritage varieties will open new avenues for understandings of learning and accommodation that exist in those settings but not in the ones more often studied. Perhaps the diversity of contextual influences on second and heritage language speech will offer greater understanding of how both linguistic and social constraints operate across languages and social situations. Whatever the results, we continue to believe, as demonstrated by the studies in this volume, that learner language is a natural language phenomenon; as such it will necessarily vary, and failure to examine that variation will leave part of our task undone.

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CHAPTER 2

An investigation of the use of the multifunctional particle *-le* by second language learners of Mandarin Chinese

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The most widely studied aspect marker in Chinese is *-le*. In addition to functioning as a perfective aspect marker to indicate action completion, it can also serve as a sentence final particle to indicate a currently relevant state. It is obligatory in some situations but optional in others. And, because both types of *-le* can be sentence final, the picture is even more complicated. Most studies of *-le* in Chinese as a second language (L2) have been conducted in a generative framework; this study is the first from a sociolinguistic variationist perspective, with native speaker data as the baseline, to investigate how learners of L2 Chinese use *-le* in oral discourse and the factors that influence their use. The data were collected from informal conversations and elicited narratives spoken by 20 high-intermediate and advanced L2 Chinese speakers resulting in more than 4,000 tokens. Factors explored include verb complement type, position of *-le,* optionality, verb type, serial verb relationship, discourse context, sentence type, native language, gender, length of residence, and proficiency level. The results show that verb complement type, optionality, and position of *-le* are the main constraints and that learners use *-le* at a lower rate than native speakers.

Keywords: L2 Chinese variation, aspect marker, multifunction, post-verbal *-le*, sentence final *-le*

Introduction

Acquiring advanced proficiency in a second language involves acquiring both obligatory forms as well as native use of variable forms. For example, many languages allow the variable omission of subject personal pronouns (SPPs) (Bayley, Greer, & Holland 2017). Studies of a variety of languages, including Mandarin Chinese, however, have shown that speakers' choices between an overt or a null SPP are

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constrained by a range of factors including co-reference with the preceding subject and person and number (e.g., Jia & Bayley 2002; X. Li & Bayley 2018; Paredes Silva 1993; Otheguy & Zentella 2012). To fully approximate native speech, learners must acquire the constraints that govern native-speakers' use of such variable forms.

While the acquisition of the complex patterning of constraints on variable forms such as SPPs presents a problem for learners, other forms present even greater problems. For example, the Chinese morphosyntactic particle *de* 的, e.g., *wǒ de péngyǒu* 我的朋友, "my friend", is obligatory in some contexts, prohibited in others, and optional in still others (X. Li 2010). The particle *-le* 了, the topic of this chapter, presents similar problems for learners of Mandarin. Like all Chinese dialects, Mandarin lacks inflectional forms to mark tense. Learners must, therefore, acquire aspect and temporal markers to understand and express such concepts (Duff & D. Li 2002; C. N. Li & Thompson 1981; Ma 2006). Of the five aspect markers in Chinese that indicate imperfective aspect (在*zài*, 着*zhe*, and 呢*ne*) and perfective aspect (了 *le* and 过 *guò*) (Duff & D. Li 2002; Erbaugh 1992), the acquisition of *-le* poses the greatest challenge for learners (Duff & D. Li 2002; B. Li, Fan & Lee 2017; P. Li 1990; Su & Tao 2018). The difficulty in acquiring target-like use of *-le* can be attributed in part to its multifunctionality: (1) as a perfective aspect marker, *-le* denotes bounded actions and events, that is, perfectivity; (2) as the sentence final particle, it indicates a currently relevant state rather than perfectivity (C. N. Li & Thompson 1981). In addition, because perfective marker *-le* can occur at the end of the sentence, it can be difficult to distinguish from the sentence final particle *-le*. The optionality of *-le* makes the picture even more complicated: it is obligatory in some contexts but not in others (Bredeche 2011). Factors such as the inherent lexical aspect of the verb, the specific discourse context, the sequence of the related events, and the gender of the interlocutors have all been shown to interact with the use/non-use of *-le* (e.g., Duff & D. Li 2002; Jia & Bayley 2008; B. Li, Fan & Lee 2017; P. Li 1990; Su & Tao 2018; Wen 1995). In addition to acquiring the grammatical rules for using *-le* when it is required, L2 learners therefore also need to develop their sociolinguistic competence to use *-le* appropriately in contexts where it is optional or, in Lyster's words, "the ability to recognize and produce contextually appropriate language" (1994, 266).

This chapter explores the acquisition of this complex particle by high intermediate and advanced learners residing in China and compares their patterns of optional *-le* use with those observed in native speech. The chapter is organized as follows. First, it provides a linguistic description of *-le* and reviews previous research, including research in first (L1) and second (L2) language acquisition. Next, the methods of the current study are described, followed by results for both native speakers and second language learners. Finally, the implications of the research are described, including those for second language learning and teaching.

Description of *-le*

As a particle in Chinese, *-le* may occur in three positions in a sentence: (1) post-verbal *-le*, which is preceded by a verb in the middle of a sentence (as shown in 1); (2) sentence final *-le* at the end of a sentence (as shown in 2); (3) post-verbal *-le* and sentence final *-le* simultaneously (as shown in 3) when it occurs at the end of a sentence and is preceded by a verb (C. N. Li & Thompson 1981). Both post-verbal *-le* and sentence final *-le* can also exist in the same sentence (Soh & Gao 2006). All the examples were extracted from our learner data.

(1) Post-verbal *-le*
他 们 举 办 了 一 个 活动。
Tāmen jǔ bàn le yí gè huódòng
3pl hold le one CL event
They held an event.

(2) Sentence final *-le*
但是 大厅 太 吵 了。
Dànshì dàtīng tài chǎo le.
But hall too noisy le
But the hall is too noisy.

(3) Post-verbal and sentence final *-le*
她 快要 毕业 了。
Tā kuàiyào bìyè le
3sg about graduate le
She is about to graduate.

Previous research on *-le*

The acquisition of *-le* by native speakers

While many grammar books and Chinese language textbooks (Chao 1968; C. N. Li & Thompson 1981; Lü 2007; T'ung & Pollard 1982; Yip & Rimmington 2004) provide comprehensive grammatical accounts of *-le*, relatively few studies have investigated the acquisition of *-le* by native speakers (but see Erbaugh 1978; 1982; C.-C. Huang 2000; P. Li & Bowerman 1998). In comparison, more studies have focused on second language learners (e.g. Duff & D. Li 2002; B. Li, Fan & Lee 2017; Su & Tao 2018; Wen 1995; Y. Zhao 2016).

Because of the complexity of *-le*, previous studies have examined how it is acquired by young children to determine why one form tends to be acquired earlier than the other in particular contexts (Chang 2013; Chen & Shirai 2010; Erbaugh

1982; 1992; Jin & Hendriks 2003; P. Li 1990; P. Li & Bowerman 1998). Erbaugh (1985; 1992), for example, reported that native-speaking children used verbal *-le* 80 to 90 percent of the time to refer to a past event. P. Li & Bowerman (1998) examined the role of lexical aspect in the acquisition of grammatical aspect in comprehension, production, and elicited imitation tasks by native Mandarin-learning children aged three to six. Their results showed that children were sensitive to the association between telic verbs and the perfective aspect marker *-le*. In their use of aspect markers, children did not distinguish semelfactive verbs (punctual but not resultative) from activity verbs but did distinguish them from achievement verbs.

In testing the aspect hypothesis, which posits that language acquirers tend to use their available verbal morphology first to encode aspect rather than time, Chen and Shirai (2010) found that the perfective aspect marker *-le* usually occurred with telic verbs, that *-le* was strongly associated with past reference, and that children used stative predicates with *-le* more frequently than predicted. They suggested that children may create a semantic prototype with achievement verbs and prefer to use the perfective aspect marker *-le* for past reference. In another study, Chang (2013) provided data that supported the distributional bias hypothesis, which suggests that aspect markers are used more frequently with prototypical aspectual classes (Shirai & Andersen 1995). For example, although the aspect marker *-le* can be used with verbs of any lexical aspectual category, it is used more frequently with accomplishment and achievement verbs, which are prototypically perfective. Chang concludes, however, that children did not have a macro-category of past, perfective, or telic predicates marked by verbal *-le*.

The results of studies with Chinese children acquiring their first language provide some support for the aspect hypothesis. However, the results are not as clear as one would like to provide guidance for the examination of the various functions of *-le* by older learners who are acquiring Chinese as an additional language.

The acquisition of *-le* by L2 learners

As a consequence of its multifunctionality and possible optionality, acquisition of the particle *-le* poses numerous challenges for L2 learners. Many studies have focused on how English-speaking learners acquire the particle *-le* (Duff & D. Li 2002; Jin & Hendriks 2003; B. Li, Fan & Lee 2017; Ma 2006; Wen 1995; L. Zhao 1997). For example, Wen (1995) investigated the acquisition of *-le* by 14 English-speaking learners of Chinese at beginning and intermediate proficiency levels. Using interviews and picture-related tasks, Wen found that learners acquired forms of *-le* differently. For example, English-speaking learners, like Chinese children (Erbaugh 1982), acquired sentence final *-le* later than post-verbal *-le*. Wen's findings suggest

that the acquisition of sentence final *-le* posed more challenges to L2 learners than post-verbal *-le*. Wen claimed that the use of sentence final *-le* is more complex in its structural markedness and varied pragmatic functions. In comparison, the perfective post-verbal *-le* occurs mostly with a completed and bounded action or event and its use is governed by more concrete and consistent grammatical rules, but learners tended to overuse post-verbal *-le.* In another study of English learners, L. Zhao (1997) found that learners tended to use *-le* to indicate a past event.

In contrast to Wen (1995) and L. Zhao (1997), who examined a range of uses of *-le*, Duff & D. Li (2002) focused solely on the perfective aspect marker *-le* and examined its use by nine English-speaking learners of Mandarin who enrolled in a Chinese program at different proficiency levels and nine native speakers. Both oral and written tasks were used. Several important findings emerged: (1) similar to Wen's (1995) findings, L1 transfer played a key role in learners' use of *-le*. L2 learners tended to use *-le* to mark past events; (2) the most correct use of *-le* was found with accomplishment or achievement verbs with quantified or specific objects; (3) native speakers' use of *-le* showed variation, due to different perceptions or viewpoints of boundedness, stylistic preferences, or registers; (4) clear and form-focused instruction related to the use of *-le* at both the sentence and discourse levels benefits L2 learners.

From a different perspective, Jin and Hendriks (2003) pointed out that the acquisition of *-le* was affected by the situational aspect of the predicates. Their results show that post-verbal *-le* was first acquired when preceded by an achievement predicate, then spread to contexts denoting activities. Like other studies, their results also showed the effect of L1 transfer.

In contrast to the many studies that focused on the acquisition of post-verbal *-le*, Su and Tao (2018) focused exclusively on students' acquisition of sentence final *-le* and examined a teaching unit using authentic materials (e.g., entertainment video clips from movies, TV shows, and internet video). As sentence final *-le* particle bears multiple pragmatic functions, they emphasized that it is important to teach and explain those functions in different contexts using authentic materials.

Ma (2006) also examined sentence final *-le*, with a focus on memorized formulaic chunks, and found that beginning and intermediate learners used sentence final *-le* more frequently because they may have memorized a certain fixed expression although they had not fully acquired the grammar. Advanced learners, however, could use post-verbal *-le* to indicate the peak event in a sentence in a manner similar to native speakers because they had acquired the discourse functions of *-le*.

Given the importance of L1 transfer demonstrated in a number of the studies discussed above, several studies have examined the acquisition of *-le* by learners of different language backgrounds. For example, Cui (2008) examined how Korean

and Japanese students used *-le* in a written exam. The findings were similar to those of Ma (2006). Cui found that (1) the accuracy of sentence final *-le* was higher than post-verbal *-le*; (2) more advanced students made fewer errors on sentence final *-le* but more complex errors on post-verbal *-le*; and (3) the double-*le* structure was usually avoided. In another study, Jia and Bayley (2008) examined how heritage speakers in the United Stated used *-le* in narratives and cloze tasks. They found that age and language background affect the use of *-le* in the discourse and that *-le* in optional contexts was omitted most of the time.

Drawing insights from the current literature, this study explores variation in *-le* use by L2 Chinese speakers from different L1 backgrounds in oral discourse and compares their use with native speaker patterns. We focus on the acquisition of *-le* use in both obligatory and optional contexts. The research questions are the following.

1. How does *-le* use by L2 Chinese speakers vary in oral discourse?
2. What are the factors that constrain *-le* use in native and L2 oral discourse?
3. Does *-le* use by L2 speakers differ from native speaker use and, if so, how?
4. What are the effects of optional and obligatory contexts on learners' use of *-le*?

Methods

Participants

The participants in this study included 20 second language learners of Chinese (8 high intermediate and 12 advanced). Gender and native languages of the participants were balanced. All of the learners had 20 hours of classroom instruction every week, 1–2 hours of Chinese tutoring sessions every day, and several hours of extracurricular activities each week with their Chinese friends. In addition, 20 native speakers were recruited for comparison; they included 13 college students whose ages were similar to the learner group and seven college teachers. All spoke fluent Mandarin.

Data collection

The data were collected in 2006 at a major university in northeast China and consisted of multiple sources, including audiotaped sociolinguistic interviews, elicited narratives, and classroom speech from Chinese native teachers. The interview questions for both Chinese native and CSL (Chinese as a second language) students were initially constructed and constantly modified through participants' feedback

throughout the interviews. Topics included life experience, hobbies, family stories, favorite movies, travel experiences, and Chinese learning experiences. Additionally, each student participant watched *The Pear Story* (Chafe 1980) and was asked to retell it to elicit narrative speech. Each interview lasted about 45–60 min.

Coding

This study investigated the multiple factors that have been found to influence the presence or absence of *-le* in required and optional contexts. For native speakers, data were coded for the linguistic factor groups of position of *-le*, verb type, complement type, sentence type, serial verb relationship, and optionality. Social factor groups included discourse context, gender, and occupation. Learner data were coded for all of the factor groups listed for native speakers except occupation. Learner data were also coded for native language (English, Korean, Japanese, and Russian) and developmental factors such as length of residence in China (i.e., 1, 2, 3, or 4 years) and proficiency level (high intermediate or advanced). Examples of the coding categories follow.

Linguistic factors

Position of -le. The grammatical function of *-le* is closely related to its syntactic position and the position of *-le* is one of the major factors examined in the literature, but as yet there is no consensus on the different functions in different contexts. Some scholars have argued that *-le* only represents one morpheme as an anteriority marker (Shi 1990), a procedural marker (Ljungqvist 2003), or a marker of intersubjectivity (Lu & Su 2009). Others have described *-le* as two homophonous and homographic morphemes, which are mainly distinguished based on their positions in a sentence and semantic differences (Soh & Gao 2006; C. N. Li & Thompson 1981; Ren 2008; Soh 2009). In this study, we first examine post-verbal and sentence final *-le* to see if there are common patterns. The overall results show that they behave differently and support the view of *-le* as two separate morphemes. Therefore, we analyzed the two forms separately based on their position in a sentence.

The position factor group actually includes three factors: post-verbal *-le* when used after a verb, multiple-word sentence final *-le* when used at the end of a complete sentence, and one-word sentence final *-le* when used in a single word sentence. An example is shown in 4.

(4) 秋天　了。
Qiūtiān le.
(It's) fall.

Optionality. We also coded the optionality of *-le*. In cases where *-le* is required in the discourse, it was coded as obligatory and in contexts where *-le* should not be used, it was coded as prohibited. In sentences where *-le* can be omitted without changing the meaning, it was coded as optional, with optionality determined by the agreement of two native speakers. Examples are shown in 5–7.

(5) Obligatory
我 来 中国 1年 了。
Wǒ lái zhōngguó yìnián le.
I've been staying in China for 1 year.

(6) Prohibited
*我 还 没 毕业 了。
**Wǒ hái méi bìyè le.*
I haven't graduated yet.

(7) Optional
如果. 他 找到 (了) 工作, 肯定 是 在 悉尼。
Rúguǒ tā zhǎodào (le) gōngzuò, kěndìng shì zài xīní.
If he finds a job, it will be in Sydney.

Verb type and complement type. Most studies (e.g., Duff & D. Li 2002; P. Li & Bowerman 1998; Wen 1995) examined lexical aspect following Vendler's (1967) four categories: activity (e.g., run), achievement (e.g., break), accomplishment (e.g., paint a picture), and stative (e.g., be). However, as some scholars have pointed out (e.g. Ma 2006), the verbs that were categorized as accomplishment and achievement verbs in those studies were actually verb phrases comprised of a verb and a complement. For example, 吃了饭 (*chī le fàn*, had a meal), 吃了一碗饭 (*chī le yìwǎn fàn,* finished a bowl of rice), 吃完了饭 (*chī wán le fàn,* finished the meal) all involve the same verb 吃 (eat), but they differ in lexical aspect because each phrase is different. As these examples show, in many cases, lexical aspect is not determined by the verb alone, but by the complement structure that follows the verb. Therefore, in this study, verb and complement are coded separately in order to tease out their roles in conditioning the use of *-le*.

Verbs were coded based on Huang and Liao's (2007) categorization: action verbs (e.g., 走, *zǒu*, to walk, to leave), modal verbs (e.g., 能, *néng*, can, could), existential verbs (e.g., 有, *yǒu,* to have; 出现, *chuxiàn*, to appear*)*, mental activity verbs (e.g., 喜欢, *xǐhuān*, to like), verbal adjectives (e.g., 我累了, *wǒ lèi le*. I (am) tired.), copula (是, *shì*, be), verbal nouns (春天了, *chūntiān le*. (It's) spring.), and dummy verbs (e.g., 进行, *jìnxíng*, to implement).

Based on Huang and Liao (2007), seven types of verb complements were included in the analysis: quantitative, resultative, directional, temporal, degree, potential, and no complement (Examples 8–14).

(8) Quantitative complement
到 现在 大概 胖 了 10 公斤。
dào xiànzài dàgài pàng le 10 gōngjīn
I've gained weight by almost 10 kilograms.

(9) Resultative complement
但是 我 去 的 时 候, 我 看到 了 天池。
dànshì wǒ qù de shíhòu, wǒ kàndào le tiānchí.
But when I got there, I was able to see the Tianchi Lake.

(10) Directional complement
有 一个 男 人 带 着 羊 走 (了) 过来。
yǒu yígè nánren dài zhe yáng zǒu (le) guòlái.
A man came with a goat.

(11) Temporal/locational complement
他 把 篮子 放在 (了) 自行车 前面, 车筐, 然后 骑着
tā bǎ lánzi fàngzài (le) zìxíngchē qiánmiàn, chēkuāng, ránhòu qízhe
自行车 走 了。
zìxíngchē zǒu le.
He put the basket in front of the bicycle, and then rode off.

(12) Complement of degree
所以 我 觉得 无聊 死 了。
suǒyǐ wǒ juéde wúliáo sǐ le
So I feel bored to death.

(13) Possibility complement
很 不 好意思, 我 记不住 (了) 谁 是 谁。
hěn bù hǎoyìsi, wǒ jìbúzhù (le) shuí shì shuí.
I'm sorry that I can't distinguish one from another.

(14) No complement
然后 他 走 了。
ránhòu tā zǒu le.
Then he left.

Why separate complement and verb in the analysis? The most commonly investigated factor for *-le* use is the lexical aspect of the verb because it determines whether *-le* is needed to signal the boundedness of the event referred to. As noted earlier, most studies that examined the aspectual features of the verbs have used Vendler's (1967) four categories. Later, two additional verb types in Chinese were added to the list: semelfactive verbs (e.g. blink), first brought up by Comrie (1976) and mixed telic-stative verbs (e.g. wear) (P. Li 1990).

Ma (2006) raised a concern about the accuracy of how the verbs are defined. Examples of accomplishment and achievement verbs in many studies (e.g., Bredeche 2011; Duff & D. Li 2002; P. Li & Bowerman 1998; Wen 1995) are actually verbal

phrases, or what Tai (1984) termed "resultative compounds," which include a verb and a directional or resultative complement. Ma (2006) argues that if the verb is analyzed independently from its verbal phrase, it might cause confusion when trying to identity the aspectual feature. For example, "本子上写满了字, *běnzi shàng xiěmǎn le zì,* The notebook is filled with characters." could also be understood as the combination of the verb 写 (*xiě*) and the resultative verb complement 满 (*mǎn*). The resultative verb complement 满 (*mǎn*) takes on the aspect feature of accomplishment, which denotes the perfectivity of the verb 写 (*xiě*). The sentence "我看了两遍电影, *wǒ kàn le liǎngbiàn diànyǐng* (I watched the movie twice)" can be seen as a quantitative verb complement 两遍 (*liǎng biàn*) making the event bounded. Taking Ma's (2006) argument into consideration, the current study treated the verbs and verb complements separately to tease out their effects on *-le* use.

Serial Verb Relationship. The next linguistic factor examined was the serial verb relationship. Some scholars have claimed that *-le* is usually used after the first event in a sequence of events (e.g. 我走了你再看电视, *Wǒ zǒu le nǐ zài kàn diàn shì*; You can watch TV after I leave) (Duff & D. Li 2002; C. N. Li & Thompson 1981), but other scholars (T'ung & Pollard 1982) argued that *-le* should not be used after the first verb in a sequence of events that is seen as one event in its entirety e.g. 他去图书馆借了不少书, *tā qù túshūguǎn jiè le bùshǎo shū*, He went to to the library and borrowed many books). In this sentence, the first verb 去 (*qù*; go) does not indicate the boundedness of the event in relation to the second verb 借 (*jiè*, borrow), and the whole borrowing event is considered in its entirety. Therefore, the relationship between different events in a sentence also affects *-le* use. Based on Huang and Liao (2007), we identified nine types of multi-verb relations in our data: instrumental, parallel, causal, explanatory, verb-object, temporal sequence, verb duplication structure, and transition relation as well as no serial verb, as illustrated in 15–24. The serial verb relationship was determined by the most semantically-related verb that precedes or follows a particular verb.

(15) Instrumental relation
从 大连 坐(V1) 火车 到(V2) 烟台。
cóng dàlián zuò huǒchē dào yāntái.
We took a train to travel from Dalian to Yantai.

(16) Parallel relation
他 的 帽子 也 掉(V1) 了, 梨 也 撒(V2) 了。
tā de màozi yě diào le, lí yě sǎ le.
His hat dropped and the pears also spilled.

(17) Causal relation
学生 太 多(V1) 了, 所以 时间 也 是 有限(V2) 的。
xuéshēng tài duō le, suǒyǐ shíjiān yě shì yǒuxiàn de.
Because there were too many students, the time was limited.

(18) Explanatory relation

然后 他 爬 上去(V1) 了, 爬 到(V2) 那个 树 的 高 的 地方, 摘,
ránhòu tā pá shàngqù le, pá dào nàge shù de gāo de dìfang, zhāi,
摘 了 几 个 水果。
zhāi le jǐge shuǐguǒ.
Then he climbed up to the top of the tree and picked several fruits.

(19) Verb-object relation
我 忘 了 谁 唱 的。
wǒ wàng le shuí chàng de.
I forgot who sang that.

(20) Temporal sequence relation
我们 是 晚上 到(V1), 然后 马上 去(V2) 香港。
wǒmen shì wǎnshàng dào, ránhòu mǎshàng qù xiānggǎng.
We arrived at night and then went to Hong Kong right away.

(21) Verb duplication structure
然后 他 看(V1) 了 看(V2), 但是 下边 没有 人。
ránhòu tā kàn le kàn, dànshì xiàbiān méiyǒu rén.
Then he looked down, but there was nobody there.

(22) Transition relation
我 以前 认识(V1) 的 美国人 不多, 但是 今年 认识(V2) 一些。
wǒ yǐqián rènshi de měiguórén bùduō, dànshì jīnnián rènshi yīxiē.
I knew few Americans before, but this year I know some.

(23) No serial verbs
小 孩儿 们 已经 走(V) 了。
xiǎoháier men yǐjīng zǒu le.
The children were already gone.

Sentence Type. Data were also coded for sentence types. Four types of sentences were included in the analysis, namely, declaratives, questions, exclamations, and imperatives.
Native Language. The learners' native languages were also coded: Russian, Japanese, Korean, or English.

Social factors

Besides linguistic factors, social factors also play an important role in the use of variables. The present study included three social factors for native speaker data and two for learner data – gender and discourse context for both datasets and occupation for only the native speaker data. As mentioned above, the data for the current study came from classroom speech by native speaking teachers as well as casual conversations and narratives by both L1 and L2 students, the comparison of which will provide insights into the use of *-le* by learners as well as their peers in different discourse contexts.

Developmental factors

Learner data were also coded for developmental factors including length of residence in China (1-, 2-, 3-, and 4-year) and proficiency levels (higher-intermediate and advanced).

Coding exclusions

All of the contexts in which *-le* actually occurred, could possibly occur, or is prohibited were identified and coded, with the following exceptions.

1. Incomplete sentences where *-le* occurred were not coded. Tokens where *-le* was incorrectly used were also excluded from statistical analyses.
2. Highly lexicalized expressions containing *-le* were excluded from coding. For example, 完了 (*wánle*, to screw up), 为了 (*wèile*, in order to), and 好了 (*hǎole*, OK) are all formulaic expressions.
3. Cases where the exact character of *-le* (i.e., 了) was used but with a different pronunciation were not coded. For example, the character 了 in the word 了解 (*liǎojiě*, to understand) shares the same written form with the *-le* investigated in the current study but is pronounced as *liǎo* instead of *le*. Similarly, in cases where *-le* was used as a possibility complement as in 吃不了 (*chī bù liǎo*, not able to eat), *-le* was not coded.
4. Tokens where the participants were repeating a sentence said by others that contained *-le* were not coded.
5. Reformation and repetition cases with the same verb but more than one mention of *-le* were coded just once. For example, in Example (24), *-le* was coded once because the second "加" was simply a repetition and reformation of the first verb, but in Example (25), *-le* was coded twice because the second verb "爬" was an elaboration of the first verb.

(24) Reformation and repetition example
到 天津 后, 加 了, 加 了 油。
dào tiānjīn hòu, jiā le, jiā le yóu.
After we got to Tianjin, we fueled our car.

(25) Explanatory relation (same as Example 18)
然后 他 爬 上去(V1) 了, 爬到(V2) 那个 树 的 高 的 地方,
ránhòu tā pá shàngqù (V1) le, pádào (V2) nàge shù de gāo de dìfāng,
摘, 摘 了 几个 水果。
zhāi, zhāi le jǐge shuǐguǒ
Then he climbed up to the top of the tree and picked several fruits.

Interrater reliability

To ensure the reliability of the coding, two Chinese researchers coded each participant independently, and the first author rechecked the discrepancies and made the final decisions. All three coders are Chinese native speakers and well-trained in coding Chinese speech data. Interrater reliability, referring to the percentage of agreement of all the tokens among all the three coders, was 93%. Disagreements were solved through discussions among the coders.

Analysis

Data were analyzed with Rbrul, a specialized application of logistic regression that allows the researcher to include individual speakers as random effects (Johnson 2009). We performed eight separate analyses. First, we analyzed all the data from native and non-native speakers in separate runs. We then, for comparison purpose, analyzed optional cases of both groups. Following that, we divided the optional data into post-verbal *-le* and sentence final *-le* and analyzed each subset for both native and non-native speakers. We combined the factors that did not differ significantly from one another within groups if it was linguistically reasonable to do so. Finally, we report the most parsimonious model for each run. Factor groups that failed to reach statistical significance are not included in the data tables.

Results

Multivariate analyses were conducted to examine both the native speaker and Chinese learner datasets, aiming to investigate their patterns of *-le* use and the effects of different linguistic, social, and developmental factors on the use and non-use of *-le.* If the factor weights of certain variables in the same group did not differ significantly, they were combined in the analyses in cases where it was linguistically justified. In addition, if the token number of a variable was too small, it was combined with another variable that shared similar usage frequency and a similar factor weight.

Table 1 shows the overall distribution of *-le* use by native speakers and learners in both post-verbal and sentence final cases.

Table 1. Distribution of *-le* use by native speakers and L2 learners

Speaker *-le* position		Native speakers				CSL leaners			
Number and frequency of tokens		Sentence final		Post-verbal		Sentence final		Post-verbal	
		N	% *-le* use	N	% *-le* use	N	% *-le* use	N	% *-le* use
Optionality	Obligatory	907	98.7	580	95.2	1,627	62.2	1066	48.9
	Optional	376	59.8	496	30.6	623	17	722	10.2
	Prohibited					100	99	69	98.6
Total		1,283		1,076		2,350		1,857	

In the following sections, native speaker results are reported first as the baseline to compare with learner results that are reported next.

Native speaker results

A total of 2,359 tokens from native speakers was extracted from the data for analysis. Verb duplication in serial verb relationship (five tokens) and exclamatory sentences in sentence type (20 tokens) were excluded from the analysis because *-le* was obligatory in these cases. One word sentence final tokens were also excluded because the number of tokens was very small (26; 1.1%) and *-le* use was nearly categorical (96%).

Overall, native speaker use of *-le* in obligatory contexts was nearly categorical (97.2%). Considering that the speakers were all highly educated university students or teachers who spoke standard Mandarin, this result is to be expected. However, native speaker use of *-le* in optional contexts showed considerable variability. Speakers used *-le* in optional contexts at a rate of 43.2%.

As seen in Table 2, results of the analysis of optional *-le* use showed that *-le* position, sentence type, and verb type significantly influenced *-le* use. All other factor groups failed to reach significance. The patterns are:

1. Sentence final position promotes *-le* presence, whereas post-verbal position favors *-le* absence.
2. Declarative sentences favor *-le* presence, but questions favor *-le* absence.
3. Modal Verbs, existential verbs, dummy verbs, and mental activity verbs favor *-le* presence, but activity verbs, verbal adjectives, copula verb, and nominal verb favor *-le* absence.

Table 2. Optional use of *-le* by native speakers

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
–le position	Sentence final	0.549	374	59.9	.634	4.95e-11
	Post-verbal	−0.549	496	30.6	.366	
Sentence type	Declarative	0.386	784	44.4	.599	0.0027
	Question	−0.386	86	32.6	.401	
Verb type	Modal verb	1.265	13	84.6	.783	0.0106
	Existential verb/Dummy verb/ Mental activity verb/	0.315	58	63.8	.577	
	Activity verb	−0.311	687	39.2	.424	
	Verbal adjective	−0.460	61	54.1	.382	
	Copula/Nominal verb	−0.809	51	51.0	.308	
Total	Input		870	43.2	.362	

Notes: Log likelihood, = −536.030, *df* = 20; intercept = −0.566.

Learner results

Learner data consisted of 4,038 tokens (Tables 3 and 4). The overall rate and likelihood of *-le* use (42.4% and .218) were much lower than the native speaker rates. For learners, the two main constraints were optionality and position of *-le.* Regarding optionality, obligatory cases favor *-le* presence, while optional ones favor omission. Learners had many errors in *-le* use, including nonuse of *-le* in nearly half the obligatory contexts. They also used *-le* 169 times (4%) in prohibited contexts. With regard to *-le* position, one-word sentence final position favors presence, but multiple-word sentence final and post-verbal positions favor absence. Verb type, complement type, and serial verb relationship also reached significance at $p < .05$. The external factor groups of native language, proficiency level, and discourse context turned out to be significant, but gender and length of residence did not. The overall patterns are:

1. *-le* is strongly favored in obligatory contexts and disfavored in optional contexts.
2. *-le* presence is strongly favored in one-word final position, whereas *-le* omission is favored in multiple-word final and post-verbal positions.
3. Resultative and quantitative complements favor *-le* use; absence of a complement slightly favors *-le* use; directional, temporal/locational, and possibility complements favor *-le* absence.
4. Existential verbs, verbal adjectives, activity and mental activity verbs favor *-le* presence; modal verbs, copulas, nominal and dummy verbs favor *-le* omission.

5. In the category of serial verb relationship, absence of a serial verb, transitional relationship, verb duplication, verb-object, and explanatory relationships slightly favor *-le* use, while causal, parallel, temporal/locational, and instrumental relationships slightly favor omission.
6. *-le* is used more in narratives than in conversations, although the difference is not robust.
7. Korean and Japanese speakers use *-le* at higher rates than Russian and English speakers.
8. Advanced learners tend to use more *-le* than intermediate learners.

Table 3. Use of *-le* by CSL learners: Internal constraints

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
Optionality	Obligatory	1.182	2693	56.9	0.765	2.19E-155
	Optional	−1.182	1345	13.4	0.235	
	Prohibited (excluded)	na	169			
–le position	One-word sentence final	1.351	109	81.7	0.794	2.68E-20
	Multiple-word sentence final	−0.414	2141	48.1	0.398	
	Post-verbal	−0.937	1788	33.2	0.282	
Complement type	Complement of degree	1.437	49	67.3	0.808	2.05E-15
	Resultative	0.739	405	55.6	0.677	
	Quantitative	0.620	355	49.0	0.650	
	No complement	0.094	3007	40.6	0.524	
	Directional	−0.391	121	33.9	0.403	
	Temporal & locational	−1.023	76	14.5	0.264	
	Possibility	1.476	25	240	0.186	
Verb type	Existential	0.642	522	50.8	0.655	3.22E-07
	Verbal adjective	0.480	543	50.6	0.618	
	Activity	0.334	2704	40.0	0.583	
	Mental activity	0.114	89	39.3	0.529	
	Modal	−0.168	27	40.7	0.458	
	Copula	−0.579	53	20.8	0.359	
	Verbal nouns/Dummy	−0.823	100	33.0	0.305	
Serial verb relationship	No serial verb	0.343	1623	51.1	0.585	0.000142
	Transitional	0.186	175	44.6	0.546	
	Verb duplication	0.106	26	34.6	0.526	
	Verb-Obj	0.04	275	37.1	0.51	
	Explanatory	0.014	171	46.8	0.504	
	Causal	−0.055	432	39.4	0.486	
	Parallel	−0.117	199	41.2	0.471	
	Temporal/locational	−0.177	1100	31.7	0.456	
	Instrumental	−0.340	37	35.1	0.416	
Total	Input		4038	42.4	0.218	

Notes: Log likelihood = −2128.151; df 37; intercept = −1.279.

Table 4. Use of *-le* by CSL learners: External constraints

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
Native language	Korean	0.509	1348	47.4	0.625	0.00443
	Japanese	0.443	744	46.4	0.609	
	English	−0.369	935	39.7	0.409	
	Russian	−0.584	1011	35.3	0.358	
Proficiency	Advanced	0.329	3009	43.1	0.581	0.0189
	High-intermediate	−0.329	1029	40.4	0.419	
Discourse context	Narrative	0.140	456	44.7	0.535	0.0341
	Conversation	−0.140	3582	42.1	0.465	
Total	Input		4038	42.4	0.218	

Notes: Log likelihood = −2128.151; df 37; intercept = −1.279.

To compare learners' use of *-le* in optional contexts with native speaker use, an additional analysis of the L2 data was performed, with cases of obligatory *-le* removed. The results in Table 5 show that learners use optional *-le* at a much lower rate than native speakers, 13% compared to 43% for native speakers, a result that may be attributed to Andersen's (1984) one to one principle, which states that interlanguage grammars tend to express one underlying function with one form. Even though learners used optional *-le* at a very low rate, a number of factor groups did reach significance. In comparison to native speaker results, there are similarities as well as differences. As with native speakers, *-le* position significantly affects learners' use of *-le*. However, learner results differ from native speaker results in that complement type and discourse context are significant constraints for learners, while sentence type and verb type significantly constrain native speaker use. For learners:

1. Degree, resultative, and quantitative complements as well as no complement favor *-le* presence, but directional, temporal and locational complements favor *-le* absence.
2. Sentence final position favors *-le* presence, but post-verbal position favors *-le* absence.
3. Narrative favors *-le* presence, but conversation favors *-le* absence.

Since post-verbal and sentence final *-le* behave very differently, further Rbrul analyses of each *-le* position in optional contexts were conducted for both groups and compared to tease out their differences and examine native speaker (NS) and learner patterns of use.

Table 5. Optional use of –le by CSL learners

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
Complement type	Comp of degree/Resultative/ Quantitative	1.182	203	18.2	0.765	3.50E-06
	No complement	0.583	1009	13.2	0.642	
	Directional/Temporal & Locational	−1.765	80	2.5	0.146	
	Possibility	na	7	0	na	
-le position	Sentence final	0.277	589	16.6	0.569	0.00883
	Post-verbal	−0.277	703	10.5	0.431	
Discourse context	Narrative	0.500	118	16.1	0.622	0.00274
	Conversation	−0.500	1174	13	0.378	
Total	Input		1292	13.3	0.107	

Notes: Log likelihood = −458.893; df 17; intercept = −2.126.

Post-verbal *-le* (NS vs. learners)

Rbrul analyses of 491 NS tokens and 617 learner tokens of post-verbal *-le* in optional contexts (Tables 6 and 7) showed that the only significant constraint for both groups was complement type, although constraint ranking differed. For example, absence of a complement favors *-le* presence for native speakers but absence for learners. Quantitative complements favor *-le* absence for native speakers but presence for learners.

Sentence type was significant for native speakers, but not for learners. However, the results did show that both learners and native speakers have similar patterns, that is, *-le* use is preferred in exclamatory sentences, followed by declarative sentences and then questions.

Interestingly, verb type did not significantly affect *-le* use by native speakers, but it did for learners. This suggests that complement type may be a much stronger constraint than verb type for post-verbal *-le* use by native speakers and that learners are still working on teasing them apart.

Native language and discourse context turned out to be two most significant constraints for learners' post-verbal *-le* use. As with overall -le use, Japanese and Korean speakers are more likely to use optional *-le* than English or Russian speakers. In addition, narrative favors *-le* use but conversation favors nonuse. Moreover, serial verb relationship also proved to be significant. Verb-object, absence of a serial verb, and parallel constructions favor–*le* use, followed by temporal/locative and transitional relationships. Causal relationships favor nonuse of *-le.*

Table 6. Post-verbal *-le* use by native speakers (optional)

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
Sentence type	Declarative	0.516	441	31.5	0.626	0.00771
	Question	−0.516	50	20.0	0.374	
Complement type	No complement	0.438	264	34.1	0.608	0.0587
	Resultative/Degree	0.167	129	30.2	0.542	
	Directional	−0.001	38	26.3	0.500	
	Quantitative/Temporal & locational	−0.603	60	16.7	0.354	
Total	Input		491	30.3	.204	

Notes: Log likelihood = −283.978; df 15; intercept = −1.364.

Table 7. Post-verbal *-le* use by CSL learners (optional)

	Factor	Logodds	N	% *-le*	Weight	*p*
Native Language	Korean	1.078	237	19.8	0.746	0.000332
	Japanese	0.758	140	10.7	0.681	
	Russian	−0.405	98	9.2	.400	
	English	−1.431	142	2.1	0.193	
Discourse context	Narrative	0.733	46	32.6	0.675	0.000891
	Conversation	−0.733	571	10.3	0.325	
Verb type	Mental activity verb/ Modal	2.005	6	50.0	0.881	0.00174
	Existential	0.497	67	20.9	0.622	
	Activity	−0.615	521	10.7	0.351	
	Verbal adjective	−1.887	23	4.3	0.132	
	Dummy		2	0	na	
	Verbal noun		2	0	na	
Complement type	Quantitative	0.425	61	19.7	0.605	0.00983
	Resultative	0.230	82	19.5	0.557	
	No complement	−0.655	474	9.7	0.342	
	Degree	na	1	0	na	
	Directional	na	22	0	na	
	Temporal & locational	na	31	0	na	
Serial verb relationship	Verb-Obj	1.124	47	25.5	0.755	0.0163
	No serial verb	0.609	131	19.8	0.648	
	Parallel	0.291	32	15.6	0.572	
	Temporal/locative	−0.019	351	8.3	0.495	
	Transitional	−0.298	14	7.1	0.426	
	Causal	−1.707	42	2.4	0.154	
	Instrumental	na	0	0	na	
	Verb duplication	na	0	0	na	
	Explanatory	na	0	0	na	
Total	Input		617	12.0	.299	

Notes: Log likelihood = −178.862; df 22; intercept = −0.851.

Sentence final *-le* (NS vs. learners)

Further analysis included 374 and 586 tokens of sentence final *-le* in optional contexts by NSs and learners respectively. The results, in Tables 8 and 9 show that for native speakers, only gender was significant, whereas for learners, verb type and serial verb relationship were significant. However, the results should be treated with some caution because the number of tokens in both analyses is fairly small.

For native speakers, complement type and sentence type are the main constraints on the use of post-verbal *-le*, but gender is the main constraint for sentence final *-le*. However, learners' use of post-verbal and sentence final *-le* is somewhat intertwined because there are two overlapping contributing factors – verb type and serial verb relationship – and the constraint rankings within these two factor groups differ. This results suggests that even high intermediate and advanced learners find it difficult to sort out the differences in the two kinds of *-le*.

Table 8. Sentence final *-le* use by native speakers (optional)

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
Gender	Male	0.309	134	67.9	0.577	0.0234
	Female	−0.309	240	55.4	0.423	
Total	Input		374	59.9	0.615	

Notes: Log likelihood = −240.072; df 16; intercept = 0.469.

Table 9. Sentence final *-le* by CSL learners (optional)

Factor group	Factor	Logodds	N	% *-le*	Weight	*p*
Verb type	Verbal adjective	0.760	132	24.2	.681	0.0212
	Activity	0.509	295	18.0	.625	
	Mental Activity	0.256	27	14.8	.564	
	Copula	−0.340	23	8.7	.416	
	Verbal noun	−0.423	26	7.7	.396	
	Existential	−0.763	83	6.0	.318	
	Modal	na	3	0	na	
Serial verb relationship	Transitional	1.282	19	31.6	.783	0.0171
	Temporal/Locative/ Instrumental	0.554	100	23.0	.635	
	No serial verb	−0.048	278	17.3	.488	
	Causal	−0.404	84	10.7	.400	
	Explanatory/Verb-Obj	−0.610	81	12.3	.352	
	Parallel	−0.774	24	8.3	.316	
Total	Input		586	16.7	.059	

Notes: Log likelihood = −234.184; df 27; intercept = −2.769.

Discussion

Learners vs. native speakers; Post-verbal *-le* vs. Sentence final *-le*

The results of this study indicate that learners have acquired the general constraints governing *-le* use, optionality and *-le* position. However, results also show that *-le* is indeed very challenging for CSL learners. They use *-le* at a much lower rate (obligatory: 56.9%; optional: 13.3%) than native speakers (obligatory: 97.2%; optional: 43.2%), even when they achieve advanced proficiency. Moreover, in contrast to native speakers, learners do not treat the verb duplication relationship and exclamatory sentences as obligatory contexts. Although more proficient learners do show an increase in *-le* use, even the most advanced learners do not match native speaker patterns. The difference between native and learner speech is particularly striking in optional contexts, where the rate of *-le* use by learners is less than a third of the rate of native speaker use.

In addition, although the learners examined in this study were considerably more advanced than those in Wen (1995) or Teng (1999), the results provide some support for Teng's finding that sentence final *-le* is acquired before post-verbal *-le*, and contrast with Wen's (1995) results that suggest that learners first acquire post-verbal *-le*. As shown in Table 3, learners use post-verbal *-le* at a rate of only 33.2%, compared to 48.1% for multiple-word sentence final *-le* and 81.7% for one-word sentence final *-le*. Moreover, although learners use *-le* at a very low rate in optional contexts, as shown in Tables 7 and 9, they use sentence final *-le* at a higher rate (16.7%) than post-verbal *-le* (12%).

Examination of the erroneous uses of *-le* shows that there are two kinds of errors: *-le* presence when prohibited and *-le* absence when obligatory (Table 10). In both cases, learners make more errors in sentence final than post-verbal position, although chi-square test shows that the difference is not significant.

Table 10. Learners' *-le* use errors

	***-le* presence when prohibited**	***-le* absence when obligatory**
Post-verbal	40.7%	47%
Sentence final	59.3%	53%

Native language and proficiency

Korean and Japanese speakers used *-le* more than Russian and English speakers, a possible consequence of the differences in aspect marking in each language. In Russian, the verbs that can carry aspect have pairs of forms to express perfectivity or

imperfectivity, e.g., дéлать (to do; imperfective) versus сдéлать (to do; perfective). English uses auxiliaries and internal verb modification to indicate aspect. Both Russian and English involve verb form changes to express aspectual differences. On the other hand, Korean and Japanese, like Chinese, use morphosyntactic markers to indicate aspect and do not change the form of the verb. For example, the verb suffix -ss- in Korean may be used to indicate present perfective aspect and the suffix -tei- in Japanese may be used to express imperfective aspect. The grammatical similarity on this dimension between Japanese/Korean and Chinese may help speakers of these languages acquire Chinese *-le* more easily than Russian and English speakers.

Previous studies had mixed findings regarding the differences of *-le* use by learners of various proficiency levels. Sun (1984) and L. Zhao (1997) investigated *-le* use by beginning learners of Chinese and found overuse. However, Jin and Hendriks (2003), by analyzing narrative data from Chinese adults, L1 acquirers, and L2 learners, found that L2 learners overused *-le* at the very beginning stage but underused *-le* as they advanced. Duff and D. Li (2002) found that L2 learners, especially beginners, tend to underuse *-le* in narratives, but overuse it for certain state and activity verbs. This study found that advanced learners used *-le* more frequently than intermediate learners, suggesting that, as learners' proficiency level goes up, they tend to move towards the native speaker end of the continuum since native speakers use *-le* at a much higher rate. Various reasons might contribute to the mixed results of the effect of proficiency level on *-le* use. First, previous studies examined learners at different proficiency levels and used different measures of proficiency. For example, Jin and Hendriks (2003) investigated learners who had at least six months of Chinese learning and classified learners into three proficiency levels based on their performance on a cloze test. Duff and Li (2003) examined nine early stage of learners and focused on their use of *-le*. Learners in the present study had one to four years of experience in the target language environment and all had higher proficiency levels than participants in many previous studies. Second, the focus of the study needs to be considered. Most previous studies (e.g. Duff & D. Li 2002; Jin & Hendriks 2003; Sun 1993; Teng 1999; Wen 1995; L. Zhao 1997) focused on aspect marker *-le*, whereas this study focused on both types of *-le.* Third, data type might also play a role. This study found that *-le* is used differently in different discourse contexts. For example, Jin and Hendriks (2003) used narrative data, Duff and D. Li (2002) used both narrative and written data, whereas this study used both narrative and conversational data. Finally, *-le* use in different verb types or sentence structures might vary. It could be that the acquisition of *-le* follows a U-shape; that is, learners start off with *-le* overuse at the beginning stage, followed by underuse when they reach intermediate level, and then work on increasing *-le* use in a more nuanced manner. Further studies along this line are needed to explore the effect of proficiency on *-le* use.

Directions for further research

Findings on the acquisition of *-le* to date have been mixed, particularly with respect to the effect of proficiency level and differences in the acquisition of post-verbal and sentence final *-le*. In fact, there is no consensus on whether there is one type or two types of *-le*, which also contributes to the complex picture of learning, teaching, and researching this language feature. Therefore, there is a need for further theoretical accounts of *-le* as well as studies of native speaker use. Such studies could provide a baseline for studies of L2 acquisition to build on. Additionally, the effect of educational input on learners' use of *-le* is another area for investigation. Previous studies found that input from teachers and textbooks significantly influences learners' use of sociolinguistic variants (X. Li 2010, 2014; Mougeon, Nadasdi & Rehner 2010). What is more, the use of *-le* as well as other potentially variable forms in different modes of communication also deserve further study. This study only looked at oral discourse, but how *-le* is used in written discourse and whether and how it is different from oral discourse would be helpful for scholars to get a full picture of *-le* use. There have already been some studies in this direction. For example, Chu and Chang (1987) examined the distribution of post-verbal *-le* in written texts and found that it was rather infrequently used in all written styles although it occurred more frequently in textbooks for foreign language learners. C. N. Li and Thompson (1981) pointed that *-le* is generally not used in formal situations and written texts. SLA scholars (e.g. Duff & D. Li 2002; Yang 2016) also explored *-le* use in written texts and found both overuse and underuse. More studies are needed to investigate *-le* use in different written context to examine topics such as L1 and L2 differences and the effect of formality. Finally, data type might also influence learner use of *-le*. Exploration and comparison of both natural speech data (e.g. conversation) and experimental data (e.g., cloze test, sentence completion) by the same group of learners will help to understand better how learners use *-le* in different tasks and the factors involved.

Conclusion

This study has examined the complex array of constraints that condition use of the multifunctional particle *-le* by high intermediate and advanced learners of Chinese residing in northeast China. Overall findings indicate that learners are more likely to omit post-verbal *-le* than sentence final *-le* in both obligatory and optional contexts. Moreover, while Chinese native speakers also omit post-verbal *-le* more frequently than sentence final *-le* in optional contexts, they use both types of *-le* at a much higher rate that CSL learners. Unlike L2 learners, the educated

Chinese native speakers in this study supplied post-verbal and sentence final *-le* nearly categorically in obligatory contexts. In addition, the learners' overlapping constraint patterns of the two types of *-le* showed that they seem to have a difficult time teasing out the subtle differences between them.

As expected, more advanced learners are more likely to use *-le* in obligatory and optional contexts, although even the most advanced leaners fall short of native speaker rates of usage. In addition, the results of this study suggest that native language plays an important role, with Japanese and Korean native speakers performing at a higher level than English or Russian native speakers.

This study has shown that the multifunctional particle *-le* is presents many challenges to CSL learners. However, given the importance of *-le* in Chinese linguistics as well as its in pervasiveness in everyday speech, the need for further research is clear. For example, although this study has included speakers of typologically diverse first languages, that goal was only achieved by limiting the number of speakers of each language. Larger studies of speakers of the languages included here will enable researchers to understand which contexts present particular difficulties for speakers of individual languages and which contexts are challenging for all learners. Comparative studies of speakers of different first languages also have obvious implications for the study of language transfer. Finally, in comparison to the study of many other major languages, variationist studies of Chinese, including Chinese as a second language, are relatively rare (X. Li, Bayley & Zhang 2022). So far, the variants that have been explored in the variation studies of L2 Chinese such as morphosyntactic particle *-de* (X. Li 2010), subject pronoun (X. Li 2014), and the particle *-le* in this study all straddle Type 1 (the acquisition of obligatory forms in target language) and Type 2 variation (the acquisition of target language stylistic or sociolinguistic variations) (Mougeon, Rehner & Nadasdi 2004). Chapter 4 by Park in this volume also examined variants that demonstrate both obligatory and stylistic use, but many other chapters dealt with Type 2 variation only. Exploration of learners' use of Type 1 versus Type 2 variants can tell us how they perceive and produce them in the acquisition process. The difference between the usage rates of these two types of variation does demonstrate that learners are able to tease out the nuances of different types of variables, although some need more time to be fully acquired, such as *-le*. More studies along this line are needed to help with understanding of the acquisition of different types of variables. In addition, variationist studies of how learners acquire the complex Chinese aspect system examined in this study have the potential to fill an obvious lacuna in the literature and contribute to our understanding of aspect generally.

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CHAPTER 3

Production and evaluation of sociolinguistic variation in Mandarin Chinese among children in Singapore

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Singapore Mandarin is traditionally characterized by non-standard features arising from southern Chinese dialect influence. However, as English expands as a home language in Singapore, children's Mandarin exposure is increasingly limited to formal school settings. The situation is further complicated by rising immigration from Mainland China and the presence of Mainland teachers in the education sector. This study investigates how local and expatriate children in Singapore acquire and evaluate Mandarin variation in this complex landscape. Expatriates attending international schools are found to orient towards Mainland varieties, while expatriates in local schools acquire more local usage patterns, but do not demonstrate sociolinguistic knowledge comparable to Singaporean peers. These findings suggest that transnational migration and language shift are prompting changes in Singapore Mandarin.

Keywords: language variation and change, acquisition of variation, dialect contact, language attitudes, child language acquisition, transnational migration, Southeast Asia, Mandarin Chinese

Introduction

Prior scholarship in variationist sociolinguistics has illuminated how children make use of the patterns of variation around them to acquire knowledge and mastery of the sociolinguistic norms typical of their community (Roberts 1997; Smith, Durham & Fortune 2007; Smith & Durham 2019; Starr et al. 2017). When children's access to a language is more limited in scope, in the case of a heritage language used primarily in the home domain or a language being learned in a school setting, the task of acquiring sociolinguistic competence becomes more challenging. Indeed, children's outcomes in such circumstances are found to differ from those of native-speaker children in terms of their patterns of language use

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(Mougeon, Nadasdi & Rehner 2010). Aside from production of variation, where the difficulties experienced by second language learners in achieving communicative competence and mastering second language pragmatics are well-documented (Scarcella, Anderson & Krashen 1990; Taguchi & Roever 2017; Li et al. this volume), relatively little work has directly assessed children's development of sociolinguistic knowledge and attitudes in heritage or second languages (see Clark & Schleef 2010). Research in the area of non-native language attitudes has focused primarily on the attitudes of English-learner university students towards varieties of English and finds that learners generally attribute higher status to so-called "standard," "native" varieties (e.g., Received Pronunciation) and develop more native-like evaluations as they gain proficiency (McKenzie 2010; McKenzie, Kitikanan & Boriboon 2016; Xu, Yu & Case 2010).

The sociolinguistic development of young second language (L2) and heritage learners is further complicated in dialectally-diverse contexts, in which children are exposed to a range of varieties from various sources. Starr (2017), a study of primary school-aged children acquiring Mandarin and English in a dialectally-diverse two-way language immersion program in the United States, argues that children do not simply mimic teachers and peers in this context, but rather actively negotiate sociolinguistic norms based on metalinguistic cues present in their environment and in line with their own identities. Just as research has demonstrated that late learners' acquisition of variation in an L2 is crucially shaped by aspects of their social identity (e.g., gender as noted in Regan, Howard & Lemée 2009), Starr (2017) observes that children vary in their acquisition patterns by background, with heritage learners maintaining regional features of their home variety and novice L2 learners orienting more strongly to the standard. Zen and Starr (2021) similarly find that social factors constrain the use of phonological variants among heritage learners of Javanese in language immersion primary schools in Indonesia. As pointed out by scholars in education, heritage speakers of marginalized varieties face challenges in dialectally-diverse classrooms, where regional and/or non-standard features and code-mixing practices are often delegitimized (J. S. Lee, Hill-Bonnett & Gillespie 2008; Leeman & Serafini 2016). More investigation is needed regarding the development of children's sociolinguistic knowledge, language attitudes, and language use in these diverse contexts.

The present analysis explores the sociolinguistic implications of the particularly diverse and multifaceted language learning situation experienced by children acquiring Mandarin in the Southeast Asian nation of Singapore. Data drawn from a set of social evaluation and production tasks indicate that children growing up in Singapore vary widely in their sociolinguistic understandings of Mandarin variation, and that substantial changes are underway in how the language is spoken in this community. I argue that these findings may be accounted for by the

sociohistorical position of Mandarin in Singapore, the multiple ongoing linguistic and demographic shifts currently reshaping Singapore's linguistic ecology, increasing migration leading to rising dialect contact, and the variety of educational settings and models in which Mandarin is taught. These findings demonstrate the impact of transnational migration and cross-dialect contact on children's development of sociolinguistic norms, and illustrate how children's backgrounds and sociolinguistic resources influence the interpretations they develop of language variation patterns.

Mandarin variation and change in the Singapore context

Mandarin in Singapore

Singapore is a multiethnic, multilingual nation that recognizes four official languages: English, Mandarin, Malay, and Tamil. Its Chinese majority is descended primarily from immigrants from southern China, who historically spoke non-Mandarin Chinese varieties (e.g., Hokkien) commonly referred to in Singapore as "dialects," despite having structural distinctions equivalent to separate languages (see DeFrancis 1986: 54–64). The rapid introduction of Mandarin in Chinese schools in the early 20th century has been identified as the birthplace of Singapore Mandarin, as speakers of Chinese dialects, Malay, and other languages converged on a norm that was influenced by transfer from their native languages and the varieties spoken by early Mandarin teachers (Lock 1989: 73–76).

Despite the adoption of Mandarin in institutional settings, the language did not make significant inroads in the home domain until the government launched the Speak Mandarin Campaign in 1979. The efforts associated with this campaign, along with a parallel rise in English usage, have resulted in a steep decline in use of other Chinese varieties as primary home languages, falling from 63% of Singaporeans in 1980 to only 12% in 2015, while Mandarin now stands at 35% and English at 37% (Khoo 1980; Singapore Department of Statistics 2015). Although a majority of young Chinese Singaporeans now speak English as their primary home language, Singapore's bilingual education policy requires that children study the official language corresponding to their ethnicity, meaning that virtually all children of Chinese heritage attend English-medium schools in which they study Mandarin as a secondary subject, regardless of their home language situation (Ministry of Education 2020a).

Another key shift that has occurred with regard to Mandarin in Singapore has been a large wave of migration from Mainland China beginning in the 1990s (Yeoh & Lin 2013). Starr et al. (2017) observed that young Singaporeans were able to explicitly identify the regional origin of Mainland Chinese-accented English before

entering primary school, indicating that this is a highly visible and salient group in the community. Despite public ambivalence towards these newcomers, studies of language attitudes consistently find that Singaporeans attribute higher status to Mainland-accented Mandarin than Singapore Mandarin, due to the perception that Mainland speakers conform more closely to standard norms (Chong & Tan 2013; Cavallaro et al. 2018).

Mandarin sociolinguistic variation

Standard Mandarin Chinese, first codified in the early 20th century, is based primarily on the conventions of northern Mandarin, and specifically the Beijing regional dialect (Li & Thompson 1981: 1). While the Mainland Chinese and Singaporean standards for Mandarin differ to a limited extent in lexicon, their norms are essentially shared at the phonemic level, barring some minor exceptions, such as use of neutral lexical tone. Despite this common abstract standard, however, community notions regarding what features are considered part of the standard, and the phonetic realizations of standard phonemes, vary considerably across regions. Zhang (2005, 2017) emphasizes the plural character of "standard" Mandarin in the Sinophone world today. She contrasts Mainland Standard Mandarin with Cosmopolitan Mandarin, which is oriented towards the norms of the international Chinese diaspora (including Singapore), and argues that these varieties increasingly compete for symbolic capital as a consequence of globalization and the intensification of contact between Mainland China and other Mandarin-speaking communities.

Table 1. Selection of phonological variables that distinguish MSM, NorM, SSM, and CSM varieties of Mandarin

Variable	MSM IPA	Other variants	MSM	NorM	SSM	CSM	Community awareness
Retroflex sibilant initials (zh, ch, sh)	[ʈʂ, ʈʂʰ, ʂ]	[ts, tsʰ, s], [tʃ, tʃʰ, ʃ]	Std.	Mostly Std.	Post-alveolar	Nearly categorical dental	High
Dental sibilant initials (z, c, s)	[ts, tsʰ, s]	[ʈʂ, ʈʂʰ, ʂ], [tʃ, tʃʰ, ʃ]	Std.	Mostly Std.	Std.	Mostly Std.	Low
Palatal initials (j, q, x)	[tɕ, tɕʰ, ɕ]	[ts, tsʰ, s]	Std.	Std.	Std.	Nearly categorical [s] for (x), moderate elsewhere	Low
Rhotacization (-er)	[ɻ]	ø	Std.	Higher rate of use	No use	No use	High

Note: Information on prevalence and community awareness of features adapted from Lock (1989), Starr (2017), and Zhang (2008).

Table 1 summarizes several key distinctions of interest in Mainland Standard Mandarin (MSM), Northern Mainland Mandarin (NorM), Singapore Standard Mandarin (SSM), and Colloquial Singapore Mandarin (CSM). For the purposes of clarity in the table, the MSM variants have been taken as the variety to which the others are compared, with the understanding that this is a norm that is not agreed upon in all regions. Moreover, while these varieties are presented as uniform codes, the reality of language use is more complex, with speakers utilizing a range of features from their repertoire to index various social meanings.

Standard Mandarin includes several distinctive phonological features not found in southern Chinese dialects, including a phonemic distinction between dental (z, c, s) (/ts, ts^h, s/) and retroflex (zh, ch, sh) (/ʈʂ, ʈʂ^h, ʂ/) sibilant initial consonants. Due to southern dialect influence, CSM features a dental-retroflex merger, in which (zh, ch, sh) is fronted and merged with (z, c, s); this merger is pervasive in Singaporean data from the 20th century, and is even found in formal contexts among highly educated speakers (Lock 1989; Starr & Wang 2021). Also observed in Singapore, at a lower frequency, is a hypercorrection of this process, in which (z, c, s) is backed to (zh, ch, sh) (Lock 1989: 188). The tendency of Singaporeans to front retroflex consonants is well-known in the community; more broadly, it is a widely-circulated shibboleth distinguishing northern and southern speech across the Sinophone world (Lock 1989; Starr 2017). Regarding L2 learners, native speakers of English learning Mandarin outside of Singapore generally show little difficulty acquiring the dental-retroflex distinction, as it is analogous to the English alveolar-post-alveolar contrast (e.g. /s/ vs. /ʃ/) (Starr 2017). Young, English-dominant Singaporeans who exhibit such a merger, then, are likely to be showing influence from CSM, rather than from English.

As indicated in Table 1, CSM also features the fronting of palatal initials (j, q, x) to (z, c, s); in the case of (x) before unrounded vowels, the [s] realization is nearly categorical (Lock 1989: 206). Relative to the dental-retroflex merger, however, this feature is subject to far less community awareness, perhaps due to lower perceptual salience or the smaller functional load of the distinction. In terms of L2 acquisition, the palatal initials are not comparable to any phoneme of English, suggesting that they may be challenging to acquire. However, the (j, q, x) initials in Mandarin are most typically approximated by English speakers as [dʒ, tʃ, ʃ] (as in the pronunciation of Chinese leader Xi Jinping's family name as [ʃi] (BBC 2012)); thus, Singaporeans who realize (x) as [s] are likely to be influenced by regional use of this feature.

While Standard Mandarin phonology is based largely upon Beijing norms, certain features of northern Mandarin varieties have remained marked as regional variants (see Zhang 2005, 2008). This is the case for the phonological process of rhotacization (in Mandarin 儿化 *er-hua*), in which the final segment of a syllable

becomes rhotic and the nucleus may change, depending on environment (Chao 1968: 46–48). This process operates frequently in a wide range of phonological environments in northern varieties of Mandarin, and particularly in Beijing (Zhang 2008). Rhotacization has historically been avoided altogether by Singaporeans, who view it as an out-group feature that can only be authentically used by Mainlanders (Lock 1989: 199).

Prior work on phonological variation in Singapore Mandarin has focused on the speech of dialect speakers who acquired Mandarin as an L2, who formerly constituted the majority of Mandarin speakers in the community (Chen 1986; Lock 1989); little research has explored the Mandarin of L1 English speakers. Starr and Wang (2021), which contrasts the cases of a dialect speaker and an English speaker who learned Mandarin as an L2 in Singapore, finds markedly different patterns of variation between speakers. Specifically, the English speaker avoids use of stigmatized regional variables (e.g., the dental-retroflex merger), but still acquires the less salient [s] realization of (x). This pattern suggests that the ongoing shift to English among young Singaporeans will yield changes in how Mandarin is spoken, but that these changes may be distributed unevenly across features, based upon learners' degree of awareness that they are non-standard. At the same time, declining community use of Mandarin paired with increasing contact with Mainland Chinese varieties may mean that even non-stigmatized regional features are headed towards extinction among young speakers, many of whom now hear Mandarin more frequently in school than in informal settings. The following analysis explores these possibilities.

Mandarin sociolinguistic development among local and expatriate children in Singapore

The Voices of Children in Singapore project

The findings presented in this study are drawn from the Voices of Children in Singapore (VOCS) project, an ongoing investigation of the English and Mandarin sociolinguistic development of children growing up in Singapore. In particular, the project contrasts the sociolinguistic knowledge, attitudes, and usage patterns of local Singaporean children with "expat kids," a term referring to children of transnational migrant parents with a wide range of national backgrounds who have moved to Singapore for high-skilled employment opportunities. This population has risen dramatically since the 1990s, as the country has become a major international hub for various professional sectors (Yeoh & Lin 2013).

As Singapore has developed, the lifestyles of locals and expatriates have increasingly converged; rather than exclusively attending private international schools, for

example, many expatriate children now attend government schools (hereafter "local schools"). Due to enrollment quotas, expatriate children in local schools are placed in classes with primarily Singaporean students (see Starr et al. 2017). At the same time, Singaporean citizens are prohibited from enrolling in international schools barring special exemption (Ministry of Education 2020b). These policies result in a situation in which expatriate students who attend local schools have extensive exposure to Singaporean peers and teachers, while expatriates who attend international schools encounter very few Singaporeans in their school setting.

Mandarin learning environments

Under the bilingual education system of local schools, students are taught almost all core curricular content in English and receive approximately three to seven hours of "mother tongue" instruction per week, depending upon school and year level. Regarding what sort of Mandarin students are exposed to in these mother tongue classes, while precise statistics regarding the number of teachers from various national backgrounds are not made public, researchers at Singapore's National Institute of Education and other education stakeholders with whom I have consulted agree that the majority of Chinese language teachers in local schools are either native-born Singaporeans or naturalized Malaysians, while a small minority are from Mainland China (see Yang & Chow 2019). Therefore, the varieties most commonly used by teachers in local school classrooms are likely to be Standard Singapore Mandarin and Standard Malaysian Mandarin, which are phonologically quite similar, due to the shared migration history of the region. Regarding peer language exposure, while the majority of students in local schools are native-born Singaporeans, a significant minority are foreign students or naturalized citizens, many of whom are from China, meaning that local school students may receive some exposure to Mainland varieties via their classmates.

Crucially, local students' experience with Mandarin education is not limited to the mainstream school system. As discussed in Starr and Kapoor (2020), a majority of students who study Mandarin as their mother tongue are also enrolled in extracurricular Mandarin tuition or private enrichment centers, which predominantly hire teachers from Mainland China. Students are also likely to have been exposed to Mainland varieties in preschools, which largely employ Mandarin teachers from China. Aside from interpersonal contact, local school students are also exposed to MSM via Mandarin learning materials and media.

Among the international schools in Singapore that teach Mandarin, some employ conventional foreign language teaching models, while others use bilingual or two-way language immersion, spending roughly half of school contact hours in

English and half in Mandarin. Much like the enrichment and preschool sectors, the Mandarin programs of international schools are overwhelmingly staffed by teachers from China. Mandarin-English two-way language immersion classes in these schools are generally arranged so that they consist of a balanced mix of students from Mandarin-speaking backgrounds, many of whom are from China, and students from non-Mandarin-speaking backgrounds.

In sum, students attending local and international schools in Singapore experience very different exposure patterns to varieties of Mandarin. Local schools are predominantly staffed by local teachers, but many students also come into contact with some Mainland Chinese teachers in mainstream schools, preschools, and private enrichment and tuition, in addition to potential contact with Mainland-origin peers. In international schools, however, there is little opportunity for students to experience any contact with Singapore Mandarin speakers, either as teachers or classmates. The only domain in which these students would have contact with local Mandarin is in everyday community interactions, which are likelier to take place in English in the case of expatriates. Given the distinction in exposure to Mandarin varieties between school types, one aim of the following analysis is to explore the impact of school environment on children's sociolinguistic development.

Participants and methodology

Participants

The first phase of the VOCS project, in which the following data were collected, was carried out in 2015 and 2016, and involved a total of 118 children. This analysis focuses on 47 children ages five to 18 who participated in the Mandarin portion of the project; Table 2 summarizes the backgrounds of these participants. For ease of reference, participant groups will be referred to by their national and school backgrounds: Sing-Local (meaning Singaporean children enrolled in local schools), Expat-Local, Sing-Intl, and Expat-Intl.

The category of "Singaporean" participants, in the context of this study, consisted of children who were born in Singapore and had at least one Singapore-born parent. All Singaporean participants spoke English as one of their home languages, as determined by parental report. As indicated in Table 2, these participants were evenly split regarding whether they also spoke Mandarin at home. Due to aforementioned restrictions on Singaporean enrollment in international schools, only two children in this category participated in the study.

The 29 expatriate participants have diverse and complex profiles; many have parents of different nationalities, hold citizenship in a different country from their

Table 2. Major background categories for VOCS Mandarin participants

Nationality	School	Mandarin home	Mean age	N
Singaporean	Local	Mandarin	11.5	8
		Non-Mandarin	16.0	8
	International	Mandarin	9.3	2
		Non-Mandarin	–	–
Expatriate	Local	Mandarin	9.1	7
		Non-Mandarin	8.5	11
	International	Mandarin	7.0	4
		Non-Mandarin	8.9	7
Total			**47**	

Note: "Mandarin home" indicates whether Mandarin is one of the languages spoken in the home.

place of birth, have lived in several different countries. The largest subgroup of expatriates ($N = 13$) are those born in the US, UK, and Australia, while others were born in various Asia Pacific nations (e.g., Japan). None of the expatriate participants were born in Mainland China, although five had at least one primary caregiver of Mainland origin. All expatriate children but two spoke English in the home; those who did not were reported as proficient English speakers who had learned the language before age five.

Of the 47 participants, two of the Sing-Local non-Mandarin-home participants did not complete the regional identification and occupation judgment tasks due to computer errors and are excluded from the findings of those tasks; similarly, three of the Sing-Local non-Mandarin-home participants and two of the Expat-Intl non-Mandarin-home participants are excluded from the production task due to interruptions or recording errors. All findings are presented here with the caveats that a wide variety of participants are involved in the study, numbers in each background group are relatively small, and the groups are not well-controlled for age. Nevertheless, these exploratory findings are suggestive of trends in Mandarin sociolinguistic development that may be worthy of further investigation as the project continues.

Methodology

A series of tasks designed to elicit children's sociolinguistic knowledge, social evaluations, cross-variety knowledge, and speech production in Mandarin was administered in a single session by Singaporean undergraduate research assistants (see Starr et al. (2017) and Starr (2019) for a more detailed discussion of the methodologies and findings of the English portion of VOCS). To make the tasks accessible

to beginner Mandarin learners, all task instructions were presented in English, with only the stimuli themselves presented in Mandarin; stimuli were designed to be accessible to participants with low Mandarin proficiency. The sections below outline the methodologies used in two of the social evaluation tasks, regional identification and occupation judgment, and one of the production tasks, illustrated word-reading.

Regional identification task

The regional identification and occupation judgment tasks were implemented as a single "game" on a laptop via the OpenSesame platform (Mathôt et al. 2012; see Starr et al. 2017 for a description of the English version of these tasks). In the region task, participants were presented with an animated story featuring cartoon frogs. The narrator, a talking cartoon squirrel[1] voiced by a male international undergraduate student with a regionally mixed, non-local English accent, informed participants that these frogs were going to the art museum to look at paintings, and that, although the frogs all looked the same, "actually, some are from Singapore and some are from China." The narrator then asked, "I wonder if we can figure out where each frog is from by listening to them talk about the paintings?" For each test item, participants were presented with a visual scene of a frog next to a framed "painting" (e.g., an image of five stars), accompanied by an audio stimulus of a Mandarin sentence describing the image in the painting, with a transcription of the sentence given in Chinese characters. After the stimulus played twice, participants selected whether they believed that the frog was from Singapore or from China.

Audio stimuli for the task were recorded by six female undergraduate and masters students, comprising three from northern Mainland China and three from Singapore. The Chinese talkers recorded the same stimuli in MSM and NorM guises, while the Singapore talkers performed in SSM and CSM guises. Participants were randomly assigned to groups so that they only heard particular talkers use a particular guise. Each of the stimuli included a well-known, salient phonological feature that differentiates MSM from NorM and SSM from CSM, as shown in Table 3. While no phonemic-level features differentiated MSM from SSM, phonetic realization of segments, lexical tones, prosody, and voice quality presented clear contrasts between the Mainland Chinese and Singaporean speakers, as confirmed by the judgements of Singaporean undergraduate research assistants, who could complete this task with 100% accuracy.

1. Animal cartoons used in the study tasks were purchased with a commercial-use license from 'Giftseasonstore' on etsy.com. The occupation guises of the rabbits were created by the author.

Table 3. Stimuli variation across guises using the example "画(儿)上有五个小星星" ('The picture has five little stars.')

Variety	Speaker origin	Guise code	Feature	Example
MSM	China	CHI	–	*huà shang yǒu wǔ ge xiǎo xīngxing*
NorM	China	CHI-NOR	Rhotacization	***huàr*** *shang yǒu wǔ ge xiǎo xīngxing*
SSM	Singapore	SIN	–	*huà shàng yǒu wǔ ge xiǎo xīngxīng*
CSM	Singapore	SIN-NS	Dental-retroflex merger	*huà* ***sàng*** *yǒu wǔ ge xiǎo xīngxīng*

In the presentation of findings that follow, to avoid excessive use of opaque acronyms, the more semantically transparent terms CHI, CHI-NOR, SIN, and SIN-NS will be used to represent the four guises analyzed, as indicated in Table 3.

Occupation judgement task

The occupation judgement task was administered as the second "level" of the game used to present the regional identification task. In a continuation of the previous scenario, participants were told by the narrator that rabbits had now arrived to visit the art museum. The narrator continued, "these rabbits all look the same, but actually they do different jobs." The images in Figure 1 were then shown, featuring two rabbits presented as a Mandarin teacher and a coffee shop worker, with the accompanying narration: "Some of them are Mandarin teachers – they teach children to read and write Chinese. Some of them are coffee shop workers – they make drinks for customers." The details of the images were designed to evoke what children would be familiar with in a Singapore setting: the Mandarin teacher has 华语 *huayu* written on the board, the local term for Mandarin, while the coffee shop worker is holding a mug of iced Milo, a popular local drink for children. For each item, participants were presented with a rabbit describing a painting and were asked to indicate, "yes" or "no", whether they believed the rabbit did a particular job. The same set of stimuli and talkers were used as in the regional identification task; individual participants did not hear the same stimuli across tasks.

Figure 1. Rabbits in Mandarin teacher (left) and coffee shop worker (right) guises for the occupation judgement task

Production task

Participants' speech was recorded in the Mandarin session across a number of tasks; the present analysis focuses on one of these, an illustrated word-reading task. Each item was presented individually as a full-screen slide on a laptop, with the Chinese characters corresponding to the target word or phrase positioned above an image that illustrated the item, and an English translation placed below the image. No romanization was given for the characters, to avoid providing phonological cues (Chinese character orthography provides no cues regarding the standard realization of the features under examination). Participants were recorded using a lavalier microphone attached to a Zoom H4n or H5 recorder, either at the linguistics laboratory at the National University of Singapore or in a quiet location in their homes.

A summary of the items used for the variables selected for analysis is given in Table 4. Variables included are the dental and retroflex sibilant initial consonants, implicated in the dental-retroflex merger and hypercorrection of that merger, and the palatal (x) (see Table 1 for further information on each variable). Examining these variables allows us to contrast the behavior of a stigmatized and salient feature of local Mandarin, the dental-retroflex merger, with an equally pervasive but less stigmatized feature, the fronting of (x) to [s]. As the roundedness of the following vowel has been found to significantly constrain the realization of these variables (Lock 1989; Starr 2017), items were balanced for following vowel rounding.

Tokens were coded auditorily by two native Mandarin-speaking research assistants. As in prior work on phonological variation in retroflex sibilant initials in

Table 4. Summary of target items analyzed in the word-reading task

Variable type	Variable	Following vowel	N	Example item
Dental	(z)	rounded	2	足球 ***zu****qiu* ('soccer ball')
		unrounded	2	汉字 *han****zi*** ('Chinese character')
	(c)	rounded	2	聪明 ***cong****ming* ('clever')
		unrounded	2	草莓 ***cao****mei* ('strawberry')
	(s)	rounded	2	五岁 *wu* ***sui*** ('five years old')
		unrounded	2	三 *san* ('three')
Retroflex	(zh)	rounded	2	猪 *zhu* ('pig')
		unrounded	2	知道 ***zhi****dao* ('know')
	(ch)	rounded	2	出门 ***chu****men* ('go out')
		unrounded	2	长颈鹿 ***chang****jinglu* ('giraffe')
	(sh)	rounded	2	书 *shu* ('book')
		unrounded	2	身体 ***shen****ti* ('body')
Palatal	(x)	rounded	2	雪 *xue* ('snow')
		unrounded	2	西瓜 ***xi****gua* ('watermelon')
Total			**28**	

Mandarin (Starr 2017), the retroflex and dental variables were coded with a focus on the categorical front vs. back phonemic contrast, meaning that tokens produced in the range of post-alveolar to retroflex were all coded as "retroflex." After eliminating tokens in words that were not correctly identified by participants in the task, 913 tokens were included in total.

Findings

Regional identification task

Figure 2 presents the overall rate of accuracy in identifying the regional origins of the CHI, CHI-NOR, SIN, and SIN-NS guises by the various participant groups. Singaporeans in local school (Sing-Local) demonstrated excellent performance on this task overall. Notably, the group that did not speak Mandarin at home was virtually perfect on this task, with only one participant making a single error; as a result, they significantly outperformed the Mandarin-home group, based on generalized linear mixed-effects modelling carried out using the lme4 package in R ($z = 2.288$, $p = 0.02213$) (Bates et al. 2015). Performance by variety was not significantly different among the Sing-Local group, meaning all accents were equally familiar. Accuracy rate in the small group of Singaporeans in international schools (Sing-Intl) was comparable to the other Singaporeans attending local school.

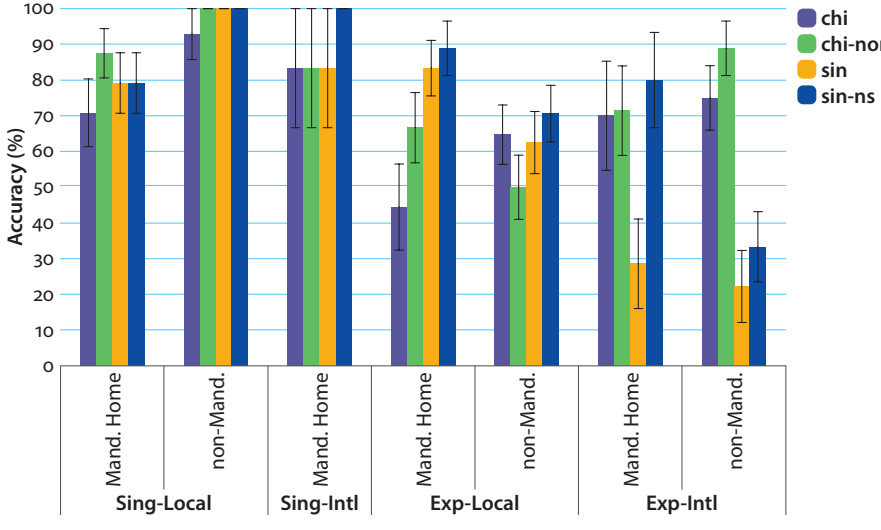

Figure 2. Accuracy rates for identification of four varieties of Mandarin among Singaporean and expatriate children by school type

Among the expatriates who attend local school (Exp-Local), significant interactions were found between speaking Mandarin at home and the variety being identified. The expatriates who spoke Mandarin at home were significantly more successful at identifying the origins of speakers of CHI-NOR ($z = 1.979$, $p = 0.0479$), SIN ($z = 2.279$, $p = 0.0226$), and SIN-NS ($z = 2.035$, $p = 0.0419$); however, Mandarin-home Exp-Locals were significantly worse than their non-Mandarin home peers at identifying CHI ($z = -2.279$, $p = 0.026$). As indicated in Figure 1, this difference was not caused by the non-Mandarin home Exp-Local group being particularly good at identifying CHI, but by the Mandarin-home expatriates being notably poor at this identification relative to their skill in identifying other varieties, performing at chance level for CHI. Among the non-Mandarin home Exp-Local group, no variety was recognized significantly better than chance, according to two-tailed Fischer's Exact tests ($p > 0.05$), while those from Mandarin-speaking homes were able to identify SIN and SIN-NS at significantly above chance level ($p = 0.0305$, $p = 0.0275$).

The expatriates attending international schools (Exp-Intl) demonstrated a considerably different pattern from their peers in local school. The non-Mandarin-home group had a propensity to label most speakers as being from China regardless of variety, giving a "China" response for 80.9% of speakers from China as well as 71.4% of speakers from Singapore, resulting in a high accuracy rate for CHI and CHI-NOR, but a significantly lower accuracy rate for SIN ($z = -3.090$, $p = 0.002$) and SIN-NS ($z = -2.800$, $p = 0.00511$). The Mandarin-home group exhibited a similar pattern for three of the four groups, giving a high rate of "China" responses for SIN, resulting in less accuracy ($z = -2.013$, $p = 0.0441$); however, this group did demonstrate an awareness that SIN-NS speakers were from Singapore, yielding a significant difference in the accuracy rate of the Mandarin and non-Mandarin home groups for this variety ($z = 1.978$, $p = 0.047963$).

Occupation judgment task

Figures 3 and 4 give the "yes" responses, meaning the percentage of responses for which participants felt that the speaker did a particular job, for the Mandarin teacher and coffee shop worker occupations by speech variety, as given by students in local schools (Figure 3) and international schools (Figure 4); for space reasons, the coffee shop worker occupation is indicated as "café" in each figure. While participants from most backgrounds stratified their occupation ratings by variety to some extent, the Expat-Local group showed no differences in rating by variety. Moreover, they indicated little confidence in their ratings, giving no variety a rating above 62% "yes". Across participant groups, a distinction is also observable in the

degree of variety-based stratification for the two occupations. Although the data show strong stratification by variety for the teacher occupation, no such stratification is observed within the coffee shop worker findings. Moreover, no variety was rated as significantly likelier to work in a coffee shop than to be a Mandarin teacher, although there was a nonsignificant trend in this direction for SIN-NS ($z = -1.054$, $p = 0.292$).

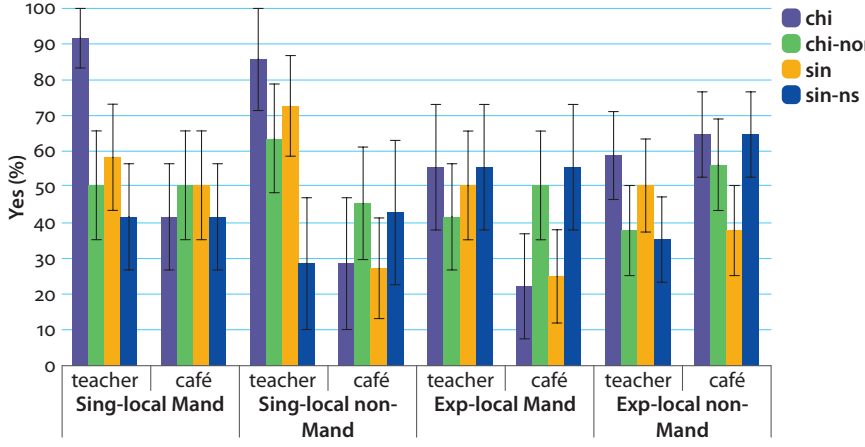

Figure 3. Rate of "yes" responses for teacher and coffee shop worker occupations for four Mandarin varieties among students attending local schools in Singapore, by background

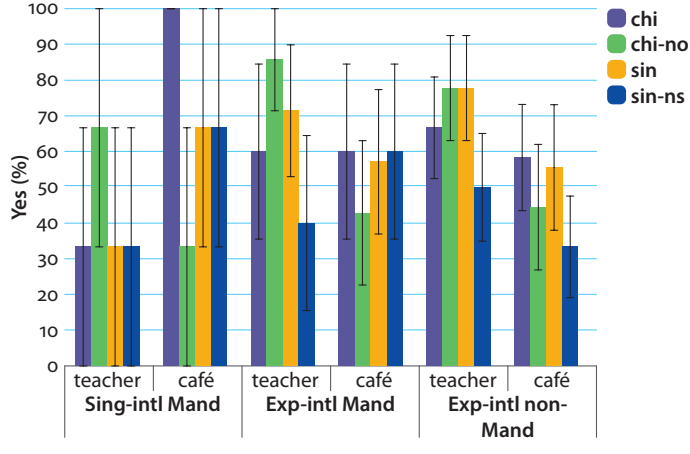

Figure 4. Rate of "yes" responses for teacher and coffee shop worker occupations for four Mandarin varieties among students attending international schools in Singapore, by background

Turning to differences by variety, the CHI variety is rated as highly likely to be a Mandarin teacher by Sing-Local students, with a rating of 90% across home language backgrounds; this group also rated CHI as significantly or marginally significantly likelier to be a teacher than all three other varieties (CHI-NS: $z = -2.330$, $p = 0.0198$; SIN: $z = -1.743$, $p = 0.0813$; SIN-NS: $z = -1.762$, $p = 0.0780$). In contrast, Expat-Local and international school students are less convinced that CHI is likely to be a teacher, giving speakers of this variety ratings of only 58% and 60%, respectively. As a result, CHI exhibits a significantly smaller teacher vs. coffee shop worker rating difference among the Expat-Local group relative to Sing-Local ($z = -2.188$, $p = 0.02866$).

CHI-NOR features a marked gap in teacher rating among the local school versus international school students, with international students significantly likelier to rate this variety as likely to be a teacher ($z = 2.164$, $p = 0.0305$). In fact, this is the variety that scores highest in the teacher category among international school students, with 79% of responses agreeing that speakers of this variety could be a teacher. Among local students, however, CHI-NOR receives the second-lowest rating for teacher, at 47%, narrowly beating SIN-NS at 40%.

Regarding ratings for SIN, these speakers were significantly more likely to be rated as Mandarin teachers than coffee shop workers overall ($z = 2.185$, $p = 0.0289$), showing no significant differences by background type. As noted above, the SIN rating for teacher was marginally significantly lower among the Sing-Local group, but not lower for other participant groups. Finally, the SIN-NS speakers were consistently rated as the least likely to be teachers by all participant groups, with the exception of the Mandarin-home Expat-Locals. The Sing-Local group was significantly more likely to give SIN-NS lower ratings for teacher relative to their CHI rating ($z = -2.106$, $p = 0.0352$).

Production task

Figure 5 indicates the rate of regional variants used for the dental (z, c, s), retroflex (zh, ch, sh), and palatal fricative (x) variables in the production task. Among the Sing-Local participants, rates of regional variables look comparable across home language groups, with the exception of the retroflex initials, which are produced largely standardly by the non-Mandarin-home participants, but have a 34% rate of regional realization among those who speak Mandarin at home. Both home language background groups produce substantial rates of regional [s] for (x), at over 40% of tokens; this variable also leads in regional realization among the Sing-Intl group. Turning to the Expat-Local group, the Mandarin-home participants pattern very similarly to the Mandarin-home Sing-Local participants. The Expat-Local

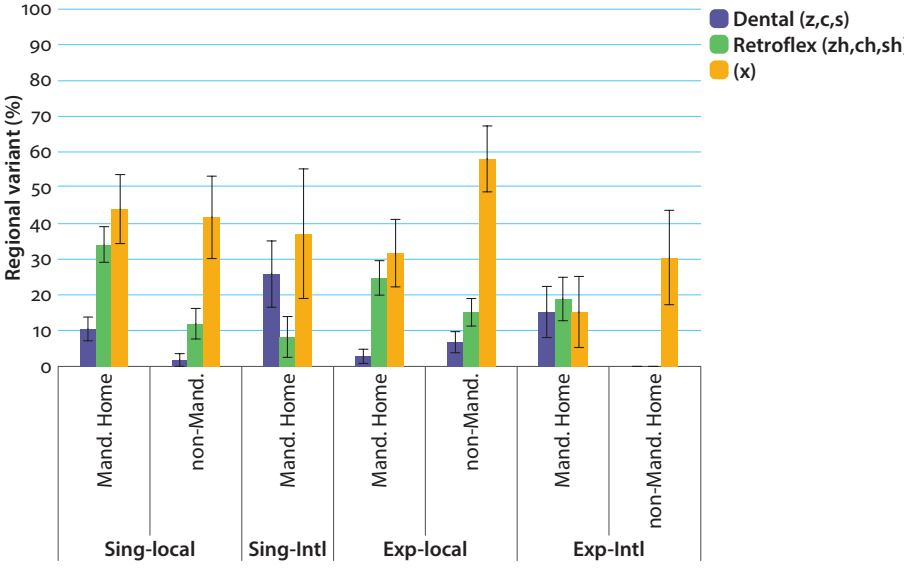

Figure 5. Rate of participant use of non-standard regional Singapore Mandarin variants for dental (z, c, s), retroflex (zh, ch, sh), and palatal (x) by background

participants who are learning Mandarin via school, however, show a dramatic gap between the dental and retroflex initials, which are largely standard, and the (x) variable, which is produced as the regional [s] at a rate of 59%. The Expat-Intl group, in contrast, produces relatively few regional variants, with the non-Mandarin-home group in fact producing no non-standard tokens of the dental or retroflex variables, and a lower [s] rate for (x) of 31%.

Table 5 gives the overall rate of regional realization of each variable and summarizes the findings of generalized linear mixed-effects modeling (using the glmer function of the lme4 package in R) for each of the variables examined with regard to the three fixed effects found to play significant roles in the models: roundedness of the following vowel, school type, and home language. Regarding phonological environment, a following unrounded vowel correlates with the use of [s] for (x), and with fronting for the dental and retroflex sibilants (although this pattern is reversed for (sh), which leads in the shift towards standard realization). Local school participants use more regional variants than international school students for (x) and two of the three retroflex variables, while no significant effects are identified for dental initials. Evidence for a Mandarin-home effect is less robust, with one of the retroflex variables, (ch), showing a marginally significant effect in which Mandarin-home participants are more likely to use the regional variant.

Table 5. Overall realization distribution and fixed effects included in best-fit generalized linear mixed-effects models for retroflex (sh, zh, ch), dental (s, z, c) and palatal variables (x), with random effect of participant

Linguistic variable		% regional	N	Unrounded vowel		Local school		Mandarin home	
				z	Pr(>|*z*|)	*z*	Pr(>|*z*|)	*z*	Pr(>|*z*|)
Dental	s	8%	140	−2.092	0.0365 *	−1.357	0.1748	1.442	0.1493
	z	8%	108	−2.242	0.025 *	–	–	–	–
	c	6%	116	–	–	–	–	–	–
Retro.	sh	12%	151	−1.814	0.0696	1.676	0.0938	–	–
	zh	23%	128	1.853	0.06395	–	–	1.320	0.18683
	ch	24%	136	2.179	0.029337 *	1.772	0.076397	1.946	0.051654
Palatal	x	40%	134	4.446	<.0001 ***	2.167	0.030207 *	−1.584	0.113157

Notes: Positive *z* values correspond with greater use of regional variants. Cells filled with a " – " indicate that these factors were not selected for inclusion in the best-fit models.

In addition to correlating with social background, participants' production patterns may also be influenced by their familiarity with and/or attitudes towards varieties of Mandarin. Figure 6 highlights one such pattern in the data; when controlling for background group, participants who were able to identify CHI with 100% accuracy were significantly more likely to produce standard variants ($z = 2.758$, $p = 0.00581$). This effect significantly interacted with background, in that it did not hold for the Expat-Local group ($z = -2.940$, $p = 0.00328$).

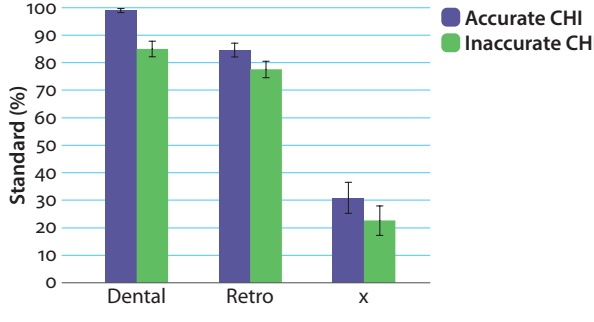

Figure 6. Rate of standard variant use by accuracy of CHI identification

Discussion

The findings presented above are suggestive of ongoing changes in how Mandarin is spoken in Singapore that result from community language shift, transnational migration, and cross-dialect contact. The data also point to differences in how children from a range of sociolinguistic backgrounds understand Mandarin variation. The following sections synthesize key findings in each of the three tasks.

Regional identification

While performance by VOCS participants on the English version of the regional identification task was strong, with children able to report the regional origin of four English varieties at high accuracy rates (Starr et al. 2017), in the case of Mandarin regional identification, some participant groups showed considerably more difficulty than others. Among participants who did not speak Mandarin at home, performance differences by background were quite clear-cut: Singaporeans attending local school could identify all varieties with near-perfect accuracy, expatriates attending local school performed at chance level for all varieties, and expatriates attending international school identified all Mandarin speakers across varieties as likely to be from China. Regarding participants who did speak Mandarin at home, Singaporeans showed strong performance regardless of school type or variety, expatriates in local school showed more familiarity with Singaporean than China-based accents, and expatriates in international school reported SIN speakers as likely to be from China, but were aware that speakers using their SIN-NS guise were from Singapore.

The extraordinarily strong performance of the non-Mandarin-home Sing-Local participants underscores the continuing presence of Mandarin in the local community and extended families of young Chinese Singaporeans, despite the decline in Mandarin as a primary home language. While this group was considerably older than the others, which limits comparability, the finding nonetheless demonstrates that Chinese Singaporeans who do not speak Mandarin at home continue to develop knowledge of Mandarin variation. The observation that Sing-Local students were easily able to identify speakers from China is also consistent with the performance of these same participants in the English regional identification task, in which Chinese-accented English was the earliest variety that Singaporean children were able to reliably identify (Starr et al. 2017: 521). In sum, although Mandarin is losing ground to English as a community language, sociolinguistic knowledge of Mandarin varieties remains strong among young Chinese Singaporeans.

In contrast to the Singaporean group, expatriate children in local schools who do not speak Mandarin at home showed little signs of gaining sociolinguistic knowledge of Mandarin via school exposure, and thus appeared to randomly guess as to the regional origins of speakers. While their performance may improve with age, it is noteworthy that Expat-Local children in the five to nine age group were already able to reliably distinguish Singaporean and Chinese-accented English at an accuracy rate of 86% (Starr et al. 2017: 522); in other words, while these children have picked up extensive sociolinguistic information about the English features of Singaporean and Mainland Chinese speakers, they have not done so at a comparable pace for Mandarin. One unexpected finding in these data among Expat-Local participants was the low accuracy rate for CHI among Mandarin-home children. The mix of Singaporean and Mainland Chinese teachers and materials in local schools and enrichment may constitute a barrier to acquiring explicit awareness of regional Mandarin varieties among the Expat-Local participants, as they may come to associate Mainland varieties with Singapore settings.

Regarding the performance of students in international schools, the impact of learning Mandarin in this educational setting is illustrated clearly in these data, with non-Mandarin-home international school students overwhelmingly reporting that any speaker of Mandarin is from China, despite being told in the task instructions that some speakers were from Singapore. Because these children are comparable in age to the Expat-Local non-Mandarin group, we cannot point to their youth as an explanation for this phenomenon. Among those international school expatriates who speak Mandarin at home, awareness of the standard variety of Singapore Mandarin is notably low, with only SIN-NS speakers labeled as likely to be from Singapore; this pattern reflects the lack of exposure these participants receive to Singapore Mandarin in any educational or formal setting. Thus, regardless of home language background, expatriates attending international school not only have not yet gained meaningful sociolinguistic knowledge of Mandarin, as was the case for the Expat-Local group, but they are in fact developing a mistaken picture of who speaks Mandarin, and how Mandarin is spoken across regions.

Occupation judgment

The occupation judgment task yielded several notable differences among participant groups, particularly with regard to the ratings for Mandarin teacher. Consistent with the high rating given by Singaporeans to Mainland Mandarin in Chong and Tan (2013), the Sing-Local participants strongly preferred CHI over other varieties for teacher, giving this accent a confident 90% "yes" rating. The preference for CHI over SIN is particularly notable given that teachers from Mainland China constitute only a small minority of Mandarin teachers in local schools. Consistent with

the behavior of participants in the English version of the occupation task (Starr et al. 2017), the high CHI rating for teacher appears to be a reflection of the overall prestige that Sing-Local participants assign to the CHI variety.

In contrast to the Sing-Local ratings, among international school students, CHI-NOR was most strongly associated with the Mandarin teacher occupation. Crucially, the CHI and CHI-NOR stimuli were produced by the same speakers from northern Mainland China, differing only in use of rhotacization. These findings suggest that, while local school participants do not consider rhotacization to be part of standard Mandarin, international school students do. This difference in judgment regarding rhotacization is in line with previously-observed regional variation in norms for standard Mandarin, most notably Zhang's (2005) distinction between Mainland Standard Mandarin and Cosmopolitan Mandarin. By orienting towards rhotacized Mandarin as the most desirable variety for teachers, the international school students are exhibiting alignment with Mainland Chinese norms, despite their Southeast Asian location.

Another notable pattern in these data is the absence of stratification by standardness for the coffee shop worker occupation. Although SIN-NS was rated as least likely to be a teacher, suggesting that participants do evaluate this variety as non-standard, SIN-NS was not rated as more likely than other guises to be a coffee shop worker. This finding is consistent with the unusual sociolinguistic situation in Singapore, in which the recent rapid shift to Mandarin from southern Chinese varieties has resulted in widespread use of non-standard features with little social stratification, meaning that high-skilled professionals, such as doctors, are just as likely to speak non-standard Mandarin as low-skilled workers. An alternative explanation for the coffee shop worker findings, that children are simply unfamiliar with this social category, is unlikely, given that in the English version of the occupation task, the same participants showed a high level of awareness that speakers of Australian English were very unlikely to work in a coffee shop (Starr et al. 2017: 528). In sum, although participants appear to be aware that coffee shop worker is not a high-status occupation, and that SIN-NS is a non-standard variety, they are unwilling to link non-standardness of Mandarin to status of occupation, contrasting sharply with their performance on the English tasks.

Lastly, although all varieties exhibited a lack of stratification for coffee shop worker, the Expat-Local group also failed to stratify the teacher occupation ratings; moreover, regardless of whether they spoke Mandarin at home, participants in this background group showed low confidence in their ratings, giving no variety a rating above 70% for either occupation. The difference between the Sing-Local and Expat-Local group for the CHI rating, in particular, suggests that the status granted to the CHI variety by Singaporeans does not originate from sociolinguistic knowledge acquired in a school setting. As was proposed for the regional

identification task above, the mix of teachers and materials experienced by students in local schools may present an obstacle to expatriate students' development of judgements in line with community norms. At the same time, given the younger average age of the Expat-Local group relative to the Sing-Local group, it is possible that Expat-Local ratings will shift towards Sing-Local ratings as children grow older; this question must be addressed in future work.

Speech production

The preliminary investigation presented above of phonological variation in children's Mandarin production, as elicited via a word-reading task, suggests that generational change is underway in certain variables historically associated with Singapore Mandarin. Most notably, the fronting of retroflex sibilant initials, observed to be pervasive among Chinese Singaporeans in data from the second half of the 20th century (Chen 1986; Lock 1989; Starr & Wang 2021), appears to be receding, with only 29% of retroflex tokens produced as dental among Mandarin-home Singaporean participants and only 12% produced as dental by those who do not speak Mandarin at home. When taken together with the low rate of non-standard hypercorrection of (s, z, c) to retroflex, it would seem that Singaporean children are increasingly acquiring a standard dental-retroflex contrast, once exceedingly rare among Singaporean speakers.

This change in the dental-retroflex distinction may potentially be accounted for by four linked factors related to language exposure: reduction in exposure to Chinese dialects, reduced exposure to local speakers of Mandarin, rising exposure to Mainland varieties of Mandarin, and an increase in L1 English dominance. Regarding the final two factors, a more detailed acoustic analysis of children's production would clarify the extent to which children are adopting Mainland norms, as these norms would involve a relatively retracted production of the retroflex initials, as opposed to mapping the English alveolar-post-alveolar distinction onto Mandarin, which would predict a post-alveolar production of these variants. Preliminary judgments from native listeners suggest that children are using post-alveolar variants, indicating that this change does not reflect the adoption of MSM as a new norm in Singapore. In addition to changes in exposure, non-Mandarin-home Singaporean children may avoid acquiring the dental-retroflex merger because it is well-known to these learners as a local, non-standard feature that has become indexically linked to older speakers and speakers of southern Chinese dialects. As speaking Mandarin at home is also associated with lower socioeconomic status, it is possible that an association is developing between social class, education level, and use of the dental-retroflex

distinction, while in previous decades, even well-educated speakers avoided retroflex variants and perceived them as non-local (Lock 1989: 278).

Additional evidence regarding the source of these changes comes from the analysis of (x), in which the local variant, [s], shows no sign of decline. Among Singaporean participants, 82% of (x) tokens before unrounded vowels were realized as [s], comparable to the high levels of usage identified in earlier work (Chen 1986: 117; Lock 1989: 204). As argued in Lock (1989: 206) and Starr and Wang (2021), this difference may be accounted for by the relative lack of awareness of (x) variation in the local community, as compared to high levels of awareness of the dental-retroflex merger as a regional non-standard feature. Moreover, while Mandarin (x) is observed to generally map to [ʃ] rather than [s] among native English speakers outside of Singapore, the twin factors of the [s] variant for (x) in Singapore Mandarin and the status of /s/ as a phoneme in English may jointly reinforce English-dominant speakers continuing to use this local feature.

Along with diachronic changes, we also observe interactions between the use of particular variables and language background among the Singaporean participants, in that Mandarin-home and non-Mandarin-home Sing-Local participants did not vary in their regional production of (x), but did vary in their use of the dental-retroflex merger. The fact that non-Mandarin-home Singaporeans have continued to acquire the regional variant for (x) suggests that children are still exposed to local varieties of Mandarin outside of the home, and not solely to MSM, as the regional (x) would not be acquirable from MSM exposure. Overall, then, these findings do not indicate a wholesale adoption of Mainland norms among the younger generation of Singaporeans.

Among expatriates who did not speak Mandarin at home, outcomes for phonological production were significantly shaped by school setting. While expatriates in local schools acquired non-standard dental and retroflex initials at comparable rates to the Sing-Local non-Mandarin-home group, the Expat-Intl group produced no regional variants of these initials at all in the data; their use of [s] for (x) was also substantially lower. The entirely standard production patterns of this group for the dental and retroflex initials is consistent with the suggestion that transfer from L1 English has a facilitative effect on acquisition of this phonological distinction in Mandarin. Thus, the fact that Singaporean children and the Expat-Local group use some level of non-standard variants for these initials suggests a continuing, albeit declining effect of exposure to CSM use in the local community.

Finally, a correlation was observed between participant familiarity with Mainland Standard Mandarin, as measured via accurate identification of CHI in the regional identification task, and production of standard variants. This correlation did not hold for the Expat-Local group, perhaps because the Mandarin-home

subset of this group exhibited relatively poor recognition for CHI. The observed association between familiarity with the regional origins of CHI and use of standard Mandarin phonology is consistent with an account that rising awareness of how Mandarin is spoken in Mainland China is one factor that has shifted younger Singaporeans away from certain stigmatized regional features.

Concluding remarks

Mandarin in Singapore has undergone an unusual historical evolution, transitioning from being a language of education learned as an L2 by speakers of Chinese dialects, to becoming a more common L1 and home language, and now shifting again towards the status of an L2, or something akin to a heritage language, learned primarily by L1 English speakers. As these changes have taken place, Mandarin has also shifted from its former role in the community as a language used primarily by locals, to its current, more complex status as a language used both by locals and newcomers, most notably those from Mainland China, who are perceived as being more proficient speakers of a higher-status variety. While native-born Singaporean children appear to navigate this multifaceted landscape with ease, acquiring an awareness of the regional distributions and statuses of the varieties now present in Singapore, as well as shedding cross-dialectally stigmatized features while maintaining a distinctively Singaporean style of Mandarin, the situation poses more difficulties for expatriate children, and particularly those who are learning Mandarin in school as an L2. As illustrated by the social evaluation tasks and production task data presented here, expatriate children develop a very different understanding of the sociolinguistic situation of Mandarin in Singapore.

In addition to revealing distinctions between children by social background, this analysis has also highlighted differences among children enrolled in different school environments. While expatriates in local schools match their Singaporean peers in terms of production patterns, neither expatriate group resembles Singaporean children with regard to their knowledge of and attitudes towards Mandarin varieties. Some of this gap may be explained by the age difference between the Singaporean and expatriate groups; however, as reported in Starr et al. (2017), expatriates in this younger age group were already demonstrating extensive knowledge of Singaporean versus Mainland Chinese speech patterns in the English versions of these tasks, indicating that this is not purely a developmental issue. Moreover, in certain respects, the judgements of expatriate students in local schools on the Mandarin tasks are more reflective of the complex reality of the sociolinguistic situation in Singapore than the responses of the Singaporean students. For example, while Singaporean children report that speakers from Mainland China

are very likely to be Mandarin teachers, this is inconsistent with what we know their experience to be in local schools, which hire few teachers from China. This response pattern is in line with children's performance on the English version of the task, which reflected the overall status of each variety, rather than the reality of which speakers fill which roles in the local labor market. In contrast, the expatriates enrolled in local schools, who hear a wide range of Mandarin varieties in high and low-status occupations, are understandably less certain in their judgments, as they lack access to the ideologies regarding prestige norms acquired by their Singaporean peers from the community. Expatriates in international schools, on the other hand, have developed more consistent and certain judgments, but these judgments reflect a skewed understanding of a Sinophone world in which Mandarin is not spoken in Singapore, and in which northern Mainland China is the preferred source of standard norms. These children are reminiscent of Zhang's (2005) Beijing yuppies, university-educated professionals who oriented towards the Cosmopolitan Mandarin typical of the Chinese diaspora due to their careers in international firms, despite their Beijing location. Much like the yuppies, these children acquire the norms of their international school community, and are disconnected from the broader sociolinguistic landscape of their region. Additional work on international schools from ethnographic and variationist perspectives may elucidate how these multicultural, rapidly evolving, and deterritorialized communities shape the sociolinguistic development of their students.

While the particular sociohistorical circumstances of Mandarin in Singapore are arguably unique, the findings of the present study have considerable relevance for other settings in which heritage and L2 learners are placed in the same language learning environment. Rather than focusing only on conventional L2 classrooms, our understanding of acquisition of variation may be fruitfully advanced through further exploration of how learners from diverse backgrounds absorb the sociolinguistic patterns and ideologies circulating in these more varied settings.

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CHAPTER 4

Cross-linguistic influence in the acquisition of L3 variation

A comparison of speech and writing

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This chapter addresses stylistic and obligatory variation in third language (L3) argument realization patterns. It focuses on the effects of formal second language (L2) learning experience, typological proximity, and five linguistic factors (discourse type, clause type, verb type, NP animacy, NP person). A corpus analysis of L3 Korean spoken production demonstrates that the considered linguistic and developmental factors do influence spoken L3 variation patterns to a certain extent. However, for the early bilingual participants, the analysis found a strong influence of their first languages (L1s) on their L3 spoken production, particularly in associating animacy with case. This L1 influence overrides the benefits of formal L2 learning experience and typological proximity on variation patterns in accusative argument realization, which were found in a prior study of L3 writing (Park & Starr 2019). The findings imply that it may take longer to acquire target-like sociolinguistic competence in L3 speech than in L3 writing.

Keywords: third language, argument realization, variation, animacy, multilingualism, transfer, Korean, early bilinguals

Introduction

The last decade has witnessed increasing interest in variationist approaches to second language acquisition (e.g., Bayley 2007; Bayley & Preston 2008; Li 2010, 2014, 2017; Mougeon, Nadasdi & Rehner 2010; Mougeon, Rehner & Nadasdi 2004; Regan, Howard & Lemée 2009). Research in this vein has produced systematic, quantitative analyses of learner corpora that have contributed to broader understanding of sociolinguistic competence among non-native speakers. The studies have also demonstrated how the acquisition of sociolinguistic competence is affected by educational factors, developmental factors, and linguistic factors. Little of this research, however, has explored how the acquisition of a second language (L2) – that is, the

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first non-native language to be learned after the first language(s) and after about age eight – might differ from the acquisition of subsequent languages. Yet other lines of research have shown a variety of ways in which L3 acquisition can differ significantly from L2 acquisition; for example, in how learners process input, and in how prior linguistic knowledge and newly acquired L3 knowledge interact (Cenoz 2003; Jessner 2006; Leung 2005; Sanz 2000). One recent exception is a study by Park and Starr (2019), who investigated variation patterns in argument realization in L3 Korean learners' written production, and whether these patterns were affected by L2 language learning experience, L2-L3 typological proximity, home language, animacy, and verb type. They found that formal L2 learning experience and typological proximity significantly predicted L3 variation patterns among their participants, who were early bilinguals (i.e., they had acquired more than one language before age eight). Specifically, the learners' writing samples were found to adhere more closely to the variation patterns of classroom input among students with prior formal L2 learning experience, and particularly so among students experienced in an L2 that was typologically similar to the L3.

The current study addresses further research questions suggested by Park and Starr (2019), extending similar analyses to the spoken production of L3 Korean among early bilingual learners in Singapore. The study evaluates how the factors of formal language learning experience and L2-L3 typological proximity influence spoken variation in argument realization patterns among L3 learners, as well as the effects of specific linguistic factors. The findings on spoken production are compared to those of Park and Starr (2019) on written production.

Acquisition of a third language

While L2 acquisition may be affected by L1, L3s are further prone to cross-linguistic influences. L3 acquisition has been actively studied for the last two decades from the perspective of formal linguistics, particularly generative approaches, with a focus on sources of transfer in the acquisition of morphosyntactic features (Jessner 2006; Leung 2005; Sanz 2000, among others). Research in this line has put forth various models to account for differences in L3 and L2 acquisition, and has suggested different mechanisms for learners' sources of transfer, based on empirical studies. For instance, the Cumulative Enhancement Model (Flynn, Foley and Vinnitskaya, 2004) argues that all of an individual's previous languages are potential sources of transfer to L3, while the L2 Status Factor Model (Bardel & Falk 2007) claims that only an L2 can be selected as a transfer source, due to similar mechanisms of learning for an L2 and an L3. The Typological Primacy Model (Rothman 2011) asserts that wholesale transfer is possible from either L1 or L2, whichever is (psycho)

typologically perceived as closer to the L3. In contrast, the Linguistic Proximity Model (Westergaard et al., 2017) proposes that any single linguistic feature can be selected from any prior language to be transferred to a new target language.

Regardless of whether transfer occurs wholesale or feature-by-feature, learners' uses of sources appear to be affected by typological proximity, suggesting that learners recognize some linguistic similarities (e.g., typological, structural). Several studies have indicated that metalinguistic awareness and metalinguistic knowledge support such recognition (Cabrelli Amaro & Rothman 2010; Falk, Lindqvist & Bardel 2015; Thomas 1988, Westergaard 2019). Such findings in turn imply that it is specifically "formal" learning (i.e., L2 learning experiences that explicitly build metalinguistic awareness) that confers a benefit for L3 learning. Nonetheless, Westergaard (2019) argued that L3 acquisition is fundamentally no different from L1 and L2 acquisition, in that the processing of language input is just the same in all cases. It may be, however, that L3 learners are sensitive to linguistic distinctions among their languages in a way that L2 learners are not, which does in fact distinguish L3 acquisition from L1 or L2 acquisition.

In addition to investigating sources of transfer, several L3 acquisition studies have identified a general advantage of formal L2 learning experience (Bialystok 1988, 2001; Cenoz 2003; Jessner 2006; Klein 1995; Park & Starr 2015; Thomas 1988). This general advantage is due to L3 learners' metalinguistic awareness and enhanced sensitivity to linguistic features, which facilitate their recognition of linguistic patterns and their ability to master novel features in an L3 (Bialystok 2001; Jaensch 2009; Park & Starr 2015).

The acquisition of L*n* variation patterns

The variationist approach introduced by Labov (1972) has been actively adopted in L2 studies that aim to understand sociolinguistic competence among non-native speakers. Research on L*n* variation has explored the roles of factors including classroom input (Li 2010; Li, Chen & Chen 2012; Mougeon et al., 2010; Park & Starr, 2019; Starr 2017), language transfer (Li 2014; Mougeon et al., 2010; Park & Starr 2019), person and animacy features (Li 2017; Park & Starr 2019), and target-language exposure (Bayley & Regan 2004; Mougeon et al. 2004; Regan 1996; Starr 2017). While these studies have arrived at a variety of conclusions, they have consistently demonstrated that variation patterns are systematic and learnable, despite the complexity that linguistic, social, educational, and developmental factors introduce into any language learning situation (Bayley & Regan 2004; Li 2014). For instance, observed gaps between native and non-native variation patterns may be due to non-native speakers' tendency toward underuse of non-formal alternatives

or over-use of formal and/or standard variants (Li 2010; Mougeon et al. 2010; Regan 1995, 1996; Starr 2017). Such findings imply that L2 learners are generally resistant to accepting variants other than the most standard and unmarked forms, particularly at the novice stage. However, Li (2010) and Regan, Howard, and Lemée (2009) both also observed that L2 learners' variation patterns become more native-like the longer they stay in a target community of practice.

Two types of non-native variation can be distinguished: stylistic variation among all acceptable variants (Type 2 variation), and variation between correct and incorrect obligatory forms (Type 1 variation) (Mougeon et al. 2004).

Variation in Korean argument realization

Korean is an agglutinative language with explicit case-markers that indicate the grammatical role of an NP in a sentence. Among native Korean speakers, however, NP arguments can be realized in three ways: (i) overt NP with overt case-marker; (ii) overt NP without overt case-marker, and (iii) covert NP.

Kim (2008) investigated patterns of variation in the realization of NPs in L1 Korean speech in an informal setting; the study's findings provide a baseline for target-like behavior for learners. The example sentences in (1), originally presented by Park and Starr (2019), describe all acceptable variants of a simple transitive sentence.

(1) 'Yuri ate the banana.'
   a. *Yuri-ka banana-lul meok-ett-eo.*
      Yuri-NOM banana-ACC eat-PAST-ENDING
   b. *Yuri-ka banana-Ø meok-ett-eo.*
      Yuri-NOM banana-Ø eat-PAST-ENDING
   c. *Yuri-Ø banana-lul meok-ett-eo.*
      Yuri-Ø banana-ACC eat-PAST-ENDING
   d. *Yuri-Ø banana-Ø meok-ett-eo.*
      Yuri-Ø banana-Ø eat-PAST-ENDING
   e. *Yuri-ka Ø meok-ett-eo.*
      Yuri-NOM Ø eat-PAST-ENDING
   f. *Ø banana-lul meok-ett-eo.*
      Ø banana-ACC eat-PAST-ENDING
   g. *Ø banana-Ø meok-ett-eo.*
      Ø banana-Ø eat-PAST-ENDING
   h. *Yuri-Ø Ø meok-ett-eo.*
      Yuri-Ø Ø eat-PAST-ENDING
   i. *Ø Ø meok-ett-eo.*
      Ø Ø eat-PAST-ENDING

Case-marker omission is traditionally considered evidence that NP animacy plays a strong role as a cue to an NP's case. For instance, in (1), 'Yuri' (a girl's name) and 'banana' differ in their animacy, and this difference clearly supports the nominative case for 'Yuri' and the accusative case for 'banana,' even when neither NP occurs with a morphological case-marker. Therefore, the overt NPs without explicit markers as in (1b), (1c), (1d), (1g), and (1h) are unambiguous. Meanwhile, the covert NPs in (1e), (1f), (1g), (1h), and (1i) may require prior context or a visual referent in the environment to support the correct interpretation.

In addition, because different verb types have different argument structures, argument realization patterns can vary across Korean's seven verb types (Park & Starr, 2015, 2019): descriptive verbs (DV), intransitive verbs (IV), transitive verbs (TV), copula, negative copula, existential verbs (EV), and negative EVs (NegEV).

Target-like performance in a non-native language requires learners to attain acceptable sociolinguistic competence in the target community of practice, and sociolinguistic competence in that language in turn entails the ability to employ variation patterns similar to those of L1 speakers. Variationists have presented compelling evidence for the systematic learnability of variation patterns of a target language by L2 learners (Bayley & Regan 2004). Therefore, the current study aims to investigate how such learnability is influenced by the language learning background of learners and internal linguistic factors.

Research questions

The definition of "second language" is controversial among scholars. Here, I follow Hammarberg's (2001) terminology in using "L3" to refer to the target language for the purposes of this study; "L2" to refer to previous language(s) learned in a formal setting after the age of eight; and "L1" to refer to language(s) acquired before the age of eight.

The research on bilingualism and L2 typological proximity in L3 variation patterns is very limited. To my knowledge, Park and Starr (2019) is the first such study; the current study was conducted to address some of the questions it raised.

1. How do the internal linguistic factors of discourse type, clause type, NP animacy, and person features affect Type 1 and Type 2 variation in L3 speech?
2. What are the similarities and differences in L3 learners' Type 1 and Type 2 variation patterns in their spoken production, as assessed in this study, and their written production, as reported in Park and Starr (2019)? How do learners' language background and the typological proximity of their languages affect these patterns in the two modes?

The study

Participants

A total of 148 L3 learners of Korean at the lower-intermediate level at the National University of Singapore participated in the study voluntarily. However, clear information on their language learning background (i.e., L1s and any languages learned in a formal setting before they began to study Korean) was available from only 94 of the participants; therefore, the data from the other 54 participants was excluded in this study's analysis of developmental factors (i.e., second language learning experience and L2-L3 typological proximity).

The 94 participants were divided into two groups: "early bilinguals with L2s" (EBLs+L2), consisting of 26 participants who had formal experience of studying an L2 in addition to their L1s; and "early bilinguals" (EBLs), consisting of 68 participants who had no formal L2 learning experience. The EBLs+L2 group was further divided into two sub-groups: EBLs+Jp consisted of 11 participants who had studied L2 Japanese, which is typologically close to Korean; EBLs+nonJp consisted of 15 participants who had studied an L2 that was typologically distant from Korean.

This study compares the results of its analysis of spoken data with the results of Park and Starr's (2019) analysis of written data. Therefore, this grouping by language background was compared to the language background grouping of the learners who provided the prior study's written dataset. A categorical frequency test (chi-square test) found no difference in L2 learning experience or L2–L3 typological proximity rates between the two groups. In addition, the learners in both studies used the same classroom materials.

The participants were enrolled in a university-level Korean course in which they received 23 weeks (4 hours per week) of formal language instruction. Patterns of argument realization were not explicitly taught in the course. Therefore, the participants' patterns had been acquired implicitly through observation of or exposure to the patterns in various resources such as their teachers' speech, textbooks, and teaching materials in the course; these resources will henceforth be referred to as "classroom input" (CI).

Data collection

This study's spoken data come from an elicited oral test administered to the participants in March 2019. The test took the form of a structured interview consisting of two tasks: picture description and comparative analysis. In the picture description task, the participants saw a picture of human figures doing a series of actions in

various situations. The participants were asked to describe the picture after 30 seconds of planning time. For the comparative analysis task, participants were given written instructions to guide them to compare two items (e.g., summer vs. winter). Both tasks were of a type familiar to the participants, as they had practiced similar tasks during lessons.

The two tasks produced a dataset of spoken Korean that included 3,712 tokens of the target forms: 2,376 tokens from the 94 participants who had provided language background information, and 1,336 tokens from the 54 participants who had not provided such information.

Coding and analysis

Each argument appearing in the data was coded on the basis of its realization: overt NP with overt case-marker (NP-CM), overt NP without case-marker (NP-Ø), or covert NP (Dropped NP). To assess Type 1 variation, arguments that included a case-marker were further classified based on whether the NPs were correctly or incorrectly marked; for instance, 'Megan' in *Megan*-l*ul janda* ('Megan sleeps') is marked incorrectly with an accusative marker l*ul* instead of a nominative marker *i*. In addition, the verb type, case, person, and animacy of each argument were coded in order to investigate any correlations between these linguistic features and argument realization type. The coding was completed by one native Korean-speaking research assistant and reviewed and modified by the author, also a native Korean speaker, for reliability. Multinomial regression analyses using the software Stata were conducted to examine the statistical impact of the factors of interest on the variation patterns.

The results will be presented in the following order: linguistic factors in Type 2 variation; linguistic factors in Type 1 variation; developmental factors in Type 2 variation; and developmental factors in Type 1 variation.

Results: Linguistic factors

Type 2 variation

With regard to stylistic variation patterns for nominative (hereafter NOM) and accusative (hereafter ACC) argument realization, a significant difference was found, mainly due to the higher frequency of NP-CM in accusative (86.7%) than in nominative (46.7%). The multinomial logistic regression analysis showed that the relative log odds of choosing Dropped NP over NP-CM for nominative is significantly

higher ($z = 23.72$, p-<–.0001) than for accusative, whereas there is no significant difference in the choice of NP-Ø over NP-CM between nominative and accusative. This pattern is similar to the pattern reported for written L3 Korean by Park and Starr (2019): 83% NP-CM in accusative and 48.4% NP-CM in nominative. According to Kim (2008), however, native speech (NS) shows no significant difference between nominative (29% NP-CM) and accusative (28% NP-CM) in the use of the full form (i.e., NP-CM), which indicates a gap in variation patterns between native speech on the one hand and written and spoken L3 Korean on the other. This finding supports previous work (Li 2010; Mougeon et al., 2010; Regan 1996) that have found a considerable gap in stylistic variation between native and non-native speakers.

The results of the analysis of how the five linguistic factors affect Type 2 variation of nominatives are shown in Table 1.

Table 1. Frequency (%) of nominative argument realizations, classified by linguistic factors

Nominative		**NP-CM (%)**	**NP-Ø (%)**	**Dropped NP(%)**
Total		46.7	4.3	49.0
Discourse	Picture description	35.9	3.1	61.0
	Comparative analysis	59.3	5.6	35.1
Clause type	Main (following)	43.7	3.7	52.6
	Coordinate (preceding)	54.4	5.8	39.8
Verb type	Copula	77.8	5.6	16.7
	Existential verbs	83.1	13.8	3.2
	Descriptive verbs	69.7	8.0	22.3
	Intransitive verbs	38.5	3.2	58.3
	Transitive verbs	32.0	1.4	66.6
NP animacy	Animate	35.6	1.9	62.5
	Inanimate	71.9	9.7	18.5
NP person	1st sg	30.8	0.1	69.1
	1st pl	40.3	14.4	45.3
	3rd sg	63.7	9.2	27.1
	3rd pl	87.5	5.9	6.6

Note. Negative Existential Verb is excluded due to the small number of tokens; *sg* = singular, *pl* = plural.

All five linguistic factors were found to have an impact on nominative argument realization patterns. First, regarding the discourse type, Dropped NP appears significantly less often ($z = -15.17$, $p < .0001$) in comparative analysis than in picture description. This finding was expected, as the picture description task, but not the comparative analysis task, provides a visual context in which the NP referent appears. In Korean, as mentioned, the availability of visual references for arguments reduces the need to produce an overt form.

As for clause type, the sentences the learners produced consisted of a main clause (following) and a coordinate clause (preceding). Dropped NP is more frequent in the second mentioned argument (i.e., in the main clause); again, this finding was expected, based on Li's (2017) study of native Chinese speakers. The relative log odds of choosing a Dropped NP over NP-CM for nominative is significantly higher ($z = 6.62$, p-<−.0001) in main clauses than in coordinate clauses.

The person of the NP was also found to be a significant factor in nominative: 3rd person plural referents are less likely to be realized as Dropped NP than as NP-CM ($z = -6.04$, $p < .0001$), while 1st person singular referents are more likely to be realized as Dropped NP ($z = 4.08$, $p < .0001$) than are 1st person plural referents. This finding is expected based on the report of the previous work by Park and Starr (2019).

Verb type and animacy are closely related factors in nominative Type 2 variation patterns. The argument realization patterns of nominative across verb types are significantly inconsistent (χ^2 (10) = 781.90, $p < .0001$): the multinomial logistic regression found that NP-CM is preferred over the other variants for Copula, Existential Verb, and Descriptive Verb structures, while Dropped NP is preferred for Intransitive Verb and Transitive Verb structures. In fact, Park and Starr (2015) categorized Intransitive Verb and Transitive Verb as "familiar," and the others as "unfamiliar," based on their structural resemblance to English verb structures, as English was a common L1 among their participants, as among the current study's. They also conducted a grammaticality judgment task, which found that participants performed significantly better with familiar structures. Similarly, the current findings suggest that learners demonstrate more native-like argument realization patterns with familiar structures.

NP animacy adds to the effect of structural familiarity for nominative argument realization patterns. For instance, 94% of the familiar structures, Transitive Verb and Intransitive Verb, have animate NPs (2,380 tokens; inanimate, 148 tokens, 6%). For this reason, NP animacy was controlled to re-examine the role of verb type; the resulting frequency of variants by verb type is presented in Table 2.

NP animacy in general was found to be a significant factor in predicting argument realization patterns for nominative, with significantly more Dropped NP for inanimate arguments than for animate arguments ($z = -2.96$, $p = .003$). However, on closer examination, it was found that the imbalance in token size between animate and inanimate NPs turned out to be related to the types of verbs that participants produced: Intransitive Verb and Transitive Verb in familiar structures are produced more than twice as often as they are in unfamiliar structures ($n = 2{,}528$ vs. $n = 1{,}153$). With animacy controlled, structural familiarity shows a greater impact on nominative argument variation patterns, particularly of animate NPs. This is due to opposing trends in the use of animate versus inanimate nominative arguments: 94%

Table 2. Frequency (%) of nominative argument realization patterns in animate and inanimate NPs, classified by verb type

Nominative		Animate			Inanimate		
Verb type		NP-CM	NP-Ø	Dropped NP	NP-CM	NP-Ø	Dropped NP
Copula	N	19	1	3	23	2	6
	%	83	4	13	74	6	19
Descriptive verbs	N	85	4	47	549	69	156
	%	63	3	35	71	9	20
Existential verbs	N	25	5	5	132	21	1
	%	71	14	14	86	14	1
Intransitive verbs	N	307	19	547	83	13	43
	%	35	2	63	60	9	31
Transitive verbs	N	479	20	1,008	6	1	2
	%	32	1	67	67	11	22
Total	N	916	49	1,610	817	110	210
	%	36	2	63	72	10	18

Note. Negative existential verb is excluded due to a small number of tokens.

of nominative NPs in familiar structures are animate, but only 17% of nominative NPs in unfamiliar structures are animate. Given the nature of Intransitive Verb and Transitive Verb in familiar structures, these two verb types are considered action verbs, which lower-intermediate Korean learners usually associate with human agents due to the limited classroom input they have received at this level.[1] (I find it odd that previous work on animacy is not referred to here.)

Next, I turn to accusative argument variation patterns among the L3 learners. The speech data shows that the learners preferred to realize accusatives as a full form (86.7%); this frequency is similar to the frequency (87.6% NP-CM, 1.4% NP-Ø, and 11% Dropped NP) in classroom input (CI) according to Park and Starr (2019). However, Kim (2008) reported the following ratio of accusative (object) realization types in native Korean speech: 28% NP-CM, 46% NP-Ø, and 26% Dropped NP. Therefore, the strong preference for NP-CM to realize accusative NPs in L3 speech may be due to the learners' exposure to the variation pattern in classroom input. The accusative argument variation pattern of L3 speech is shown in Table 3.

There is a significant impact of discourse type on accusative Type 2 variation patterns ($\chi^2 = 8.26$, $df = 2$, $p = .0161$), as with nominative. However, the preferred variant for nominative and accusative differs by discourse type. The multinomial logistic regression analysis showed that comparative analysis discourse is more

1. This categorization of Transitive Verb and Intransitive Verb as action verbs is known to the participants through explicit instruction.

Table 3. Frequency (%) of accusative argument realizations, classified by linguistic factors

Accusative		NP-CM	NP-Ø	Dropped NP
L3 Total		86.7	8.0	5.2
Discourse	Picture description	87.6	8.4	4.0
	Comparative analysis	85.1	7.4	7.4
Clause type	Main (following)	87.8	6.3	5.8
	Coordinate (preceding)	83.6	12.8	3.5
NP animacy	Animate	85.9	9.4	4.7
	Inanimate	86.8	8.0	5.2
NP feature	3rd sg	85.9	8.7	5.4
	3rd pl	92.2	4.1	3.7

likely to realize accusatives as Dropped NP than as NP-CM ($z = 2.61$, $p = .009$) than is picture description discourse, while for nominative, Dropped-NP is more likely to appear in picture description discourse. There is no significant difference in the choice of NP-Ø over NP-CM for accusative based on discourse type. The availability of visual referents does not explain this result for accusative, as it does for nominative. There may, however, be linguistic reasons for this finding. I investigated the verbs in the sentences with Dropped accusative NPs. In the picture descriptions, two verbs, *mekta* (to eat) and *ssista* (to wash) appear frequently (50%) in the sentences with Dropped accusative. Both of these verbs can be either transitive or intransitive in the participants' L1 English. That is, both 'eat' and 'wash' can form a grammatical sentence with or without an object. Conversely, in the comparative analysis discourse, one transitive verb, *cohahada* (to like), is used in 67% of the sentences with Dropped accusative. In Singlish (a variety of English spoken in Singapore), the verb 'like' often allows accusative drop (Deterding 2007); the same is true for the equivalent verb in the participants' other L1, Chinese. Therefore, the frequent usage of the verb *cohahada* in comparative analysis discourse may account for the frequency of Dropped accusative in the L3 Korean data. This behavior may be evidence for a strong L1 influence, particularly as L1 Singlish is used in everyday contexts ("recency" in Hammarberg 2001), and thus its impact is likely to influence the L3 more significantly than argument drop from the less used L1, Chinese (Li, 2017).

Clause type was also found be a factor in accusative argument variation patterns. The multinomial logistic regression analysis found that the relative log odds of choosing NP-Ø over NP-CM in a main clause is significantly lower ($z = -3.86$, $p < .0001$) than in a coordinate clause, while no significant difference was found in the choice of Dropped NP over NP-CM.

Person also had an impact on accusative Type 2 variation ($\chi^2 = 31.1896$, $df = 8$, $p = .000$), with a higher frequency of NP-CM in 3rd person plural accusative

arguments. It is not uncommon that a marked feature (in this case, 3rd person plural) significantly favors a full form (Jia & Bayley, 2002). As for animacy, however, the analysis found no impact of animacy in accusative, unlike in the nominative variation patterns.

Type 1 variation

The study observed a marginal difference between nominative and accusative in Type 1 variation. The multinomial logistic regression analysis showed that the relative log odds of choosing NP-incorrect CM over NP-correct CM for nominative is significantly higher ($z = 2.06$, $p = .040$) than for accusative. This result indicates that, in L3 speech, case-marking nominative is more challenging than case-marking accusative, which is the opposite trend from that observed in written data (90.9% accuracy for nominative and 82.9% accuracy for accusative in case-marking) by Park and Starr (2019). A possible explanation for this result will be discussed in the upcoming discussion of animacy as a factor. In sum, all of the linguistic factors except clause type had significant effects on nominative Type 1 variation. In contrast, only discourse type had a significant effect in accusative Type 1 variation. The frequency of Type 1 variation classified by the linguistic factors is presented in Table 4.

For nominative arguments, the multinomial logistic regression analysis found that those in comparative analysis ($z = 5.31$, $p < .0001$) and those with inanimate arguments ($z = 3.79$, $p < .0001$) are more likely to appear as NP-incorrect CM than as the other variants. Among the verb types, learners are significantly more accurate in case-marking nominative arguments that occur with IV ($z = -2.13$, $p = .033$), but not any other verb type, compared to those that occur with the copula.

With regard to the person of the NP, the multinomial logistic regression analysis found that incorrect forms are chosen significantly less often for 1st person singular than for 1st person plural ($z = -4.40$, $p < .0001$). According to Park and Starr (2019), all 1st person singular +animate arguments in classroom input are marked as nominative, which suggests that the learners would have a strong association between the 1st person singular and the overt case marking, whereas arguments with other persons would require learners to have an understanding of the relationship between a verb and an argument to produce accurate case-marking. Animacy is also a significant factor due to the strong association of animacy with a particular case: of the incorrectly marked nominative arguments ($n = 277$), 86% had inanimate referents ($n = 239$).

Regarding accusative, the multinomial logistic regression analysis found that the relative log odds of choosing NP-incorrect CM over NP-correct CM is significantly higher in the comparative analysis discourse ($z = 8.15$, $p < .0001$) than in the picture description discourse, as expected, due to the visual availability of the arguments in the latter.

Table 4. Frequency (%) of Type 1 variation in nominative and accusative, classified by linguistic factors

		Nominative		Accusative	
		NP-correct CM	NP-incorrect CM	NP-correct CM	NP-incorrect CM
Total		84.0	16.0	86.7	13.3
Discourse	Picture description	89.7	10.3	92.5	7.5
	Comparative analysis	80.0	20.0	75.3	24.7
Clause type	Main (following)	84.6	15.4	85.8	14.2
	Coordinate (preceding)	82.7	17.3	89.5	10.5
Verb type	Existential Verbs	77.7	22.3	–	–
	Descriptive Verbs	70.5	29.5	–	–
	Intransitive Verbs	95.1	4.9	–	–
	Transitive Verbs	95.5	4.5	86.7	13.3
NP animacy	Animate	95.9	4.1	89.0	11.0
	Inanimate	70.7	29.3	86.6	13.4
NP feature	1st sg	99.5	0.5	–	–
	1st pl	90.4	9.6	–	–
	3rd sg	74.9	25.1	86.3	13.7
	3rd pl	73.1	26.9	88.6	11.4

Note. Verb type: Copular and Negative Existential Verb are excluded due to small numbers of tokens.

Based on the findings reported by Park and Starr (2019), NP animacy was predicted to be significant in accurate case-marking for accusative arguments in L3 speech. However, no significant difference according to NP animacy was found in the current L3 speech dataset. To explore potential explanations, the number of tokens, s-structure, and the verbs in the sentences with NP-incorrect CM for accusative were analyzed. First of all, almost all of the accusative arguments are inanimate NPs (94%, n = 1,431). Eight sentences have inaccurately marked accusative arguments with animate referents; in all eight, the nominative arguments are realized as Dropped NP and the nominative marker, *i/ka*, is chosen for the accusative arguments instead of the accusative marker, *ul/lul*. Sample sentences are shown in (2).

(2) a. *ku taumey yetongsayng-i manna-ss-supnita*
that after younger.sister-NOM meet-PAST-END
Intended: 'After that, Ø met younger sister.'

b. *chinkwu-tul-i manhi chotayhay-yo*
friend-PL-NOM much invite-END
Intended: 'Ø meets friends a lot.'

Even though the sentences in (2) seem grammatically correct, it is clear from the dialogues in which they appear that *yetongsayng* (younger sister) in (2a) and *chinkwu-tul* (friend-PL) in (2b) are accusative arguments, which should receive the accusative case-marker. Thus, the type of error in these eight sentences indicates that inaccurate case-marking with a nominative marker for accusative occurs with covert nominative arguments in the same sentences; upon seeing the single overt animate argument of a sentence, the learners over-generalize, automatically marking it as nominative.

On the other hand, 167 sentences have an inaccurately marked accusative argument with an inanimate referent. The verb *cohahata* (to like) appears in 49% of these sentences. Among the sentences with *cohahata* (to like), 63% of the accusative arguments are incorrectly marked with a nominative marker. It can be speculated that learners have incomplete knowledge of the verb *cohahata*, and are unable to distinguish it from a similar descriptive verb, *cohta* (to be good). The two verbs are similar in form, phonological value, and function. For instance, the two sentences in (3) have a very similar meaning.

(3) a. *nay-ka yenghwa-lul cohahay-yo*
I-NOM movie-ACC like-END
'I like the movie.'
b. *na-nun yenghwa-ka coha-yo*.
I-TOP movie-NOM good-END
'As for me, the movie is good.'

Even though the literal meanings of (3a) and (3b) differ, they share the same function of expressing fondness for a movie. In the participants' textbook, these two verbs are used to perform this function interchangeably. All of these factors along with the high frequency of *cohahata* (to like) likely increase the inaccurate case-marking for accusative with inanimate NPs.

Results: Developmental factors

Type 2 variation

For greater convenience of comparison, the findings from the current study will be presented with three other types of data, as observed in two different sources, in this section: L1 speech from Kim (2008), and classroom input (CI) and L3 writing from Park and Starr (2019).

Table 5. Frequency (%) of nominative and accusative argument realizations, classified by source and learner type

Nominative				
Source	**Learner type**	**NP-CM**	**NP-Ø**	**Dropped NP**
L1[a]		29.0	13.0	58.0
Classroom input[b]		46.3	3.2	50.6
Oral	Total	46.7	4.3	49.0
	EBL	49.0	4.0	47.0
	EBL+L2	44.4	4.4	51.2
	L2 Jp	35.2	6.2	58.6
	L2 nonJp	51.7	3.0	45.3
	Unknown	45.1	4.6	50.4
Written[c]	Total	48.4	5.0	46.6
	EBL	48.5	5.5	46.0
	EBL+L2	48.1	3.3	48.6
	L2 Jp	43.0	3.2	53.8
	L2 nonJp	54.7	3.4	41.9
Accusative				
Source	**Learner type**	**NP-CM**	**NP-Ø**	**Dropped NP**
L1		28.0	46.0	26.0
Classroom input		87.7	1.4	10.9
Oral	Total	86.7	8.0	5.2
	EBL	87.8	6.8	5.4
	EBL+L2	86.7	8.8	4.6
	L2 Jp	85.7	8.7	5.6
	L2 nonJp	87.4	8.8	3.8
	Unknown	85.4	9.4	5.3
Written	Total	83.0	4.8	12.2
	EBL	81.7	5.6	12.7
	EBL+L2	87.8	1.9	10.3
	L2 Jp	85.1	2.1	12.8
	L2 nonJp	91.7	1.5	6.8

a. Kim (2008) studied variation in argument realization in conversational Korean (native adult-adult) in casual settings.
b. Park and Starr (2019) conducted a classroom input (CI) analysis.
c. More details on the written data can be found in Park and Starr (2019).

The investigation of developmental factors found significant impacts of L2 learning experience and typological proximity in nominative argument realization patterns. The multinomial logistic regression analysis showed that the relative log odds of choosing Dropped NP over NP-CM is significantly higher in EBLs+L2

($z = 2.05$, $p = .040$) than in EBLs, and the relative log odds of choosing Dropped NP over NP-CM is significantly lower in EBLs+nonJp ($z = -4.13$, $p < .0001$) than in EBLs+Jp. According to Kim (2008), L1 speakers favor Dropped NP (58%) over NP-CM (29%) for nominative arguments. Therefore, this study's results suggest that L2 learning experience and typological proximity support native-like argument realization patterns by encouraging the use of Dropped NP over NP-CM for nominative among L3 learners.

However, for accusative argument realization, while Park and Starr (2019) found a statistically significant effect of L2 learning experience and typological proximity in L3 writing, this study's analysis found no such effect in L3 speech.

Previous studies have reported that the general benefit of L2 learning experience (regardless of typological proximity) in subsequent language learning comes from enhanced cognitive ability such as control of attention (Bialystok, 2001) and metalinguistic awareness (Jaensch 2009; Park & Starr 2015; Thomas 1988), while typological proximity can lead to linguistic transfer (Bardel & Falk, 2007; Rothman 2011, 2015). The results of the current study indicate an asymmetry between nominative and accusative realization patterns produced by L3 learners in terms of these two developmental factors, in that accusative argument realization patterns do not seem to be benefitted by L2 learning experience and typological proximity.

Comparing the current study's findings with the findings of Park and Starr (2019) allows us to explore potential impacts of production mode in Type 2 variation. In Type 2 variation of nominative, there is no significant impact from production mode, whereas for accusative, a significant difference was found between the two ($\chi^2 = 58.36$, $df = 2$, $p = .0000$). The Dropped NP form to be used significantly more ($z = 6.43$, $p < .0001$), and the NP-Ø form to be used significantly less ($z = -3.08$, $p = .0002$), for accusative arguments in written production than in oral production. In other words, in L3 speech, a full-form NP-CM in accusative is the most preferred variant, followed by NP-Ø, while the Dropped NP is the least preferred. Subject and object drop are allowed in one of the L1s common to the participants, Chinese, at different frequency levels: 36.13% vs. 10.3%, respectively (Wang et al. 1992). Thus, the strong preference for overt objects in Chinese may influence the strong dispreference for the Dropped NP in accusative in these participants' L3 speech.

In addition, the second choice, NP-Ø, is a bare NP without an explicit case-maker, which is the default form of arguments in both of the common L1s, English and Chinese, of the participants. While it initially seems likely that the use of NP-Ø comes from classroom input exposure, the multinomial logistic regression analysis showed that the relative log odds of choosing NP-Ø over NP-CM for accusative increases significantly ($z = 4.18$, $p < .0001$) in speech in comparison with classroom input. Therefore, a stronger L1 influence on speech than on writing is a reasonable explanation for the observed impact of production mode on accusative.

There is also a possibility that Korean media exposure outside the classroom has some effect, as it could enhance L3 learners' native-like speech while differing from classroom input in the frequency of NP-Ø. However, there are still incongruent results between nominative and accusative realization patterns.

Nonetheless, can formal L2 learning experience and typological proximity mitigate L1 influences in attaining stylistically native-like speech in L3? To investigate the impact level of L1 influence in each learner group, a multinomial logistic regression analysis of Type 2 variation patterns between speech and writing was conducted for each learner group. The relative log odds of choosing alternative forms over the full form, NP-CM, in written production compared to spoken production, is shown in Table 6.

Table 6. Multinomial logistic regression analysis of type 2 variation in written production compared to spoken production by learner type

Nominative				
	Dropped NP		**NP-Ø**	
	***z*-score**	***p* value**	**z-score**	***p* value**
EBLs	none	none	2.06	.040
EBLs+L2	none	none	none	none
EBLs+Jp	none	none	−2.17	.030
EBLs+nonJp	none	none	none	none
Accusative				
	Dropped NP		**NP-Ø**	
	***z*-score**	***p* value**	**z-score**	***p* value**
EBLs	4.96	.000	none	none
EBLs+L2	2.37	.018	−3.36	.0001
EBLs+Jp	none	none	−2.35	.019
EBLs+nonJp	none	none	−2.36	.018

The lack of significant difference between speech and writing indicates no impact from production mode, which implies that L1 influence on stylistic variation is not greater in writing compared to speech. The multinomial logistic regression analysis of argument realization patterns in the speech and writing of each learner group found, for nominative, no difference in Dropped NP use but a marginal impact from an absence of L2 learning experience in using more NP-Ø than NP-CM, and that typological proximity marginally reduces the log odds of choosing NP-Ø over NP-CM in writing. These results indicate that formal L2 learning experience and typological proximity minimize L1 influence in terms of using NP-Ø for nominative in L3 writing.

For accusative, the analysis found no effect from L2 learning experience or typological proximity on the likelihood of choosing Dropped NP over NP-CM, but that L2 learning experience predicts less use of NP-Ø over NP-CM in L3 writing. The NP-Ø variant for accusative is realized significantly less by EBLs+L2 and the two sub-groups of EBLs+Jp and EBLs+nonJp in their written than in their oral production. Conversely, there is no significant difference in the choice of NP-Ø over NP-CM in written production for EBLs. In other words, all learner groups except EBLs show less likelihood of choosing NP-Ø over NP-CM in writing compared to speech, indicating that a strong L1 influence on accusative argument realization patterns in speech is more applicable to the other groups than to EBLs.

These results offer evidence for L1 influence, particularly on L3 speech rather than on L3 writing, and that the L1 has a significantly stronger impact on the speech of those whose writing suggests their effective acquisition of classroom input patterns (e.g., EBLs+L2, EBLs+Jp, EBLs+nonJp).

Type 1 variation

Now let us turn to the possible impacts of the developmental factors on Type 1 variation (NP-correct CM vs. NP-incorrect CM).

Table 7. Frequency (%) of Type 1 variation in nominative and accusative, classified by source

Type 1		Nominative		Accusative	
Source	Learner type	NP-correct CM	NP-incorrect CM	NP-correct CM	NP-incorrect CM
Oral	Total	84.0	16.0	86.7	13.3
	EBL	81.6	18.4	86.7	13.3
	EBL+L2	86.7	13.3	87.0	13.0
	L2 Jp	83.3	16.7	90.7	9.3
	L2 nonJp	88.5	11.5	84.2	15.8
	Unknown	85.9	14.1	86.5	13.5
Written	Total	90.9	9.1	82.8	17.2
	EBL	90.4	9.6	81.7	18.3
	EBL+L2	92.5	7.5	86.8	13.2
	L2 Jp	96.6	3.4	86.3	13.8
	L2 nonJp	88.3	11.7	87.6	12.4

In L3 speech, L2 learning experience predicts higher accuracy in obligatory case-marking for nominative: the logistic regression analysis found that EBLs+L2 choose the incorrect form for nominative significantly less than EBLs ($z = -2.07$,

$p = .039$), while no significant group difference was found for accusative. Among EBLs+L2, having studied an L2 that is typologically close to the L3 is not a significant benefit in accurate case-marking for either nominative or accusative in the spoken L3. Conversely, Park and Starr (2019) reported that, for accurate case-marking of nominative in L3 writing, L2 learning experience does not have a significant effect while L2 typological proximity does.

A comparison of Type 1 variation patterns between oral and written work revealed interesting findings. There are significant differences between oral and written production for both nominative ($\chi^2 = 32.19$, $df = 1$, $p < .0001$) and accusative ($\chi^2 = 7.25$, $df = 1$, $p = .0071$). However, the trends go in opposite directions: L3 learners choose the incorrect form for nominative significantly less in writing ($z = -5.66$, $p < .0001$) compared to oral production, while they choose the incorrect form for accusative significantly more in writing ($z = 2.74$, $p = .006$) compared to oral production. In other words, in writing, accusative case-marking is more challenging, while in speaking, nominative is more challenging. Typically, learners at the novice level are expected to experience more difficulties in speech than in written production; nonetheless, the current study found a mixed outcome.

To more deeply explore this difference between writing and speech, a logistic regression analysis was conducted on the effects of learner group and production mode. Table 8 reports the log odds of choosing NP-incorrect CM over NP-correct CM in writing compared to speech.

Table 8. Logistic regression analysis of type 1 variation in written production compared to spoken production by learner type

Type 1	Nominative		Accusative	
	z-score	*p* value	*z*-score	*p* value
All learners	−5.66	.000	2.74	.006
EBLs	−5.62	.000	2.63	.008
EBLs+L2	−2.31	.021	none	none
EBLs+Jp	−3.36	.001	none	none
EBLs+nonJp	none	none	none	none

The analysis finds that case-marking for nominative is likely to be more accurate in writing than in speech for EBLs, EBLs+L2, and EBLs+Jp. Conversely, case-marking for accusative by EBLs is significantly more inaccurate in writing compared to speech, while the other learner groups show no influence of production mode. Therefore, the unexpected finding is mainly due to the performance of the EBLs, who found case-marking for accusative a greater challenge in writing than in speech.

To further unpack this result, accusative Type 2 variation is revisited. EBLs choose the full form over the other variants significantly more in oral than in written production ($\chi^2 = 12.34$, $p = .0004$), while EBLs+L2 show no difference between modes. This finding suggests that the EBLs are more conservative about choosing non-default variants of accusative in their speech (Li 2010; Mougeon et al. 2010; Regan 1995, 1996; Starr 2017), but they still demonstrated higher accuracy than expected in their production of case-marking. Conversely, for nominative, the analysis found no significant difference between speech and writing in Type 2 variation among EBLs, meaning that the EBLs realized nominative as a full form at similar frequencies in both modes.

Discussion and conclusion

In this section, I will discuss the implications of this study's findings. First, the study confirms previous works on biases toward the full NP-CM form in non-native speech (Li 2010; Mougeon et al. 2010; Regan 1995, among others) and on the possibility of strong L1 influence in L3 speech in both stylistic (Li 2010) and obligatory variation patterns. For instance, L1 influence from Chinese is shown in the increase of Dropped NP over NP-CM for nominative in main (following) clauses compared to coordinate (preceding) clauses (Li, 2017), for 1st person singular nominative arguments, and for animate nominative arguments (Li et al., 2012).

For this study's participants, their L1 – whether Chinese or English – seems to be an additional source of transfer when they produce native-like variation patterns based on structural familiarity. In fact, the effect of structural familiarity is related to NP animacy, because action verbs, in both Intransitive Verb and Transitive Verb constructions, are likely to select an animate NP for the nominative argument. As a result, this study found a significantly higher frequency of Dropped NP for nominative arguments (1st sg and/or animate) in Intransitive Verb and Transitive Verb constructions than in the other verb type constructions.

Further, the findings regarding the Type 2 variation patterns for animate accusative arguments suggest a strong L1 influence on these arguments' realizations, in that the L3 learners frequently choose the NP-Ø form for animate accusative (9.4%), despite the absence of exposure to this variant from classroom input. In fact, the NP-Ø form is the closest to a default form of argument in the participants' L1 English and L1 Chinese. Hence, the high frequency of the NP-Ø form in speech, which cannot be due to classroom input, is probably due to L1 influence.

Additional supporting evidence for L1 influence in L3 speech was found in the comparison of this study's findings with the findings for L3 written production reported by Park and Starr (2019). This comparison demonstrates significantly

different Type 2 variation in argument realization in L3 speech and L3 writing. A strong preference for NP-CM and NP-Ø for accusative in speech is the main source of this difference. Given the fact that this preference is not present in either classroom input or native Korean variation patterns, the L3 learners' preference for it may be explained by the lower frequency of object drop than subject drop in L1 Chinese, and the resemblance of default argument forms in both L1 English and L1 Chinese to the NP-Ø variant in L3 Korean.

As for Type 1 variation patterns, the statistical difference between speech and writing was due to learners' significantly greater inaccuracy with nominative case-marking in spoken than in written production. The learners' incorrect case-marking appears to be due to their strong reliance on the animacy of the referent in the selection of a case-marker. Across languages, it is not uncommon for animacy to be an important cue in case assignment (MacWhinney, 1987). Nevertheless, in Korean, the overt morphological marker is the strongest cue for assigning case. In Chinese case assignment, on the other hand, while word order is a major cue, it is overridden by the animacy cue if there is a conflict (Li, Bates & MacWhinney 1993). The current study argues that the L3 learners relied on animacy in assigning case due to the influence from L1 Chinese and L1 English, and that this L1 influence was a greater barrier to accurate case-marking for inanimate nominative arguments ($z = 3.79$, $p < .0001$) than for animate nominative arguments. In other words, the learners over-generalized an association between animacy and case, and therefore marked inanimate NPs as accusatives and animate NPs as nominatives, regardless of their intended case. Furthermore, in sentences with a single NP, learners frequently marked that NP with an accusative marker if it was inanimate, and a nominative marker if it was animate, again regardless of its actual argument. This behavior indicates an interesting hierarchy between word order and animacy in case assignment for L3 learners. For the first NP of the sentence, which is usually nominative in L1 English, animacy seems to have a stronger impact. While it might be argued that this association derives from an imbalance in the animacy of nominatives in classroom input, in fact 42% of nominative arguments in classroom input tokens are inanimate. It is accusative that shows an imbalance in the animacy feature in classroom input, where only 5.6% of accusative argument tokens are animate. Therefore, a strong association between -animate and accusative could lead learners to develop an association of the other binary option, +animate with nominative. (Perhaps some small part of this more extensive discussion on animacy could be hinted at in the above first-mention of the significance of the category.)

In sum, this study's findings from the analyses of the five internal linguistic factors in Type 1 and Type 2 variation of nominative and accusative argument realizations support the claim of strong L1 transfer in L3 speech, particularly in the realization of accusative.

With regard to the developmental factors of formal L2 learning experience and typological proximity, both appear to have a significant impact on stylistic variation in the L3, particularly for nominative. For accuracy in case-marking, however, only L2 learning experience has an impact on realization patterns, and only for nominative, not for accusative. These findings imply that enhanced metalinguistic awareness or linguistic transfer from typologically close prior languages has an impact mainly for nominative arguments during speech. Nonetheless, the factors of formal L2 learning experience and typological proximity failed to show any mitigating effect on this L1 influence on accusative realization patterns in L3 speech, unlike in L3 writing.

One notable finding from the comparison between spoken and written production in Type 1 variation is that the major challenge in accurate case-marking in speech apparently comes from nominative arguments, not from accusative arguments. A closer look at fully formed accusative arguments, taking animacy into consideration, reveals a great difference in accurate case-marking of animate arguments between speech and writing (89% vs. 64%). Based on the fact that the EBLs were mainly responsible for this outcome (Table 8), I further analyzed the EBLs' animate accusative arguments. In L3 speech, the EBLs used one particular noun, *chinkwu/tul* (friend/s), at a much higher rate than any other specific human noun or than human names in general, selecting an animate accusative argument for it at the rate of 86% (39 out of 45). 97% (38 out of 39) of these cases of the noun *chinkwu/tul* (friend/s) in the accusative argument position appeared in full form, which is much higher than the average of all accusative arguments in full form, 86.7%. The reason for this pattern could be that the EBLs actively adopted a "play-it-safe" strategy (Hulstijn & Marchena 1989) in regard to accusative arguments in speech, by choosing a familiar and neutral word, 'friend/s', to refer to anonymous human figures instead of identifying human figures more specifically in the discourse. Hulstijn and Marchena (1989) argued that non-native speakers tend to prefer forms with more general or multi-purpose meanings, and to avoid more semantically specific forms. According to Laufer and Eliasson (1993), such avoidance is one of the strategies that learners use to overcome communicative difficulties. Laufer and Eliasson further argued that avoidance is largely caused by cross-linguistic influence, and thus L1 influence may explain the EBLs' patterns that derive from avoidance of the specific or novel in favor of the familiar, including variants that are also available in their L1s. The fact that they showed this behavior – avoidance of Korean human names – more actively than the other groups and most clearly for accusative arguments may be related to the markedness of the accusative (Hulstijn and Marchena, 1989). Finally, Jia and Bayley (2002) argued that marked forms tend to be explicitly expressed, and that non-native speakers demonstrate a bias toward

full forms to avoid misinterpretations. This study indeed supports their claim, particularly for EBLs' accusative arguments.

In conclusion, a stronger L1 influence was found in L3 speech compared to L3 writing, and this influence was particularly strong in argument realization patterns for accusative NPs. While the study found some evidence of beneficial effects of formal L2 learning experience and typological proximity, these influences were not sufficient to support native-like L3 speech against L1 influence. This may be due to the nature of speaking as linear performance, in contrast to writing, which allows revision.

Among the four L3 models reviewed in the section "Acquisition of a Third Language," the Cumulative Enhancement Model, the L2 Status Factor Model, and the Typological Primacy Model do not account for such non-facilitative transfer or selective transfer. Although the Linguistic Proximity Model predicts feature-to-feature transfer, the current study found evidence of incongruent transfer by argument type. This finding of different learning patterns for linguistic variables is not unexpected, as, unlike morphosyntactic features, structural variation patterns are not visually explicit (Slabakova 2017).

Although the current study identified a tendency towards full forms and L1 influences in L3 variation patterns of argument realization, it has limitations, which also suggest directions for further study. First, identifying facilitative and non-facilitative L1 influences would allow us to understand how various language dynamics among learners might account for L1 influence more completely. In addition, a sample that included learners from novice to advanced proficiency levels would provide a more complete picture of development in variation patterns over time, and a chance to examine the role of the level of L1 influence along with proficiency.

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CHAPTER 5

What can Cantonese heritage speakers tell us about age of acquisition, linguistic dominance, and sociophonetic variation?

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For many individuals, the first acquired language is also the linguistically dominant language, but what are the implications for sociophonetic variation if the linguistically dominant language is a second acquired childhood language, as is the case for many heritage speakers? This chapter addresses two correlates of linguistic dominance on the production of L2-influenced vowels in heritage Cantonese sociolinguistic interview data. Results show that Cantonese Production Score (CPS), an externally measured proficiency proxy, is consistently a better predictor than Ethnic Orientation (a self-reported identity metric) in accounting for speakers who are most likely to produce English influenced vowels. While a distinction between child vs. adult language acquisition remains important, these results highlight linguistic dominance as an interacting factor in sociophonetic variation.

Keywords: sociophonetics, sound change, language contact, Chinese – Yue, bilingualism

Introduction

For many bilinguals, the L1 is one's first childhood acquired language as well as one's more linguistically dominant language. The L2 is often one's second language acquired as an adult as well as one's less dominant language. Order of acquisition, age of acquisition, and linguistic dominance, however, do not always align with L2 in this way. For example, the second acquired language for many heritage speakers is acquired in childhood and becomes the linguistically dominant language. What are the theoretical implications of such cases for sociophonetic variation?

The study of heritage languages and heritage speakers has become a growing area of research interest in the past decade, especially among researchers in acquisition, psycholinguistics, and applied linguistics (see Polinsky 2018 for a book-length

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review). Montrul defines heritage languages as "culturally or ethnolinguistically minority languages that develop in a bilingual setting where another sociopolitically majority language is spoken" (2015, 2). Heritage languages therefore often develop in the context of immigration from one country to another. First-generation immigrants to a new country typically struggle to learn the dominant language of their new country if they immigrate as adults. For the second-generation, however, child language acquisition makes both the heritage language and the sociopolitically dominant language easily acquirable, but the latter typically becomes the linguistically dominant language.

The specific topic of this chapter is vowel production across two generations of Toronto heritage Cantonese speakers. What is the best predictor of inter-generational differences in production of the high front and high back rounded vowels: /y/ and /u/? I consider two variables that may be related to individual linguistic dominance: ethnic orientation and Cantonese Production Score (a proficiency proxy). The theoretical aim is to contribute to the assessment of frameworks for the study of contact-induced sound change that are based on an L1 vs. L2 distinction, whether that refers to age of acquisition or to linguistic dominance. Unless otherwise noted, I use L1 vs. L2 to refer to order of acquisition.

Acquisition and the study of contact-induced sound change

Within sociolinguistics, different aspects of acquisition have long formed the basis behind major frameworks for the study of contact-induced change. The distinction between child and adult language acquisition, for example, is the basis behind Labov's (2007, 2011) Transmission and Diffusion Model, Thomason and Kaufman's (1988) Analytical Framework for Contact-Induced Change, and Trudgill's (2013) Sociolinguistic Typology. Individual linguistic dominance is a factor emphasized in van Coetsem's (1988, 2000) General and Unified Model of the Transmission Process in Language Contact. I discuss these two basic frameworks in the paragraphs below.

Frameworks based on child vs. adult acquisition

Labov (2007, 2011) proposes a distinction between *transmission* and *diffusion* to account for two types of sound change. *Transmission* is change initiated by child language acquisition and is change that results in Neogrammarian sound change, a type of change that affects the same phoneme across all lexical items containing that phoneme in a specific dialect. It is, thus, exceptionless and structurally-based. *Diffusion*, on the other hand, is sound change initiated by adults. It is change in individual lexical items rather than change across all lexical items containing the

same phoneme. *Diffusion* results in exceptions in the sound change process and is what leads to contact-induced change.

Labov argues that *diffusion* is rooted in what he considers the "inability" (2007, 383) of adults to learn new phonological distinctions. He cites Scovel (2000), who argues for a biological explanation to account for the difficulty that adults experience in speaking a second language without an accent. To further support his point, Labov discusses Payne's (1976) study of children born to out-of-state parents in a Philadelphia suburb, King of Prussia. Payne (1976) shows that only children who arrived in King of Prussia before the age of 10 were able to acquire the phonetic variables of the Philadelphia dialect. This, according to Labov, shows that a critical period for pronunciation applies to both second dialect and second language acquisition.

Thomason and Kaufman (1988) propose an analytical framework for the study of contact-induced change based on a similar distinction between child and adult language acquisition. Unlike Labov (2007), the distinction made is one that integrates a broader range of language contact phenomena as well as two possible directions of cross-linguistic influence. The two processes they formulate are *borrowing under language maintenance* and *interference through language shift*. The first involves settings in which the same language is transmitted inter-generationally by those who learn the language as children. The type of changes that are possible depend on the *intensity of contact*, which refers to the extent to which speakers of a language also speak another language, which is usually a sociopolitically dominant one. Under low-intensity contact, change is limited to borrowing of lexical items. When intensity of contact is high, grammatical features can also be borrowed. Labov's *transmission* generally corresponds with internally-motivated change that take place under Thomason and Kaufman's *language maintenance* while *diffusion* generally corresponds with externally-motivated change that also takes place under *language maintenance*.

Interference through language shift is the second process in Thomason and Kaufman's framework. It involves adults learning a target language and introducing features of their native language in their version of the target language. If intensity of contact is high enough, features of their version of the target language can be transmitted to subsequent generations of speakers of the target language. Thus, while Labov's *transmission* and *diffusion* involve a distinction between internally motivated and externally motivated change under *language maintenance*, Thomason and Kaufman's *borrowing* vs. *interference* distinction focuses on the direction of cross-linguistic influence with *borrowing* referring to a native or heritage language while *interference* involves a target language learned by adults and how change in that target language can be influenced by native or heritage speakers of a different language.

Influenced in part by Thomason and Kaufman (1988), Trudgill (2013) also identifies a distinction between child and adult language acquisition as fundamental to explaining the types of changes that can develop in languages spoken in diverse sociolinguistic contexts. Trudgill argues that simplification of linguistic structure is most likely to arise in settings involving short-term adult language contact while complexification most likely arises in settings characterized by long-term language contact involving childhood bilingualism and in settings characterized by linguistic isolation.

A framework based on linguistic dominance

A second approach taken in contact-induced change frameworks is based on linguistic dominance. This is well exemplified in van Coetsem's (1988; 2000) model. Van Coetsem defines linguistic dominance as "based on the greater proficiency that a speaker has in one language (L1) as compared to another (L2)" (2000, 66–67). This framework has influenced variationists who study bilingualism (cf. Guy 1990; Sankoff 2013) as well as researchers who specialize in pidgins, creoles, bilingual mixed languages, and World Englishes (cf. Winford 2007, 2013, 2017).

According to van Coetsem, the reason that linguistic dominance has a strong effect is because of the *stability gradient*, which he describes as "differences in stability between language components/domains (or subcomponents/subdomains), such as the difference between lexicon (less stable) and grammar (more stable)" (2000, 50). He describes lexicon as less stable because it is very easy and common for one to borrow lexicon into one's dominant language even with minimal knowledge of the source language. In contrast, grammar (including phonology, morphology, and syntax) is more difficult to borrow and is thus described as a more stable domain of language.

Van Coetsem formulates three types of cross-linguistic transfer that result from the *stability gradient*. The first is called *RL (recipient language) agentivity*, which involves influence from a non-dominant language on a dominant language. Lexical transfer is more likely to occur than phonological or grammatical transfer under RL agentivity because lexicon is a less stable domain. The second type is called *SL (source language) agentivity* (or *imposition*), which involves transfer in the reverse direction for the same speaker. In other words, imposition involves transfer from the dominant language to a non-dominant language. Speaking a less dominant language with a perceptible accent would be an example illustrating imposition. In this case, phonology is one of the most stable domains of language. Speakers would, thus, speak their less dominant language with influence from the grammar (including the phonology) of their more dominant language under imposition.

Finally, the third transfer type is called *neutralization*, which develops when one becomes a balanced bilingual. For balanced bilinguals, neither language is significantly more dominant than the other. The *stability gradient*, thus, no longer operates. The possible ways that one language can influence another are less constrained under neutralization.

The importance of linguistic dominance as a driving factor is well emphasized by van Coetsem. In formulating his model, he says that, "L1 refers to the language in which the speaker is most proficient, although it is not necessarily his (*sic*) first acquired or native language" (van Coetsem 2000: 66–67). This usage differs from the way L1 and L2 are used in much of the research literature. Van Coetsem also describes an inverse relationship between acquisition and imposition, which can change over the course of a speaker's lifetime. As one increases acquisition (and hence proficiency) of a less dominant language (even if that language is a second language), the *stability gradient* weakens, leading to a decrease in influence from the dominant language. In other words, one's L2 takes on or even takes over the roles of one's L1 over time if proficiency in the L2 increases. If acquisition of a non-dominant language increases to a point at which a speaker becomes a balanced bilingual, the differences between RL and SL agentivity become neutralized.

Van Coetsem discusses the most typical heritage language scenario as involving imposition on the individual level and an inter-generational shift in the dominant language, leading to a change in the direction of influence. The initial immigrant generation of speakers is linguistically dominant in Language A (the Homeland language). For this generation, the transfer mechanism involved is imposition of Language A as speakers acquire Language B (the sociopolitically dominant language in the host country). For the second generation, imposition is also involved but goes in the opposite direction since many individuals from the second generation become dominant in Language B. This allows them to introduce structural material from Language B to Language A as speakers undergo attrition in Language A. Van Coetsem notes that imposition is only one possibility. He says, "attrition does not have to occur and is therefore not a necessary development in the second stage. Language A may be maintained and with symmetrical bilingualism neutralization may result" (van Coetsem 2000, 172). Thus, under van Coetsem's framework, two possible transfer mechanisms may be involved among second-generation heritage language speakers depending on individual speaker proficiency in the heritage language. The first is *imposition*, while the second is *neutralization*. Van Coetsem recognizes that heritage languages are exactly the type of case in which one's first acquired language does not permanently remain one's most dominant language.

Winford argues that van Coetsem's (1988, 2000) framework offers the "most promising attempt to address" (2007: 75) problems with other frameworks for the

study of contact-induced change. For example, he says that earlier frameworks, including Thomason and Kaufman (1988) and Weinreich (1953), ambiguously use the same terminology to refer to the outcome of contact and the linguistic processes that lead to these outcomes. This, he says, is especially a problem with highly proficient bilingual speakers. The social dominance of a language does not always correspond with individual linguistic dominance. Furthermore, the dominant language can change over time both on the societal level and on the individual level. Winford says that there needs to be a way to distinguish between these two levels because shifts in individual linguistic dominance can lead to use of different mechanisms for cross-linguistic influence. Thus, he argues that van Coetsem's focus on individual linguistic dominance is a step in the right direction because there ultimately needs to be a way of explaining how individual psycholinguistic mechanisms lead to the propagation of contact-induced change on the macro sociological level.

Winford discusses the heritage Spanish use of the verb *gustar*, which is semantically similar to the English verb *to like*, as a case of L2 to L1 imposition (2013, 64). The mapping between thematic roles and grammatical functions for *to like* and *gustar*, however, are different. Thus, some heritage Spanish speakers use the verb *gustar* in a way that is grammatically similar to the way they use the English verb *to like*. This illustrates imposition of their English dominance to their use of Spanish. In another heritage language context, Smits (1998) discusses the loss of morphological inflection in Iowa Dutch, which she says also illustrates imposition from the L2 on the L1. Smits also argues in favor of van Coetsem (1988) as presenting a more suitable framework than Thomason and Kaufman (1988) for the study of heritage languages because of its recognition that individual linguistic dominance can change over time.

While these two previous examples illustrate imposition in the morphosyntactic domain, the extent to which van Coetsem's framework is applicable to sociophonetic variation within a heritage language speaker community remains an underexplored topic. Furthermore, Winford has noted that most research in SLA has focused on L1 to L2 transfer rather than L2 to L1 transfer, "which has so far been seriously neglected" (2013: 69). This is exactly the type of context that allows us to better evaluate the importance of linguistic dominance vs. age and order of acquisition and its effects on speech production.

Background on Toronto heritage Cantonese

The social context

Cantonese (also known as Yue Chinese) is a Sino-Tibetan language spoken by over 85 million speakers worldwide, with most speakers living in Guangdong (formerly anglicized as "Canton," based on the Portuguese pronunciation) Province, China and the surrounding region (Eberhard, Simons & Fennig 2020). One of the largest cities in this region is Hong Kong, which has been governed as a Special Administrative Region (SAR) of the People's Republic of China (PRC) since 1997. In this chapter, the form of Cantonese spoken in Hong Kong is treated as the "Homeland" variety of Cantonese. In the Hong Kong SAR, 88.1% of residents speak Cantonese as their native language (Census and Statistics Department, Hong Kong Special Administrative Region 2016). Cantonese is also widely spoken in diasporic communities throughout the world, including many major cities in North America, Australia, Europe, and Southeast Asia. The current study focuses on heritage speakers in Toronto, Canada.

The Hong Kong Cantonese community in Toronto developed as a result of two major waves of immigration (Chan 2011).[1] The first came in the 1960s following the loosening of Canadian immigration restrictions while the second came following the ratification of the Sino-British Joint Declaration in 1984. According to this declaration, Hong Kong, which was a British colony at the time, was to be handed over to the People's Republic of China in 1997. This led to fears among many Hong Kong residents about how the Communist government of the PRC would change life in the territory.

In contrast to Hong Kong, only 247,710 out of almost 6 million people in the Toronto Census Metropolitan Area (CMA) identify Cantonese as their mother tongue (Statistics Canada 2017), representing only 4% of the population. The Toronto CMA is also a very multilingual region, in which 44% of the population speaks a mother tongue other than English (Statistics Canada 2017). Aside from Cantonese and English, nine other languages have at least 100,000 speakers (Statistics Canada 2017). Although 4% seems small, Cantonese still ranks number

1. Prior to the 1960s, most of the Toronto Chinese community came from rural areas of Guangdong Province. They spoke Yue Chinese dialects that are mutually unintelligible with Hong Kong Cantonese. Tsang (1984) described one-way intelligibility related to the higher social standing of Hong Kong. Speakers of these rural dialects reportedly understood Hong Kong Cantonese speakers, but Hong Kong speakers could not understand these rural dialects. Thus, although there was an earlier Chinese immigrant presence, there is a lack of sociolinguistic continuity between the earlier immigrant groups and the groups that came after the 1960s.

two after English in terms of number of mother tongue speakers. Thus, while Cantonese is the dominant language of everyday life in Hong Kong, in Toronto it is one of many heritage languages in a city that is dominated by English, which serves as a common tongue across speakers of many different languages. Although societal dominance does not always align with individual linguistic dominance, most Canadian-born Cantonese speakers are linguistically dominant in English.

The Cantonese vowel system

Cantonese has a typologically large vowel system with 22 vowel phonemes[2] including 11 monophthongs and 11 diphthongs. The monophthongs include a set of seven tense vowels (shown in Table 1) and four lax vowels (shown in Table 2).[3]

Table 1. Cantonese tense vowels (adapted from Zee 1999)

Front		Central	Back
Unrounded	Rounded		Rounded
i	y		u
ɛ	œ		ɔ
		a	

Table 2. Cantonese lax vowels (adapted from Zee 1999)

Front	Central	Back
ɪ		ʊ
	ɵ	
	ɐ	

Toronto English also has both monophthongs and diphthongs. The monophthongs are shown in Table 3.

2. I follow Yip's (1996) treatment of these vowels as distinct phonemes. Other descriptions treat a subset of these vowels as allophones of the same phoneme. Zee (1999) recognizes the same vowels, but is neutral on their phonemic status. See Bauer and Benedict (1997) for a detailed discussion of controversial issues in the description of Cantonese vowels.

3. Zee (1999) distinguishes between these two sets of vowels in terms of length and in terms of whether or not a vowel can occur in open syllable context. Some researchers including Yue-Hashimoto (1972) describe this distinction as a tense vs. lax distinction. Zee (1999), however, does not use the terms *tense* and *lax*.

Table 3. Toronto English monophthongs (adapted from Walker 2015, 81)

Short		Long	
Front	**Back**	**Front**	**Back**
ɪ	ʊ	i	u
ɛ	ʌ	e	o
æ			ɑ

Both languages share a phonological distinction between tense and lax vowels (but called "long" in Table 3). One point of contrast between the two languages is in the high tense round vowels. Cantonese has two: /y/ and /u/. Toronto English (as is the case for other dialects of English) has only one: /u/, which (also as in many English dialects) is phonetically fronted. From this comparison, we might hypothesize that Toronto English influence on Cantonese might mean the loss of a contrast between /y/ and /u/.[4]

Tse (2019) presented evidence of exactly that by comparing F1/F2 production patterns across two generations of Toronto Cantonese speakers. Of the 11 monophthongs analyzed, only /y/ showed significant intergenerational differences, with the second-generation group retracting this vowel. The Homeland comparison group did not retract, which suggests that this is not likely to be an internally motivated change. Furthermore, /y/ retraction is the opposite direction of movement predicted by Labov's (1994; 2011 Principle III of vowel chain shifts). (Although Principle III does not address rounded high front vowels.)

Although /y/ and /u/ remain distinct, these results showed the second-generation group moving towards merger of /y/ and /u/. Although Tse (2019) found no significant inter-generational differences for the F2 of /u/, there could still be inter-speaker variation within this group. If /y/ is retracting because of the influence of one high round vowel in the dominant language, we would also expect /u/-fronting at least among speakers who are also retracting /y/. What Tse (2019) did not address is specific factors that account for which particular second-generation speakers are most likely to retract /y/ and front /u/.

4. This is a phonologically based hypothesis based on the relative position of /y/ and /u/. Another hypothesis is that either /y/ or /u/ or both vowels phonetically assimilate to Toronto English /u/, which is phonetically fronted. This hypothesis will require an F1/F2 analysis of the English spoken by the same speakers, which has not yet been undertaken.

Research question

What specific factors (onset place of articulation, Ethnic Orientation Group, Cantonese Production Score) best predict F2 production of /y/ and /u/ among second-generation Toronto heritage Cantonese speakers?

The hypothesis is that English-influenced variants are more likely to be produced by those with lower Cantonese Production Scores (CPS) because of imposition. Those with higher CPS are balanced bilinguals and are expected to show more variation because of neutralization. Although ethnic orientation (EO) is distinct from linguistic dominance, high EO speakers may be more likely to value conservative Cantonese pronunciations. Thus, the high EO group is expected to be similar to higher CPS speakers. Similarly, low EO group speakers may pattern more similarly to lower CPS speakers. The English-influenced variants are lower F2 for /y/ (more retraction) and higher F2 for /u/ (more fronting).

Methodology

Data and analysis procedures

The data analyzed for this chapter (and for Chapter 12) comes from the Heritage Language Variation and Change (HLVC) in Toronto Project (Nagy 2011). The HLVC corpus includes digitally recorded interviews of speakers of ten different heritage languages spoken in the Toronto area, including Cantonese. Two or three generations of speakers were audio recorded and transcribed in each language. Each interview consisted of three parts:

1. An audio recorded sociolinguistic interview (spontaneous speech sample) averaging one hour in length (following the protocol discussed in Labov 1984, questionnaire at http://ngn.artsci.utoronto.ca/pdf/HLVC/long_questionnaire_English.pdf).
2. An Ethnic Orientation Questionnaire (EOQ, available at http://ngn.artsci.utoronto.ca/pdf/HLVC/short_questionnaire_English.pdf), which included questions specifically about speaker's ethnic orientation and language use (following Keefe and Padilla 1987). These questions were answered orally and were audio recorded.
3. A picture naming task, in which participants were asked to use the heritage language to identify the object shown in a picture. This section was also audio recorded.

This chapter involves an analysis of a subset of data from Tse (2019), which included 33,179 vowel tokens of 11 vowel categories from 32 speakers representing three groups: first-generation Toronto (GEN 1), second-generation Toronto (GEN 2), and Hong Kong (HK). These 32 speakers include twelve GEN 1, twelve GEN 2, and eight HK speakers. The vowel analysis includes only tokens of /y/ and /u/ (n = 516) from GEN 2 speakers since this is the group shown to be undergoing vocalic change in Tse (2019). The GEN 1 and GEN 2 groups, however, are compared with each other in the discussion of EOQ Scores (Section 4.2) and CPS (Section 4.3). The distribution of the 12 GEN 2 speakers analyzed is shown in Table 4. Nine of these speakers were born in Canada while three of them arrived in Canada at the age of 4 or earlier. This group includes an equal number of male and female participants. L2 to L1 influence is expected to be much more likely due to the local dominance of English.[5]

Each participant shown in Table 4 is identified based on speaker code. The "C" indicates Cantonese. The following number indicates generational group. This is followed by an "M" or "F" for male or female and then by the participant's age. The last character is a letter used to distinguish between different participants who share the same demographic characteristics. For example, "C2M21D" is a Cantonese-speaker, second-generation, male, and 21 years old at the time of recording. The "D" is used to distinguish this participant from three other participants who are also Cantonese-speakers, second-generation, male, and 21 years old.

Table 4. Distribution of second-generation Toronto (GEN 2) speakers

	Male	**Female**	**Total**
Born in Canada	C2M21B C2M21C C2M21D C2F22A C2M27A	C2F20A C2M22A C2F24A C2F41A	**9**
Born in Hong Kong (Age of Arrival in Canada in parentheses)	C2M44A (age 2)	C2F21B (age 2) C2F21C (age 4)	**3**
Total	**6**	**6**	**12**

5. Although French is also an official language in Canada and a required subject in schools, English is a far more dominant language in Toronto. In fact, the 2016 census shows that only 469,835 out of 5,883,670 (or about 8%) residents of the Toronto Census Metropolitan Area report having knowledge of French. In contrast over 95% reported having knowledge of English. For this reason, I do not believe French has a major influence on Cantonese. Furthermore, knowledge of French was not queried in the interviews. If there were French influence, however, the hypothesis would be that speakers maintain a distinction between /y/ and /u/ because like Cantonese, French has a phonological distinction between a high front and high back round vowels.

The recordings for each individual speaker were reviewed for tokens of each vowel category. The recordings include the interview, the EOQ, and the picture naming task. Prosodylab Aligner was used for forced alignment (Gorman, Howell, and Wagner 2011). The aligned textgrids were manually reviewed and corrected. A Praat script (Boersma & Weenink 2016) automatically extracted the midpoint F1 and F2 measurements of each vowel token. Vowels that are immediately preceded by a glide (/j/ or /w/) were excluded from analysis due to the co-articulatory effects of these consonants. The formant measurements were all Lobanov normalized (Thomas & Kendall 2007) based on the larger set of 33,179 vowel tokens.

Table 5 shows the distribution of /y/ and /u/ tokens analyzed in this chapter. As shown in this table, there are no tokens of /y/ when preceded by a labial and no tokens of /u/ when preceded by coronal and glottal consonants. Both Bauer and Benedict (1997) and Yue-Hashimoto (1972) describe a near complementary distribution relation between /y/ and /u/ with preceding velar context being the only phonetic context in which both vowels occur. Thus, the empty cells in the table reflect inventory gaps in the language and not artifacts of the data.

Mixed effects modeling (Johnson 2009) was used with separate models run for each dependent variable. The two dependent variables were the Lobanov normalized midpoint F2 of /y/ and of /u/. The independent variables are shown in Table 6. They include both random and fixed effects. The random effects in each model were "speaker" and "word." The fixed effects included onset place of articulation (POA), EO Group, and CPS. Since Cantonese lacks consonant clusters, the onset is always a consonant that immediately precedes a vowel.

Table 5. Token distribution based on phonetic environment

Onset POA	/y/	/u/	Total
Labial	0	117	117
Coronal	341	0	341
Velar	7	48	55
Glottal	3	0	3
	351	165	516

Table 6. Summary of independent variables

Random effects	Fixed effects	
	Speaker variables	Word variables
(1) Speaker	1. Ethnic Orientation (EO) Group	1. Onset place of articulation (POA)
(2) Word	2. Cantonese Production Score (CPS)	

Ethnic orientation (EO) group

The EO Group variable is designed to address the role of identity in production of English-influenced variants of the two vowels in question. Are those who identify more strongly with Chinese or Cantonese-speaking culture the ones who are most likely to produce English-influenced vowels? This variable was created as a categorical factor based on responses to the EOQ given to each HLVC Project participant.

Table 7 shows a sample of the questions included in the EOQ.

Table 7. Sample EOQ questions

Code	Category	Question
A1	Ethnic Identity	Do you think of yourself as Chinese, Canadian, or Chinese-Canadian?
A2	Ethnic Identity	Are most of your friends Chinese?
B3	Language Preference	Do you prefer to speak Cantonese or English?
B4	Language Preference	Do you prefer to read and write in Cantonese or English?
B5	Language Preference	Do you prefer to listen to the radio or watch TV in Cantonese or English?
C1	Language Choice	What language does your family speak when you get together?
C3	Language Choice	What language do you speak when you're talking about something personal?
E1	Parents	Do your parents think of themselves as Chinese, Canadian, or Chinese-Canadian?
F1	Partner	Is your partner Chinese?
G1	Chinese Culture	Should Chinese-Canadian kids learn Chinese culture?
H1	Discrimination	Have you ever had a problem getting a job because you're Chinese?

Given the impracticality of including 35 factors in multivariate statistical modeling and the high degree of correlation across multiple questions, ethnic orientation was statistically operationalized as a categorical variable based on a calculated score. This follows one of the approaches adopted in Nagy, Chociej and Hoffman (2014) for the HLVC Corpus data and in Hoffman and Walker (2010) for a study of the English spoken by Torontonians of different ethnic backgrounds.

The first step in calculating the EOQ Score was to code responses to each question as 0, 1, or 2, with 0 indicating responses that showed stronger Canadian identity, a 2 indicating stronger Chinese or Cantonese identity, and a 1 indicating in-between responses. For example, question A2 was "Are most of your friends Chinese?". A "yes" response would be coded as "2" while a "no" response would be

coded as "0." If a speaker said neither mostly Chinese nor mostly white Canadian, their response would be coded as "1." Speakers were not expected to answer every question especially for questions that are not relevant for individual speakers. For example, Question C5 is not applicable for participants who do not have children or grandchildren.

Once responses were coded, an average value was calculated for each speaker. Unanswered questions were not factored into the calculation of this score. For example, if a speaker answered 20 questions, the sum of their responses was divided by 20 rather than by 35. Thus, each speaker had an EOQ score based on a continuous scale ranging from 0 to 2, with 0 reflecting a greater mainstream Canadian ethnic orientation and 2 reflecting a greater Chinese ethnic orientation.

The next and final step was to divide speakers into two groups based on their EOQ Score. In Hoffman and Walker (2010), the High EO group includes speakers with EOQ scores of 0.5 or above while the Low EO group included those with scores below 0.5.[6] Figure 1 is a boxplot showing the range of EOQ scores for both of the Toronto groups. As can be seen, none of the GEN 2 speakers scored below 0.5. Thus, a higher cut-off point needs to be set for this study based on the distribution of actual scores.

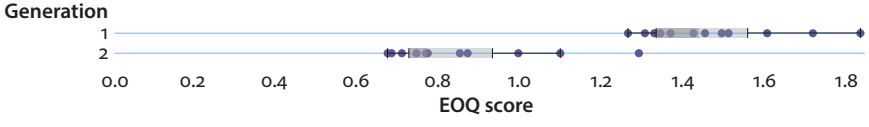

Figure 1. EOQ score range for Toronto group

Figure 2 shows the EOQ scores for each GEN 2 speaker. We can see that five speakers have EOQ scores above 0.8, while seven speakers have scores below 0.8. Based on this distribution, speakers with a score of 0.8 or above were categorized as High EO while those with a score below 0.8 were categorized as Low EO. EO Group was then included as a categorical dependent variable in mixed effects modeling (Johnson 2009).

6. Hoffman and Walker (2010) use a 1 to 3 scale rather than a 0 to 2 scale as used in the HLVC data. Here, I've converted their scale to the HLVC scale by subtracting 1 from the scores they report.

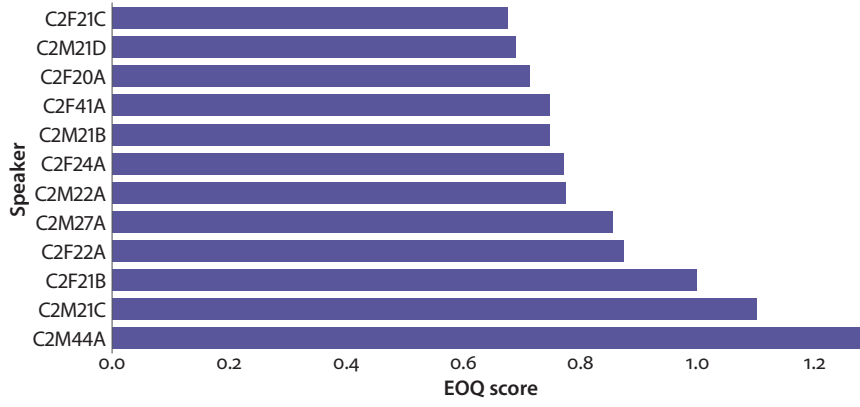

Figure 2. EOQ Scores for GEN 2 Toronto speakers

Cantonese production score (CPS)

CPS is a proficiency proxy based on the relative amount of Cantonese produced in the interview recordings. Although some of the EOQ questions discussed above relate to language use and proficiency, the responses to these questions are all self-reported. The CPS is, thus, introduced as an external measure of language proficiency based on actual spontaneous speech production.

The nature of the interview task makes CPS a viable proficiency proxy. HLVC participants were informed that the interview was to take place primarily in Cantonese. Code-switching or code-mixing with English was allowed. Speakers varied in how often they actually used English during the interview. Those who used less Cantonese are believed to be those who spoke more English to compensate for gaps in their Cantonese knowledge rather than to demonstrate high proficiency in both languages. This assumption differs from the neutral view taken in other HLVC-based studies such as Lyskawa et al. (2016). Table 8 is an interview excerpt that supports the assumption that lower CPS indicates stronger English-dominance and weaker Cantonese proficiency. The speaker interviewed, who is identified with the speaker code C2F24A, has the lowest CPS among the speakers analyzed in this study.

In this interview, we see C2F24A hesitating as she says the word "hok6 saang1" because she is unsure if she said the correct word for "student". She switches to English to ask. Once she confirms, she says in English, "Oh, yes! I got it right! I'm learning!" before switching back to Cantonese to answer the interviewer's original question. By saying that she is learning, she is making it clear that Cantonese is not

Table 8. Interview excerpt from C2F24A

	Original	Translation
Interviewer	Gam2 aa3, jau5 di1 mat1 je5 hai6 ling6 dou6 di1 sin1 saang1 hou2 nau1 gaa3?	So, what is something that makes teachers angry?
C2F24A	Ah, well, ngo5 jau5 jat1 go3 … um … hok6 saang1. Is that right?	Ah, well, I had a … um … "hok6 saang1". Is that right?
Interviewer	Tung4 hok6	Classmate
C2F24A	Oh, no, is it tung4 … "student"! Isn't it "hok6 saang1"?	Oh, no, is it "tung4" … "student"! Isn't it "hok6 saang1"?
Interviewer	Yeah, "hok6 saang1"	Yeah, "hok6 saang1"
C2F24A	Oh, yes, I got it right! I'm learning! … Ngo5 jau5 go3 hok6 saang1, keoi5 baai5 zo2 di1 … um hoeng1 hau2 gaau1 lok6 heoi3 jan4 dei6 di1 tau4 faat3 dou2. Gam2 ngo5 zau6 hou2 laa1, ngo5 zau6 Office!	Oh, yes! I got it right! I'm learning! … I had a student who put some … um … chewing gum in someone's hair. So then I was like "that's it!" I was like "office!"

her dominant language, but she does her best to continue in Cantonese since she was instructed at the beginning of the interview that Cantonese is intended to be the primary language used in this task. Thus, C2F24A had a low CPS because she used a lot of English to compensate for gaps in her ability to speak Cantonese rather than to demonstrate high proficiency in two languages. Thus, C2F24A is classified as an English-dominant rather than a balanced bilingual.

The CPS was calculated by counting the total number of Cantonese words uttered during the interview and dividing that number by the total of all words uttered (including Cantonese and English, and on a few occasions Mandarin). The resultant value was multiplied by 100 to obtain the CPS. Figure 3 shows the CPS range among speakers analyzed. The GEN 1 group has a narrower CPS range with all speakers scoring at least 91. The average score for the GEN 1 group is 97. The GEN 2 group, on the other hand, stands out in having a much wider range of scores with a few speakers overlapping within the range of GEN 1 scores. Most speakers, however, have lower scores than the GEN 1 speaker with the lowest score. The average score for the GEN 2 groups is 78. The speaker with the lowest score has a score of only 29 on a 100-point scale. The scores for each individual GEN 2 speaker are shown in Figure 4.

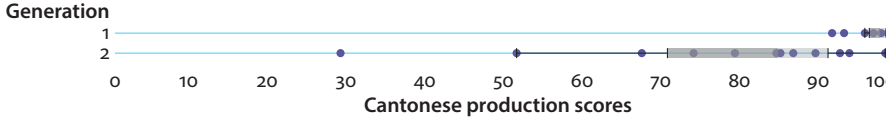

Figure 3. Range of Cantonese production scores for GEN 1 vs. GEN 2

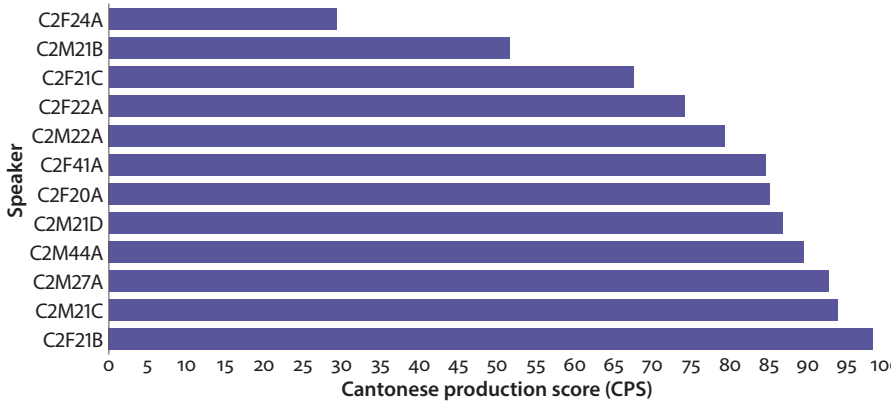

Figure 4. Cantonese production scores for GEN 2 speakers

Following van Coetsem's framework, we would expect more English dominance among lower CPS speakers. With more English dominance there should be more imposition of English-influenced phonology on Cantonese. Higher CPS, however, does not necessarily mean Cantonese dominance. It more likely indicates speakers who are balanced bilinguals. According to van Coetsem, neutralization rather than imposition would be involved for these speakers. This means the stability gradient does not operate, leading to fewer constraints on linguistic behavior.

The evidence for balanced bilingualism rather than Cantonese dominance among GEN 2 speakers who have the highest CPS comes from Hoffman and Walker (2010), which shows that GEN 2 Cantonese speakers have several features in the English that they speak that is not significantly different from Toronto English speakers from other ethnic groups. Thus, it seems reasonable to assume that all or most GEN 2 speakers are highly proficient in English. Those who are also highly proficient in Cantonese would be balanced bilinguals while those who are less proficient in Cantonese are English dominant.

The subset of EOQ questions related to language preference and language choice shows that Cantonese dominance is rare among GEN 2 speakers. Figure 5 shows boxplots indicating the average score from Part B (Language Preference) of the EOQ while Figure 6 includes boxplots showing the average score of questions from Part C (Language Choice).

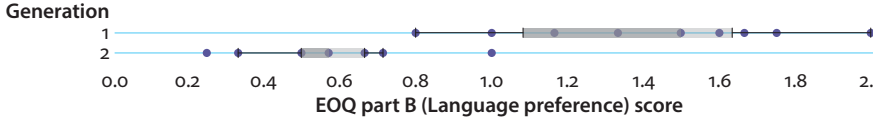

Figure 5. Range of EOQ (Part B) language preference scores

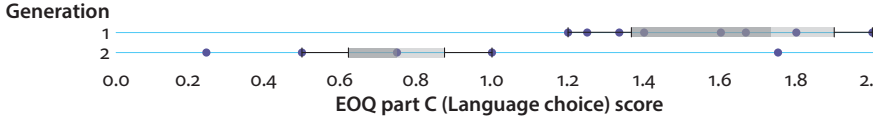

Figure 6. Range of EOQ (Part C) language choice scores

If we treat scores above 1.2 as indicating Cantonese dominance, we can see that Cantonese dominance is found almost exclusively among GEN 1 speakers. One GEN 2 speaker has an average score above 1.7 based on Part C questions, but not a single GEN 2 speaker comes even close to this based on Part B questions. Thus, based on Hoffman and Walker (2010) and on the responses to Parts B and C of the EOQ, GEN 2 speakers with high CPS are more likely to be balanced bilinguals than they are to be Cantonese-dominant bilinguals.

Results

The vowel /y/

Cantonese /y/ is expected to be retracted (lower F2) by GEN 2 speakers with lower EOQ and CPS. Balanced bilinguals (higher EOQ and CPS) are expected to show more variation. Figure 7 shows the relationship between a speaker's mean F2 and CPS while Figure 8 shows how mean F2 is related to EOQ Scores.

In Figure 7, we can see that the two speakers with the lowest CPS both produce retracted variants of /y/. The mean normalized F2 for both speakers is less than 1580 Hz. Speakers with CPS above 60 show a wider range of mean F2. This includes the speaker with the second lowest mean F2 (C2F41A) and the speaker with the highest mean F2 (C2M21C). Tse (2019) reported a normalized mean F2 of 1631 Hz for the /y/ of GEN 1 speakers. Several GEN 2 speakers produce /y/ with similar mean F2.

Figure 8 is a plot showing EOQ Score vs. Lobanov Normalized F2 Mean of /y/ for individual GEN 2 speakers. In general, we see that a stronger Chinese (or Cantonese) ethnic orientation favors higher mean F2. Those who have EOQ Scores above 0.8 all produce mean F2 above 1600 Hz. This is also the more conservative pronunciation. Those with EOQ Scores below 0.8, however, are more variable in their mean F2.

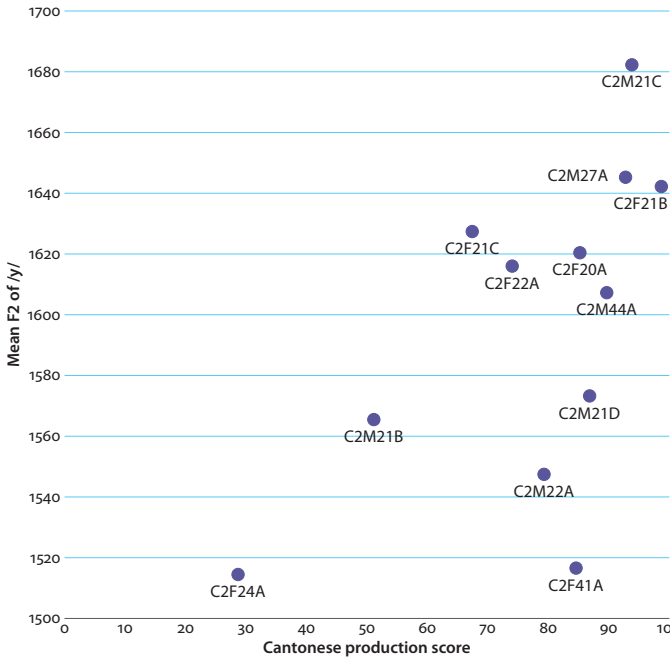

Figure 7. Cantonese production score vs. mean F2 of /y/

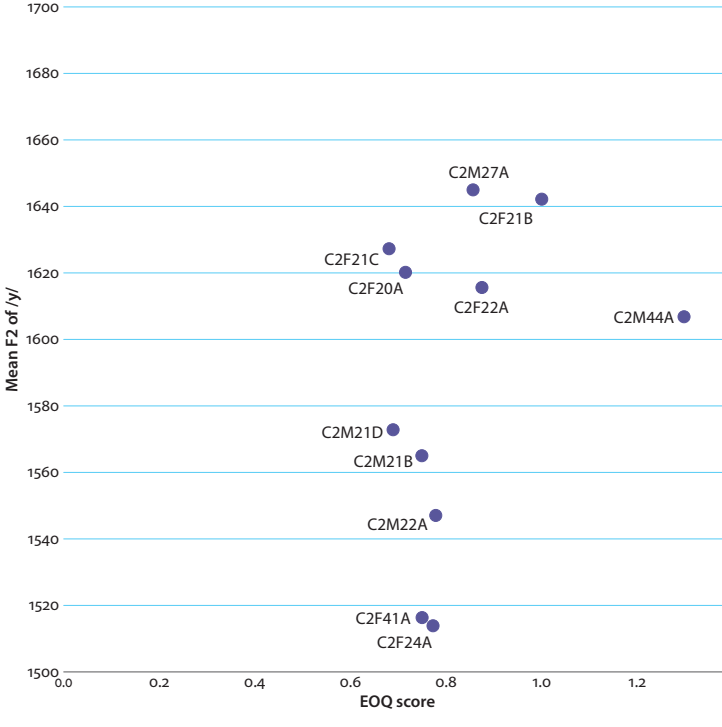

Figure 8. EOQ score vs. mean F2 of /y/

Table 9 shows the results of a mixed effects model with the F2 of /y/ as the dependent variable. The random effects included speaker and word. The fixed effects included CPS, EO Group, and Onset POA. CPS was significant ($p < 0.05$) with higher CPS favoring higher F2 (more front) of /y/. Onset POA was also significant with coronal onsets favoring more front position than non-coronal onsets. The low EO Group produces more retracted (lower F2) variants of /y/ than the high EO group, but this difference was not significant. Nevertheless, the p-value came very close to the $p < 0.05$ threshold. There is also a substantial amount of inter-speaker and inter-word variation that cannot be accounted for based on these factors, as evident in the R^2 value of 0.222 for the random effects in contrast to an R^2 of 0.159 for the fixed effects.

Table 9. Mixed effects model for the F2 of /y/

Random Effects (R^2 = 0.222)				
Speaker, Word				
Fixed effects (R^2 = 0.159)	**Coef.**	**N**	**Mean (Hz)**	***p*-value**
CPS (continuous)	1.257	351	1607	0.047*
EO Group				0.050
High	23.26	228	1631	
Low	−23.26	123	1562	
Onset POA				0.023*
Coronal	32.956	341	1608	
Non-coronal	−32.956	10	1547	

Note. R^2 [total] = 0.381

The vowel /u/

/u/ was hypothesized to be fronted by English-dominant speakers while balanced bilinguals are expected to show more variation. Higher mean F2 indicates more fronting while lower mean F2 indicates less fronting. Figure 9 shows that the two speakers with the most fronting (C2F24A and C2M21B) are also the two speakers with the lowest CPS. For speakers with CPS above 60, we see more variation in terms of mean F2 of /u/. This includes one of the most retracted speakers, C2F21C with a CPS just under 70, as well as the third most fronted speaker, C2M21C with a score of over 90.

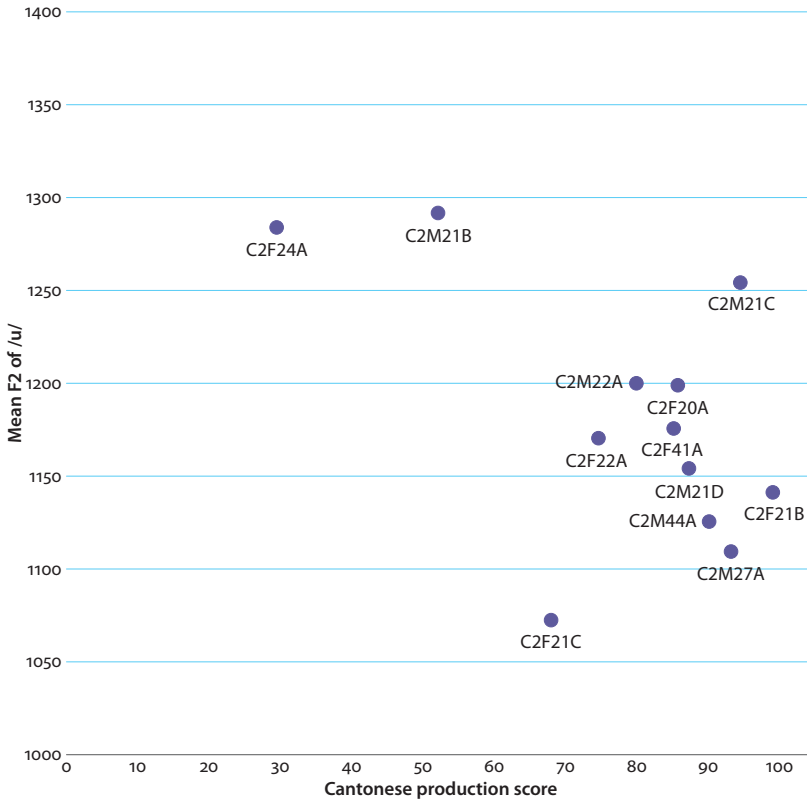

Figure 9. Cantonese production score vs. mean F2 of /u/

Figure 9 is a plot of the relationship between EOQ Score and /u/-fronting. As was the case for /y/ in Figure 8, speakers with low EOQ scores produce a wider range of mean F2. The difference between low and high EO speakers, however, does not appear to be as large as it was for /y/. Unlike for /y/, there is no overall trend showing the more conservative variant being more common among high EO speakers. The two speakers with the highest EOQ scores are at neither extreme end in mean F2 production. Low EO speakers include the speaker with the most /u/-fronting as well as the speaker with the least /u/-fronting.

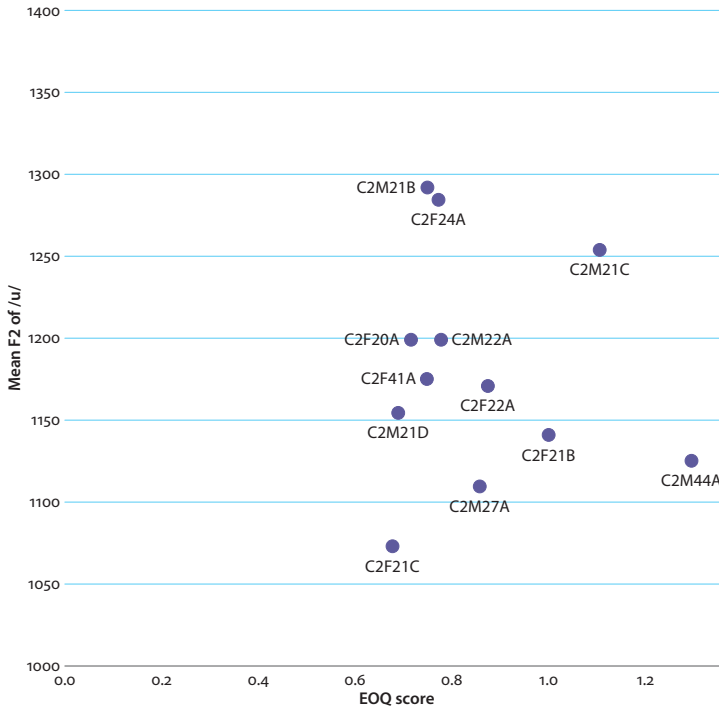

Figure 10. EOQ score vs. mean F2 of /*u*/

Table 10 shows the results of a mixed effects model with the F2 of /u/ as the dependent variable, "speaker" and "word" as random effects, and the same fixed effects as the ones included in Table 9 above (CPS, EO Group, Onset POA). Only CPS was significant at the $p < 0.05$ level. As was the case for the model for /y/, the R^2 of the random effects is also higher than the R^2 for the fixed effects

Table 10. Mixed effects model for the F2 of /u/

Random Effects (R^2 = 0.183)				
Speaker, Word				
Fixed effects (R^2 = 0.144)	**Coef.**	**N**	**Mean (Hz)**	***p*-value**
CPS (continuous)	−1.865	165	1169	0.049*
EO Group				0.703
Low	6.384	54	1208	
High	−6.384	111	1150	
Onset POA				0.133
Velar	14.724	48	1179	
Labial	−14.724	117	1164	

Note. R^2 [total] = 0.327

Summary

To summarize, CPS is significant in both the model for /y/ and the model for /u/. Speakers with lower CPS are more likely to retract /y/ and front /u/. These are both English-influenced variants of these vowels. Onset POA is significant only in the model for /y/. EO Group is not significant in either model, although the p-value comes very close to the $p < 0.05$ threshold in the model for /y/. The plot of EOQ Scores and mean F2 of /y/ still shows a split with high EO speakers producing only front variants and low EO speakers with a very wide range of variability in mean F2. A similar but weaker pattern is found in the plot of EOQ Scores and mean F2 of /u/.

Discussion

Two broad approaches to contact-induced sound change have been discussed earlier. The first approach focuses on child vs. adult acquisition while the second approach focuses on individual linguistic dominance. The study presented in this chapter was designed to empirically address the second approach. Overall, the results support van Coetsem's framework by showing a distinction between English-dominant and balanced bilinguals with the former showing imposition in their production of /y/ and /u/ and the latter showing neutralization. The EO group variable was not significant, although the plots of EOQ Score vs. mean F2 show patterns worthy of further investigation. Although these results highlight linguistic dominance as a factor in sociophonetic variation, there is no reason to believe that linguistic dominance operates in a social vacuum. Instead, linguistic dominance appears to be conditioned by age of acquisition and this may be the case due to social factors.

The results presented in Section 5 show CPS to be a reliable metric for identifying speakers who are most likely to impose English on their production of Cantonese /y/ and /u/. The two speakers with CPS below 60 have among the most retracted variants of /y/ and among the most fronted variants of /u/. With the same speakers showing both retraction of /y/ and fronting of /u/, imposition of English phonology, which lacks a similar high round vowel contrast, seems quite clear. The outcome of /y/ retraction combined with /u/ fronting is a loss of contrast between these two vowels.

For speakers with CPS above 60, neutralization applies. These balanced bilinguals show more variability in the production of both vowels. Some speakers with higher CPS produce more conservative variants of /y/ and /u/ while others produce more English-influenced variants. Under neutralization, the *stability gradient* is not in operation. Thus, those with higher CPS are less constrained in their vowel

production patterns. This means more variation among this group of speakers and that is exactly what is observed in the results.

High EO speakers were expected to pattern similarly with high CPS speakers while low EO speakers were expected to pattern with low CPS speakers. The plots of EOQ score and mean F2 show almost the reverse pattern in terms of variability. It was the low EO group that shows more variability. This pattern appears stronger in the plot for /y/ than it does in the plot for /u/. This could be because those who are less oriented to Chinese culture are less invested in aiming for "correct" pronunciation. Consequently, their vowel production may be less constrained by social factors, so we see more variability. Some of these speakers stick with more conservative pronunciations because that is how they learned to speak Cantonese while others apply imposition and produce more English-influenced pronunciations. Since high EO speakers place higher value on "correct" pronunciation, their vowel production patterns may be more constrained by prestige. This could explain the narrower range of mean F2 for both vowels. In terms of the overall trend, the hypothesis that high EO speakers are more conservative still shows some support. What we find is a narrower range of mean F2 for high EO speakers, but this narrower range involves more front variants of /y/ (the conservative form). Although EO group does not come out significant for either /y/ or /u/, this could be due to the small number of speakers (n = 12). For this reason, EO group is a factor worthy of future exploration especially in terms of how it interacts with CPS. Also worthy of further exploration is the phonetic conditioning effects on /y/. The results show more fronted forms of /y/ following coronals than following non-coronals. It is unclear if this simply reflects a general phonetic tendency for high round vowels to front in this phonetic environment or if this could be further evidence of English imposition since English /u/ has also been described as fronted following coronal onsets (Labov, Ash, & Boberg 2006).

In spite of the support for models based on linguistic dominance, the results of this study do not show age of acquisition to be irrelevant. One point made by Winford (2007; 2013) in support of van Coetsem's framework is the fact that the societally dominant language does not always correspond with the linguistically dominant language for individual speakers. Although this is a valid point, it is difficult to see how this distinction matters for understanding the propagation of sound change in a heritage language when the HLVC data shows a very high degree of alignment between age of acquisition and linguistic dominance. Based on responses to EOQ questions about linguistic preference and linguistic choice, we see an almost categorical split between GEN 1 and GEN 2 speakers, with GEN 1 speakers almost universally Cantonese dominant and GEN 2 speakers being almost universally English dominant. While some of these speakers may be balanced

bilinguals, English-dominant speakers are completely absent in the GEN 1 group while Cantonese-dominant speakers are completely absent in the GEN 2 group. Thus, with so few speakers with individual linguistic dominance not aligning with what is expected based on societal dominance for each generational group, it is not entirely clear what link there may be between variable individual linguistic dominance and broader societal level patterns of contact-induced change.

These patterns have a socially motivated explanation related to age of acquisition. While both GEN 1 and GEN 2 speakers acquired Cantonese as children, they differ in terms of age of acquisition of English. This is related to the societal contexts in which each group grew up. The GEN 1 group grew up in a Cantonese-dominant setting and lacked substantial exposure to conversational English until adulthood while the GEN 2 group learned English at an early age because this group grew up in a city dominated by English. This difference has consequences for individual linguistic dominance. Hoffman and Walker (2010) showed that only GEN 1 speakers show influence from Cantonese in the English they speak. The English spoken by GEN 2 ethnic Chinese is not significantly different from the English spoken by other ethnic groups. Similarly, Cui et al. (2014) showed that the English spoken by GEN 2 ethnic Chinese has a fronted /u/ much as is also the case for the English spoken by ethnic Anglo Torontonians. Thus, societal context conditions age of acquisition of specific languages while age of acquisition within a societal context conditions patterns of individual linguistic dominance. Although this study supports Winford's (2013) point about individual linguistic dominance, it is also clear that age of acquisition cannot be completely ignored. How age of acquisition interacts with linguistic dominance in the development of sociophonetic variation and change remains a question worthy of future research.

Conclusion

To conclude, this chapter has addressed age of acquisition vs. linguistic dominance in accounting for sociophonetic variation among Toronto heritage Cantonese speakers. In doing so, it contributes to the larger goal of bringing variationist sociolinguistics together with the study of acquisition in all its forms. The study presented involved mixed effects modeling, which was not a statistical method used in earlier studies of variationist acquisition (see Chapter 1). The empirical contribution is a focus on Cantonese, which is not a target language that has been as well studied as English in either variationist sociolinguistics or in SLA.

Along with Chapter 12, this chapter contributes to the growing variationist literature on heritage languages. The focus on heritage speakers presents a unique

perspective for SLA research. As Nagy and Meyerhoff (2008) note, variationist sociolinguistics has long focused on monolingual speakers. Meanwhile, SLA studies have long focused on those who acquired their second language as adults rather than as children. The problem with a focus on monolingual speakers is that the first and only acquired language is also the linguistically dominant language. Similarly, the L1 in SLA research is also typically the linguistically dominant language. With heritage speakers, on the other hand, it is typically the second rather than the first acquired language that is the linguistically dominant language. Thus, by focusing on heritage speakers, we can more clearly recognize age of acquisition and linguistic dominance as distinct factors that can affect speech production, at least when there are differences observed between first- and second-generation speakers (see Chapter 12 for an example of a study showing lack of differences). This chapter is a step forward in helping us better understand how all these factors (and many more) interact with each other.

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At the LSA Summer Institute (UC Berkeley) in 2009, Dennis Preston recommended to me his co-edited volume on *Second Language Acquisition and Linguistic Variation* when I asked him about variationist sociolinguistics research and SLA. More than a decade later, I feel very honored and grateful to have the opportunity to contribute to this volume. The material for this chapter originally developed from my doctoral dissertation completed at the University of Pittsburgh. The full text is available at: http://d-scholarship.pitt.edu/35721/. An earlier (and substantially less developed) version of this paper was presented as a poster at the Workshop on Sound Change 5 (2019) at UC Davis. I would like to thank all attendees who provided feedback. This work would not have been possible without the anonymous participants interviewed for the corpus and the many dedicated research assistants involved with the project (see http://projects.chass.utoronto.ca/ngn/HLVC/3_3_former_ra.php for full list of research assistants).

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CHAPTER 6

Spanish rhotic variation and development in uninstructed immersion

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Perhaps due to the salient differences between English and Spanish rhotics, there has been a robust discussion regarding the acquisition of Spanish taps and trills by first language (L1) English speakers. Previous studies that have explored rhotic development have suggested that while there is a significant increase in accuracy of producing taps and trills as Spanish proficiency level increases (Face 2006; Olsen 2012), even advanced learners or learners with intense exposure to the language still face difficulty in producing the trill (Major 1986; Reeder 1998). Despite the contributions of previous studies, it remains unclear how learners develop the tap and trill in real time (as opposed to apparent time), to what extent the two rhotic sounds develop differently, and the role of additional linguistic and extralinguistic factors apart from phonological context and exposure. This study contributes to the discussion of Spanish rhotic development by tracking uninstructed L1 English learners in an Ecuadorian immersion setting for one year, providing an analysis of development in real time. By applying variationist methodology using the mixed-effects model *Rbrul* (Johnson 2009), we explore the role of phonological context, lexical stress, word class, cognate status, target word syllables, proficiency, exposure, speech style, and individual differences in the development of native-like taps and trills. We find that phonological context, word class, exposure, and speech style significantly condition tap production, while there are no significant predictors found for trill production. Furthermore, we see that target tap production accuracy grows throughout the year-long stay abroad, but target trill production shows no improvement.

Keywords: rhotics, Spanish tap acquisition, Spanish trill acquisition, sociolinguistic approaches, uninstructed immersion

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Introduction

Despite the fact that variation pervades second language (L2) speech, up until the late 1980s, variationist approaches to sociolinguistics were mainly limited to research on native speakers (NSs) (Bayley, 2007). Since then, there have been a number of studies that have applied sociolinguistic approaches to the field of second language acquisition (SLA). First applications of the variationist paradigm to SLA (e.g. Adamson & Kovac 1981; Dickerson 1974; Ellis 1987; Tarone 1988; Young 1991) focused on alternations between native and non-native forms, e.g. *Did you drink the milk? vs. *Did you drank the milk?* or between more than one non-native variant, e.g., **Did you drank the milk?* vs. **Did you drinked the milk*? A second strand of research emerged in the following years: the examination and quantification of variable target language structures in SLA (e.g. Adamson & Regan 1991; Bayley 1996; Major 2004). Variation between native and non-native structures which decreases as proficiency improves is referred to as variation along the vertical continuum by Corder (1981) and as Type 1 variation by Mougeon, Nadasdi & Rehner (2004). Variation in non-categorical structures according to NS patterns (sociolinguistic variation) is referred to as variation along the horizontal continuum by Corder (1981) and as Type 2 variation by Mougeon et al. (2004). Studies of both types of variation demonstrate that interlanguage variation is highly systematic and subject to linguistic and extra-linguistic constraints similar to those operating on NS language.

Bayley (2007) notes that the field of SLA can gain significantly from more often incorporating variationist methodology and data analysis into project designs; as such, investigations in SLA could more accurately isolate variables that are affecting acquisition, such as language transfer, the role of the target language, acquisition processes, and sociolinguistic competence. Responding to this call, the current study takes a variationist approach as we explore the development of Spanish rhotics in young adult English speakers who travel to coastal Ecuador to participate in a humanitarian volunteer program for the period of one year. Since these participants work as full-time volunteers, there is no academic element in their program, and they are not instructed or evaluated in their Spanish language development during the year.

We examine rhotic production collected from reading tasks and interviews conducted at three points during the participants' year-long stay, and, in applying a variationist approach, we consider several linguistic and extralinguistic predictor variables through Rbrul analyses. We find that our real time results reflect the findings of previous apparent time studies of rhotic development in some ways, but also present important differences, such as proficiency level failing to serve as a significant predictor of target-like rhotic production. Furthermore, while increased time abroad contributes to tap development, even in the twelfth month of their stay in Ecuador, participants' trill production does not improve.

Background

The rhotic systems of English and Spanish

The Spanish rhotic system is comprised of two main sounds, one generally described as an apico-alveolar tap [ɾ] and the other as an apico-alveolar trill [r]. Both sounds are articulated by rapid contact of the apex of the tongue against the alveolar ridge, with the tap being the result of one single contact and the trill as that of multiple contacts, but generally two or three (Hualde 2005: 181). Although the tongue tip strikes the alveolar ridge in the production of both the tap and the trill, the articulatory gestures required to produce these two sounds differ from one another. The trill is generally considered a more complex segment which requires precise control over the positioning of the articulators and the amount of air flow (Solé 2002). It also demonstrates more dialectal variation, since even a small change in any of the articulatory gestures of the trill can significantly alter the sound produced (Widdison 1998). The trill is among the last segments acquired by NS children (Goldstein 2000; Jiménez 1987), suggesting substantial difficulty in articulatory terms.

As Table 1 illustrates, rhotics appear in six different phonological positions in Spanish: word-initial, syllable-initial following a consonant, complex onset, intervocalic, and syllable-final. Only in intervocalic position does the rhotic system maintain a phonemic contrast, creating minimal pairs such as *pero* 'but' and *perro* 'dog', *caro* 'expensive' and *carro* 'car', *foro* 'forum' and *forro* 'lining'. In other contexts, rhotics are realized as either the tap (in the case of consonant clusters) or trill (in the case of word-initial and syllable-initial following a consonant), or they vary (in the case of syllable-final, where the tap is preferred).

Table 1. Rhotic distribution in Spanish

Phonological context	Example	Prescriptive distribution
Word initial	*rosa* 'rose'	trill
Syllable initial post consonantal	*sonrisa* 'smile'	trill
Intervocalic	*caro* 'expensive' *carro* 'car'	tap/trill contrast
Consonant cluster	*crema* 'cream'	tap
Syllable final	*hablar* 'to speak'	variable, but tap preferred

American English has one phonemic rhotic, a voiced alveolar approximant [ɹ] that varies in the details of the specific articulation in terms of the amount of retroflexion, the amount of lip-rounding, and the exact point of articulation (truly alveolar versus post-alveolar) (Face 2006). Although the alveolar approximate has been found to exist in a limited number of dialects of Spanish, such as in New Mexico

(Cassano 1977), Texas (Sánchez 1973), the Yucatan Peninsula (Lope Blanch 1975), and Puerto Rico (Ramos-Pellicia 2007), it is a sound not typically associated with the majority of Spanish varieties and usually not used in instruction of Spanish as an L2 (Face 2006).

For English L1 speakers acquiring Spanish as an L2, both the tap and the trill may pose articulatory challenges. First, the trill is unlike any sound that exists in American English. Although phonetic dissimilarity sometimes aids in acquisition – since speakers do not have to disassociate or recategorize a sound that already exists in their L1 phonetic inventory (Flege 1995) – in the case of the trill, the articulatory effort and precision required to produce the trill may override any ease that the dissimilarity might grant (Ladefoged & Maddieson 1996; Recasens 1991; Solé 2002). The tap, on the other hand, is nearly identical to the American English alveolar tap produced as an allophone of /t/ and /d/ in post-tonic position, as in words such as *better* and *muddy*). Although this would suggest that American English speaking learners of Spanish should be able to produce the alveolar tap with no difficulty given its existence in their native language, the tap still may pose challenges in two ways. First, the English tap is associated with stops /t/ and /d/, never with rhotics, and therefore learners must learn to recategorize this sound. Secondly, the English tap only exists in post-tonic, intervocalic position, whereas in Spanish, it occurs intervocalically in both pre-tonic and post-tonic positions, and it also occurs word-finally, syllable-finally, and as the second member of a complex syllable onset (Face 2006). Therefore, not only do learners need to remap an existing sound onto a new phoneme, but they also must produce the tap in phonological contexts where the sound is not present in their L1 (Face 2006).

Empirical studies on L2 rhotic development

Over the last decades, several studies have explored rhotic development among L1 English L2 Spanish speakers. These studies have focused on a variety of speaker profiles in different learning contexts, but can be summarized in two main groups: one string has focused on learner development over time, either through cross-sectional or longitudinal analyses, while the other string is represented by variationist studies that have looked at the multiple factors affecting rhotic acquisition.

How rhotics develop over time: Cross-sectional and longitudinal studies

One of the few longitudinal studies on Spanish rhotics is that of Major (1986), who tests the Ontogeny Model (Major 1987), a model for L2 phonological acquisition, using data from four beginning learners of Spanish as they progress through an intensive (eight week, seven hours per day) Spanish course. The model claims that transfer errors (i.e., non-target sounds produced due to the influence of the learner's first language) decrease over time, while developmental errors (i.e., non-target

sounds not attributable to the influence of the learner's first language) first increase but then decrease. For the intervocalic tap, three of the four participants demonstrated improvement and accuracy; one participant improved from 3%-79% accuracy between the first and last recording sessions, one from 10%-73%, and one from 43%-57%. One participant, however, demonstrated no improvement. For the intervocalic trill, only two of the four participants demonstrated improvement. One participant improved from 48% accuracy to 71% accuracy from the first to the last recording session, while another improved from 52% to 100%. The remaining two participants exhibited neither accuracy nor improvement; combined, they only produced 1 trill out of 347 opportunities.

Reeder (1998) conducted a cross-sectional investigation of target-like realizations of the intervocalic trill by 40 Spanish learners at varying levels of proficiency and experience: 10 each of beginning undergraduate students, intermediate undergraduate students, upper-division and graduate students, and full-time faculty members. Categorizing the produced sounds as either target or non-target (examined acoustically and judged by the presence or absence of multiple alveolar closures), Reeder finds evidence to support that experience strongly affects accuracy. While the beginner and intermediate student groups demonstrated only 7% and 13% accuracy, respectively, in producing trills, the upper division undergraduates and graduate students were accurate 37% of the time, and faculty participants 83% of the time. Reeder discusses his results in light of Flege's (1995: 239) Speech Learning Model (SLM), which predicts, among several other hypotheses, that (1) learners will be able to create a new phonetic category for an L2 sound that does not exist in their L1 once they perceive that a sound differs from a similar sound in the L1, (2) the more dissimilar the L2 sound is from the closest L1 sound, the more likely it is that the phonetic differences will be discerned, and (3) new sounds are eventually acquired provided that the phonetic categories are accurately represented. Because the results of the study indicate nearly categorical inaccuracy at low levels of experience and nearly categorical accuracy among very experienced speakers, and because the trill is phonetically dissimilar to the closest L1 sound (the English retroflex rhotic), Reeder finds evidence to support the hypotheses of the SLM.

Face (2006) observed the production of the tap and trill through a cross-sectional analysis of 41 L1 English L2 Spanish speakers (intermediate and advanced) and a control group of 5 L1 Spanish speakers. A reading task eliciting 10 target intervocalic taps and 10 intervocalic trills was administered and tokens were then analyzed acoustically and coded as target or non-target. Results indicate significant differences between learner groups and for each rhotic. Both learner groups were much more successful in producing the tap than the trill, and the advanced learners were more accurate in producing both rhotics than the intermediate group. Analyzing the type of non-target sounds produced, Face also found evidence of different developmental trajectories for each rhotic. For the target tap, most of the

non-target realizations – of which there were relatively few – were attributable to transfer from the L1 (use of the alveolar approximate). For the target trill, even the advanced students had low accuracy, but instead of showing transfer of the American English rhotic, they tended to over-generalize the tap and substituted it in contexts requiring the trill, although Face notes that this occurred even among the native control group. Face suggests that while learning is demonstrated for both the tap (as evidenced by the high level of accuracy achieved) as well as the trill (as evidenced by the abandoning of transfer and the overgeneralization of the tap), the tap is at a more advanced stage of learning.

Face (2018) investigates the ultimate attainment of L2 rhotics by a group of U.S.-born, native English-speaking immigrants to central Spain who are long-time residents. Participants included eight English speakers (of U.S. origin) who migrated to Spain as adults, averaging 67.6 years in age and 36 years living in Spain as well as a group of five, similarly-aged NSs from Spain. The task elicited 75 taps [ɾ] and 26 trills [r]. Several variables were taken into account, but the most relevant was the phonological context in which the phonemes are found. First, it is important to note that the NS comparison group did not demonstrate categorical use of taps and trills in the prescribed contexts. Secondly, the L2 participants achieved results very similar to those of the natives in intervocalic position (both in taps and in trills); however, in other phonological positions, they did not approximate NS performance. Data suggests that even very advanced L2 speakers of Spanish who have lived in an immersive context for an extensive period still experience difficulty in producing native-like rhotics.

Factors influencing rhotic development: Variationist studies

Weech (2009) explored the articulation of rhotics among participants who had spent 18–24 months in immersion in a Spanish-speaking country with the goal of identifying to what extent the long-term immersive experience aided in target-like production of taps and trills. Using a Varbrul analysis (GoldVarbX, Sankoff, Tagliamonte & Smith 2005), he also observed whether or not certain linguistic factors (e.g., neighboring sounds, syllable stress, etc.) and extra-linguistic factors (e.g., previous Spanish instruction, instructors who were NSs of Spanish, speech style, etc.) had influence on their articulation. The results of this study reveal that the participants were generally successful in articulating the Spanish rhotic sounds, with the majority producing target-like rhotics over 80% of the time. Weech found that the two most significant factors in accurate tap and trill articulation are its phonetic context and whether or not the participants had received Spanish instruction prior to having lived abroad. In terms of phonetic context, intervocalic tap and word-final position favored accuracy, while intervocalic trill, word-initial, and post-alveolar consonant (e.g., *Israel*, *honra*, *alrededor*), disfavored accuracy. Spanish instruction prior to immersion favored more accurate productions as well. Lastly,

Weech found that the most common error to occur in the non-target realizations was not the transfer of the English retroflex, but rather the developmental error of overgeneralizing the tap to contexts requiring the trill.

A second variationist (Varbrul) analysis of rhotics is that of Hurtado and Estrada (2010), which examined the role of linguistic and extralinguistic factors affecting the production of Spanish rhotics over English rhotics. Participants included 37 students enrolled in a Spanish pronunciation class who were recorded before and after instructional treatment on rhotic pronunciation. Three linguistic factors (type of vibration, preceding consonant, and position of the rhotic within the word) and two extra-linguistic factors (level of classes abroad and effect of instruction) were found to be significant predictors of Spanish rhotics.

Contributions and research questions

From these studies, we have seen that rhotics, especially trills, are difficult to acquire even after prolonged exposure to the language. In general, we observe beginning learners often substituting the English approximate for both segments; then as they progress in proficiency, they first acquire accuracy in the tap, but overgeneralize the tap to contexts that require the trill. After several years of experience (and in some cases, several decades), some individuals acquire trill accuracy, while others do not. Phonological context seems to be the strongest predictor of rhotic accuracy, with contexts requiring the tap acquired more easily than those requiring the trill.

The present study seeks to contribute to the robust discussion of rhotic development in several important ways. First, most of the previous studies have been cross-sectional analyses, exploring how students of varying proficiency levels fare in apparent time. Only Major (1986) and Hurtado and Estrada (2010) tracked the same students in real time, yet in both of these studies, the time between recordings was limited to a few weeks. The present study tracks the same participants over the course of one year to understand the nature of the individuals' rhotic trajectories.

Secondly, it uses the "principle of quantitative modeling" (Young & Bayley 1996: 253), or the process by which the co-occurrence of a particular linguistic variable and a number of contextual factors – including both the linguistic environment surrounding the variable and extralinguistic factors – are studied. The principle allows researchers to make statements about the likelihood of a co-occurrence of a variable form and any one of the contextual factors of interest (Bayley 2013: 86). At the same time, the quantitative analysis of language variation incorporates the "principle of multiple causes," which holds that multiple factors, rather than a single factor, are usually responsible for the occurrence of a linguistic variable (Young & Bayley 1996: 253). While two of the previous studies have used Varbrul analyses to determine the multiple factors influencing rhotic production, Bayley (2013) notes several drawbacks to this model. First, Varbrul analyses are unable to handle

continuous variables such as time, age, and proficiency. Secondly, this type of model does not allow for the incorporation of random effects, such as individual speaker variation. Recently, Johnson (2009) and Gorman and Johnson (2013) have argued that mixed-effects models are more able to analyze sociolinguistic variation than Varbrul. These models are able to test for interactions between social factors, they account for discrete variables as well as continuous ones, and they have the ability to include individual speaker as a random effect. This last capability is especially important for L2 learners who do not, as a group, meet the typical requirements of a speech community and who are expected to exhibit high levels of individual variation (Kennedy 2012). Lastly, since the model provides three R^2 values – an R^2 for fixed predictors, an R^2 for random intercepts, and a total R^2 value – the researcher is able to determine how much of the variation can be accounted for by fixed and random predictors (see R^2 values below Table 4). It is for these reasons that it was decided that a mixed-effects model, Rbrul (Johnson 2009), would be used for the quantitative analysis of this study.

In light of the findings of previous research, we seek to answer the following research questions:

1. What is the nature of the acquisitional trajectory of Spanish rhotics by L1 English speakers who spend a year in uninstructed immersion?
2. What are the linguistic and extra-linguistic factors influencing target-like rhotic pronunciation?

Methods

Participants

The participant group was comprised of 11 L1 English speakers who were full-time, international volunteers with a humanitarian-focused NGO from the U.S. There were 7 females and 4 males, and participants ranged in age from 22–26 years. All were recent college graduates from different parts of the U.S. with varying degrees of experience in international travel as well as Spanish language proficiency. All had received some formal language instruction in Spanish prior to their volunteer year, but that training varied from 2–10 years. Most had spent at least some time abroad in Spanish-speaking countries, with two having prolonged experience (four months or more) in another country via study abroad. All participants acquired Spanish mainly in the classroom environment. Table 2 provides a synopsis of participants' background and language experience. It also includes other factors relating to their language acquisition and use, their overall Versant test score (explained further in the section discussing instruments), and the OPI equivalent of this score.

Table 2. Participant background and language experience

Name	Age	Sex	Hometown	Previous experience studying Spanish	Previous experience in Spanish-speaking countries	Other	Versant score	OPI equivalent
"Laura"	26	F	Baltimore, MD	HS 2–3 yrs. PS	None	Reports not retaining language learned from college classes due to lack of practice outside of classroom	21	Novice mid
"Ethan"	25	M	Harrisburg, PA	MS, HS 2–3 yrs. PS	Spain: 7d Ecuador: 18d*		24	Novice high
"Tim"	25	M	Walpole, MA	HS ≤ 1 yr. PS	Ecuador: 21d*		29	Novice high
"Nicole"	22	F	Canfield, OH	ES ≤ 1 yr. PS	Dom. Rep.: 10d Ecuador: 10d		37	Intermediate low
"Cherise"	22	F	El Paso, TX	MS, HS ≤ 1 yr. PS	None	Grew up near US-Mexico border; Spanish-speaking boyfriend	39	Intermediate low
"Jack"	22	M	Buffalo, NY	ES 2–3 yrs. PS	Spain: 4m	Reports having learned most of his Spanish through a study abroad with homestay in Spain	41	Intermediate low
"Rachel"	22	F	Los Angeles, CA	MS, HS	Mexico: 10d Costa Rica: 7d Spain: 5d	Reports being surrounded by Spanish growing up in Los Angeles	46	Intermediate mid
"Katie"	22	F	Arlington, VA	ES, MS HS ≥ 4 yrs. PS	Honduras: 3w Spain: 4m	Studied abroad one semester in Spain	46	Intermediate mid
"Daniel"	22	M	Iowa City, IA	HS ≥ 4 yrs. PS	Spain: 1m Guatemala: 10d	Completed a research internship in Spain for one month during undergrad	49	Intermediate mid
"Grace"	22	F	Upper Darby, PA	HS ≥ 3 yrs. PS	Ecuador: 10d	Worked in outreach to Hispanic communities in Philadelphia	49	Intermediate mid
"Sarah"	25	F	Cleveland, OH	ES, MS, HS ≥ 4 yrs. PS	El Salvador: 16d Ecuador: 8d Spain: 6w Peru: 10d	Reports having close friends who come to work in the US each year from Mexico	50	Intermediate mid

Note. *non-consecutive. ES=Elementary school; *MS* = middle school; *HS* = high school; *PS* = post-secondary.

Setting

Upon arrival in Ecuador, the participants were split into two volunteer houses (5 in one, 6 in the other) in two different districts of Guayaquil, both of which were identified by the NGO as two of the most impoverished districts in the region. Participants worked in their communities in different educational and social work capacities during the day, but their primary goal was to live in community, poverty, and solidarity alongside their neighbors. Because of the outward focus of the organization, participants spent the majority of their time outside of the volunteer house with Spanish-speaking neighbors and co-workers. They did return to their houses in the evenings, where they typically spoke English, but also participated in neighborhood functions some evenings and nearly all weekends where they interacted with Ecuadorians nearly exclusively in Spanish.

Instruments

One week prior to departure for Ecuador, the participants completed four tasks: a *Versant* oral proficiency test, a background questionnaire on language acquisition and experience, a reading task, and a sociolinguistic interview. The interview and production task were then repeated during the sixth and twelfth month of their volunteer year. The first author administered the tasks during the first data collection interval and a native Ecuadorian research assistant trained in sociolinguistic methodology administered the tasks at the second and third interval. The instruments are described in more detail below.

Versant oral proficiency test

The *Versant Spanish Test*, which is based on Levelt's (1989) model of speech production, uses spoken prompts in Spanish of NSs from a variety of Spanish-speaking countries to elicit oral responses from students. It consists of seven sections (Reading, Repeats, Opposites, Short Answer Questions, Sentence Builds, Story Retelling and Open Questions). Within five minutes of test completion, it provides an overall score and its equivalent score on other proficiency tests, as well as four subscores in the areas of sentence mastery, vocabulary, fluency, and pronunciation. It has been tested for validity and correlates highly with other well-known proficiency measures such as the American Council on the Teaching of Foreign Languages (ACTFL) Oral Proficiency Interview (OPI), the Interagency Language Roundtable Language (ILR) interview Speaking Proficiency Test (SPT), and the Common European Framework of Reference for Languages (CEFR) (Pearson 2011: 22). This

test was chosen because it provides nearly instantaneous, objective, highly reliable results regarding students' abilities to speak and understand spoken Spanish.

Background questionnaire
Participants completed a questionnaire (Appendix A) prior to arrival in Ecuador which elicited demographic information, previous education and experience in Spanish and other languages, previous international experience, and reasons for wanting to participate as a volunteer.

Reading task
In order to test a more careful speech style, participants completed a reading task in which they were asked to read a total of 72 sentences containing either a word or short phrase with a target rhotic ($N = 43$) or a distractor ($N = 36$) embedded in a carrier phrase (see Appendix B). Rhotics appeared as intervocalic taps, intervocalic trills, word-initial trills, in consonant clusters, and in syllable-final position.

Sociolinguistic interview
Following sociolinguistic research methodology (Tagliamonte 2006), participants engaged in an informal interview in Spanish. The goal of this interview was to obtain natural speech data. Sociolinguistic interviews generally progress from general, impersonal, non-specific topics/questions to more specific, personal ones (Tagliamonte 2006: 38). Labov (1984) describes that the optimal questions for eliciting natural speech are those that ask participants to narrate specific personal experiences. During the interviews, which lasted 20–40 minutes (depending on individual language proficiency), participants were asked questions about their family, education, health, and daily routines. For the sixth and twelfth month intervals, the interview included questions that elicited a reflection of personal experience such as the most exciting moment they had experienced during the previous month, a specific injustice they had witnessed in their community, a person they had met in Ecuador whom they admire, the best or worst day of the last month, among others.

Analysis

Rhotic extraction and classification
As outlined above, 43 rhotic tokens were extracted from the reading task for each participant three times during their year abroad, for a total of 129 reading style rhotics per participant. For the interview data, approximately 50 tokens were

collected from each participant for each of the three recording intervals, beginning with minute 5 for the majority of the interviews. It should be noted that due to the initial lower proficiency of three participants, for the month zero it was necessary to begin extracting rhotic tokens from minute 0 of the interview. Even with this alteration, two participants produced very little speech and thus their rhotic count is considerably low for the month zero data, with $N = 36$ for Ethan and $N = 8$ for Laura. The corpus of data extracted from the reading task and interviews combined resulted in a total of 3003 tokens: 927 consonant clusters, 879 intervocalic taps, 893 syllable-final rhotics, 253 word-initial trills, and 51 intervocalic trills.

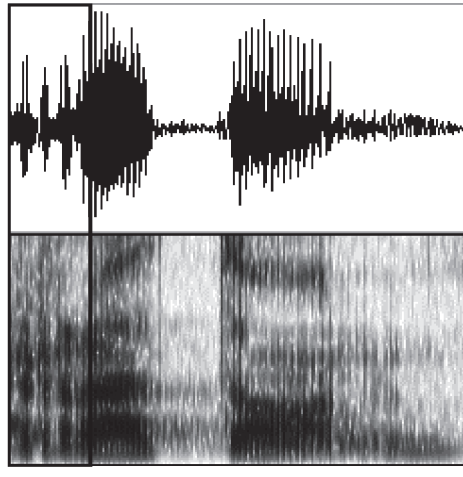

Figure 1. Waveform and spectrogram of the word *ratón* with a target trill

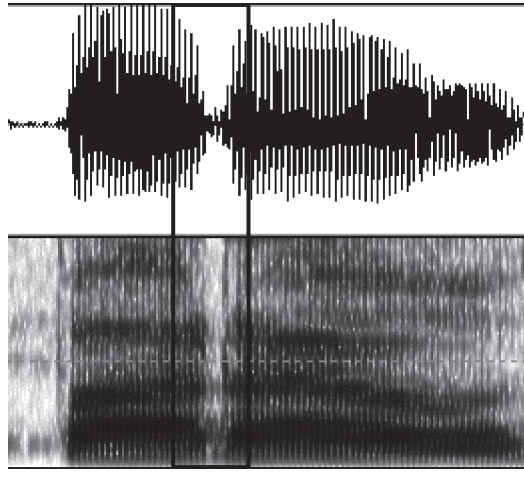

Figure 2. Waveform and spectrogram of the word *para* with a target tap

Once the data was collected, the researchers were tasked with examining each rhotic token and classifying it as either the English approximant, a tap, a trill or a form of interlanguage. Segments that included both a tap and the English approximant together were coded as examples of interlanguage. In order to classify the rhotic segment, each token was examined in Praat (Boersma & Weenick 2019), and those elements that showed a clear closure were classified as taps, as seen in Figure 2 with the word *para*, while those showing multiple closures were classified as trills, as shown in Figure 1 with the word *ratón*. Figures 3 and 4 show examples of rhotics coded as English (Figure 3) and Interlanguage (Figure 4).

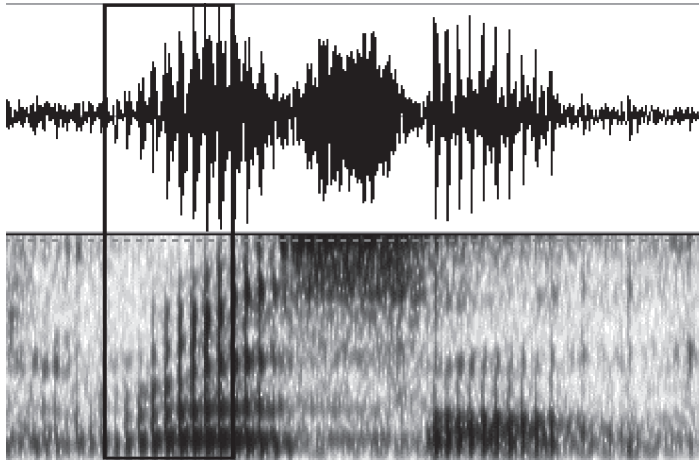

Figure 3. Waveform and spectrogram of the word *razón* with a target trill pronounced as [ɹ]

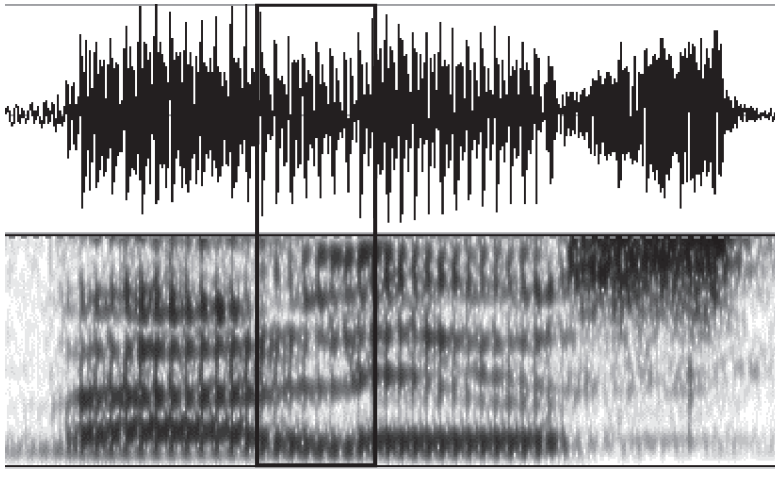

Figure 4. Waveform and spectrogram of the word *varios* with a target tap pronounced as [l]

The first 1419 tokens, that is, the reading task data, were coded by both researchers.[1] For those instances in which the authors did not agree on a particular classification, a third coder[2] was brought in to categorize the segment. After the ample training on the reading task data, the last 1584 tokens, that is, the interview data, were divided in half, each author classifying the rhotics from one and a half recording intervals.

Statistical analysis

In order to discover the factors that were wielding a significant effect in the realization of our participants' rhotics, the statistical analysis tool Rbrul (Johnson 2009) was run through the software R (R Core Team 2019). The dependent variable used in the analysis was *target-like pronunciation*. If the target was a tap, all instances classified as *tap* were labeled as *target-like* while any other realization of the target was coded as *non-target*. When the target was a trill, all tokens classified as *trill* were labeled as *target-like* and any other realization, including a tap, were considered *non-target*. Target tap contexts included an intervocalic tap (a single <r>) as well as a context of the second element of a consonant cluster. Target trill contexts included an intervocalic trill position (a double <rr>) and a word-initial position. Given the extremely low rate of syllable-initial post consonantal target trill words in the interviews ($N = 3$), this context and the corresponding data points were excluded from the analysis. Finally, for a syllable-final position, either Spanish variant – the tap or trill – was considered a target-like realization.

There were ten independent variables considered in the analysis, five extralinguistic and five linguistic. The first extralinguistic factor was the recording interval, or the time during a year stay abroad that the recording was made. Recordings were taken one week prior to departure (month zero), after six months and after twelve months. The next extralinguistic factor was *style*, which referred to whether the rhotic token was part of a reading task or part of the interview data. Other extralinguistic independent variables included the initial Versant score (a continuous factor), the OPI equivalent score of each participant (a discrete factor), and whether or not the participant had previously studied abroad.

The five linguistic factors considered in the analysis as independent variables were phonological context, word class, the number of syllables in the word, the stress of the rhotic syllable, and whether the target word was a cognate of English. The phonological contexts considered included an intervocalic tap, consonant

1. The researchers are both native English speakers with a high proficiency in Spanish, acquired past adolescence.

2. The third coder is a NS of Spanish from Spain with a high proficiency in English, acquired during adolescence.

cluster, syllable-final, word-initial, and intervocalic trill. The levels within the factor group of word class included conjunction, preposition, adjective, adverb, noun, infinitive verb, conjugated verb, and gerund. For the variable of cognate status, the definition of cognate that was adopted was that of a word that has a similar form and meaning as its corresponding English translation.

In addition to the independent variables outlined above, participant and word were included in the Rbrul model as random effects. In carrying out the analysis, three models were run. The first model included the entire data set, and the next two were run with distinct subsets based on phonological environment, the first analysis examining a target tap context and the second analyzing the rhotics produced in an obligatory trill position.

Results

First, the overall distribution results for the study are presented along with the statistical analysis results supporting the further separation of the data into two groups: target tap and target trill. Next, the results from the analysis of the tap data are detailed, followed by the results of the trill data. Throughout the results section, the statistical analyses are presented with Rbrul centered factor weights in which a weight of 0.5 represents a neutral effect while those closer to 1 demonstrate an effect that favors a target-like rhotic production, while those closer to 0 represent an effect that disfavors a target pronunciation. Although the log-odds scores are given in each table to provide a more familiar statistic for those outside the variationist tradition, they are not discussed here since they are consistent with the Rbrul factor weights. The center or neutral position for log-odds scores is 0.0 not 0.5.

General rhotic results

The overall results show that trills are clearly more difficult for participants to produce than taps, with only 12.1% of all required trills being produced in a target-like manner, compared to 49.9% of required target taps that were produced. As for environments where the target rhotic is variable, that is, in syllable-final position, a target-like rhotic was produced 22.1% of the time. Within the 22.1% of all syllable-final rhotics realized as a target-like variant, 90.4% of them were produced as taps ($N = 178$) while 9.6% were produced as trills ($N = 19$). The distribution of the variants produced are shown in Figures 5 and 6.

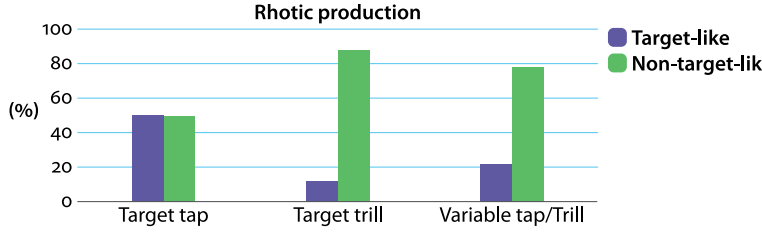

Figure 5. Distribution of target-like rhotic production

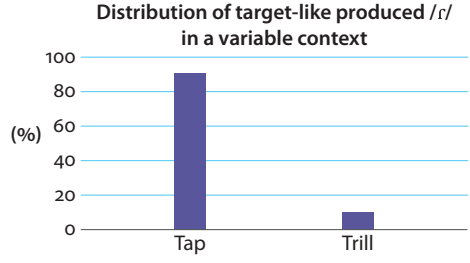

Figure 6. Distribution of target-like variants in a variable context

This finding is further supported by the logistic regression conducted on the rhotic data as a whole. Here the phonological environment was shown to significantly condition whether the variant produced was the target ($p < 0.001$). Contexts that require a tap, that is, an intervocalic tap position and consonant cluster context, strongly favor producing the target rhotic (0.759 and 0.752), whereas contexts which require the trill, that is, an intervocalic trill position and word-initial context, strongly disfavor a target-like pronunciation (0.253 and 0.328). Furthermore, a context that allows for free variation, a syllable final position, disfavored a target-like pronunciation (0.389).

Table 3. Rbrul results for all rhotic data for phonological context

	N	Log odds	% Target-like	Weight
Phonological context				
Intervocalic tap	879	1.146	52.5	.759
Consonant cluster	927	1.109	47.7	.752
Syllable final	893	−0.452	22.1	.389
Word initial	253	−0.718	13.4	.328
Intervocalic trill	51	−1.085	11.8	.253
Total/**Input**	3003		38.0	.237

Notes. *df* = 17, intercept = −1.168, log likelihood = −1529.714, $p < 0.001$.

Given that the rhotic distribution presented above shows that target-like production of rhotics differs greatly depending on the particular variant and that the factors affecting said acquisition will therefore also vary, it was decided that the statistical analysis should be conducted separately for each set of target variants. Because a variable context was overwhelmingly produced as a tap (see Figure 6), it was included in the tap analysis, while the trill analysis was reserved for those contexts in which a trill pronunciation was obligatory.

Target tap results

The target tap analysis included 2701 tokens, made up of all variants produced for contexts in which a tap is either required or may variably appear, that is, in an intervocalic position, as the second element of a consonant cluster and in a syllable-final position. The Rbrul analysis identified two extralinguistic factors, recording interval and style, and two linguistic factors, phonological context and word class, as significant predictors of target pronunciation. The initial Versant score and equivalent OPI score, whether the participant had studied abroad, the number of syllables in the word, the stress of the syllable with the rhotic, and whether the target word was a cognate of English were all not significant factors in the realization of the tap.

The first factor, the interval in which the recordings were made, was significant at the $p < 0.001$ level. As can be seen in Figure 7, target-like tap production remains relatively similar between month zero and month six of the participants' year-long stay in Ecuador. The Rbrul analysis reflects this, showing that both recordings from the month zero interval and six-month interval mildly disfavor a target-like tap production at .431 and .467, respectively. It is a twelve month stay that favors target-like tap production in the participants at .601. As can be seen in Figure 7, month twelve is indeed the interval in which most taps are produced; however, at 47.4% target-like production, participants still do not produce target taps even 50% of the time.

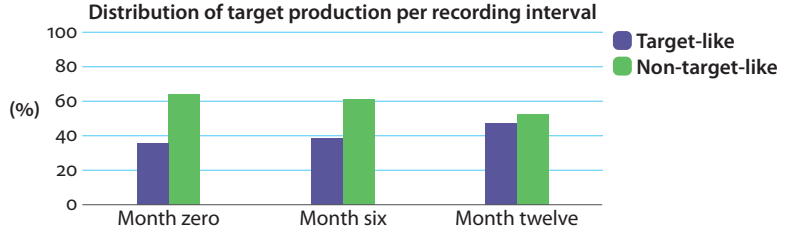

Figure 7. Distribution of target tap production across one year abroad

The second significant extralinguistic factor was style, that is, whether the target rhotic appeared while reading or during the interview. Reading style disfavored a target-like pronunciation with a factor weight of .453, while an interview style slightly favored a target-like pronunciation with a weight of .547. This is further supported by the fact that 36.5% of the rhotics produced during a reading style were the English approximant, compared to 28.1% of the rhotics produced during an interview.

Next, the first of the two linguistic factors found to significantly condition rhotic production in the tap analysis was the phonological context, $p < 0.001$. Here we see that the two contexts in which a tap is obligatory, intervocalic tap and the second element of a consonant cluster, both favor a target-like tap pronunciation with factor weights of .636 and .628, respectively. While each of these contexts nearly equally favors a target-like pronunciation, as illustrated in Figure 8, it is only in the intervocalic position that the participants' target-like production surpasses the non-target realizations of the phoneme at 52.4%. In contrast to the required tap contexts, the variable context of a syllable-final position very strongly disfavors a target-like rhotic pronunciation with a weight of .254. We remind the reader here that in this position, a speaker may variably produce a tap or trill, although our participants only produced the trill 19 times out the 197 target-like productions in syllable-final position.

The final significant factor established was word class, $p = 0.021$, in which the Rbrul analysis shows that words with a more grammatical function favor a target-like pronunciation. Specifically, both conjunctions and prepositions favored a target-like pronunciation with a factor weight of .699 and .643 respectively. A conjugated verb only very slightly favored a target-like pronunciation with a factor weight of .525 while a gerund is even more neutral in its effect with a weight of .503. Disfavoring a target-like pronunciation are infinitives (.372), adjectives (.382), adverbs (.424) and nouns (.441).

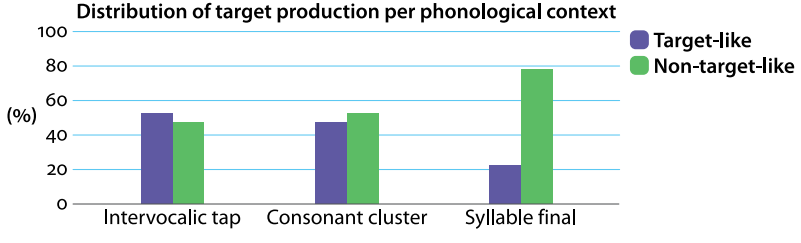

Figure 8. Distribution of target tap production by position

Table 4. Rbrul results for target tap data

	N tokens	Log odds	% Target-like	Weight
Recording interval				
Twelve	933	0.410	32.4	.601
Six	920	−0.133	38.7	.467
Zero	846	−0.277	52.3	.431
Style				
Interview	1511	0.188	45.1	.547
Reading	1188	−0.188	35.2	.453
Phonological context				
Intervocalic tap	879	0.557	52.5	.636
Consonant cluster	927	0.522	47.7	.628
Syllable final	893	−1.078	22.1	.254
Word class				
Conjunction	197	0.843	55.3	.699
Preposition	230	0.590	57.4	.643
Conjugated verb	168	0.102	54.2	.525
Gerund	23	0.013	52.2	.503
Noun	1236	−0.238	37.2	.441
Adverb	109	−0.305	32.1	.424
Adjective	352	−0.479	43.8	.382
Infinitive	384	−0.525	27.9	.372
Total/**Input**	2701		40.7	.119

Notes. *df* = 16, intercept = −2.002, log likelihood = −1421.17. Recording interval: $p < 0.001$. Style: $p = 0.009$. Phonological context: $p < 0.001$. Word class: $p = 0.021$. R^2 fixed: 0.153, R^2 random: 0.319, R^2 total: 0.472.

Target trill results

The target trill analysis included 307 tokens, made up of all variants produced in a context that mandates a trill production, that is, in an intervocalic or word-initial position.[3] An Rbrul analysis of the trill data found that none of the independent variables considered (recording interval, style, initial Versant and OPI scores, whether the participant had studied abroad, phonological context, word class, the number of syllables in the word, the stress of the syllable with the rhotic and whether the target word was a cognate of English) significantly conditioned whether or not a trill was accurately produced. Participants were simply unable to produce the trill variant,

3. We remind the reader that a word-internal syllable-initial context was discarded due to the minimal number of tokens ($N = 3$) found in the interviews. Note that of these 3 tokens, 1 produced a target-like trill while the other 2 were non-target-like productions.

with a total target-like production rate across the data of only 12.1%.[4] The trill was so difficult, in fact, that four of the eleven participants were unable to successfully produce a trill even once. Furthermore, as reflected in the insignificant Rbrul results for recording interval, we see that 12 months was not enough to see any improvement in the trill production of those that were able to pronounce it, participants producing trills between 10–13% across the intervals, as shown in Figure 9.

It should be noted that while only 12.1% of required trills were produced as the target variant, 16.9% of the tokens produced in obligatory trill contexts were realized as taps. Aligning with previous literature (Face 2006; Major 1986; Weech 2009), it appears our participants use the tap as a strategy for producing a Spanish <r> in places where context dictates a trill (see Figure 10) and that this strategy is used more often as time in-country progresses.

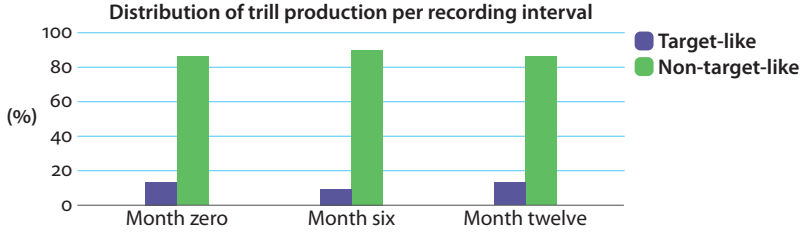

Figure 9. Distribution of target trill production across one year abroad

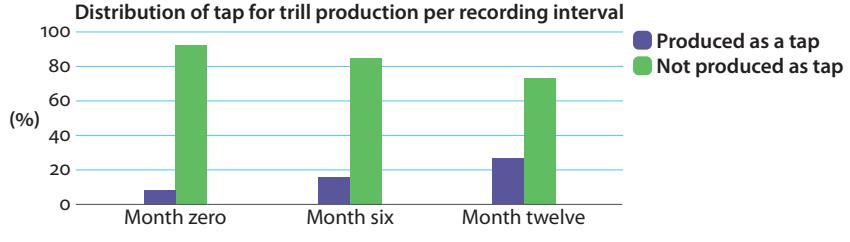

Figure 10. Distribution of trills produced as taps across one year abroad

4. $N = 37/307$. This does not include the 19 trills produced out of the 893 syllable final tokens included in the tap analysis. These 19 trills were used by just four of the nine participants, Cherise, Rachel, Grace and Katie. Cherise ($N = 6$) and Rachel ($N = 5$) only produced trills in a syllable-final position in month zero, while Katie ($N = 3$) only produced a syllable-final trill in month twelve.

Discussion

The findings of our multivariate analysis support one of the main tenants of sociolinguistics – that language variation is not random, but instead characterized by "structured heterogeneity" (Weinreich, Labov & Herzog 1968: 99–101). That is, speakers' choices among variable linguistic forms – be they conscious or unconscious decisions – are systematically constrained by multiple linguistic and extralinguistic factors that reflect underlying grammatical systems. In this section, we discuss how these multiple factors are simultaneously exerting force on the realization of Spanish rhotics. Since we find evidence to support the separation of taps and trills (as different factors were found to be significant in the realization of each sound), we discuss our findings separately as well.

Tap analysis

Both the significant and insignificant factor groups detected through the Rbrul analysis tell us important information about the nature of the acquisition of taps for L1 English–L2 Spanish speakers. First of all, while participants' accuracy over the course of the immersion experience did improve (from the initial rate of 35.7% to 38.6% at six months and finally 47.4% at twelve months), even after a year abroad, they were still accurate slightly less than half of the time. This improvement varies substantially by individual,[5] both in terms of the final accuracy achieved and also with regards to the amount of improvement experienced. The final interval accuracy varied from 8.4% to 77.9% (mean 51.5%, median 48.8%) with some participants making large jumps between intervals (for example, Katie, who went from 35.7% to 59.3% to 77.9% accuracy across the three intervals), but others remaining stable throughout the year (for example, Cherise, who went from 56.6% to 56.1% to 60.7% accuracy across the three intervals). Overall, these results support the large body of research demonstrating high levels of variability in interlanguage speech (Dickerson 1975; Ellis 1985; Tarone 1983, 1985).

Accuracy levels of our participants compare to the results of most previous studies when taking into account methodological differences. For example, Major's (1986) participants went from 12% accuracy in tap production at the beginning of the seven-week intensive course to 32% by the end. Major's participants had faster gains over a shorter period of time than our participants, perhaps due to the

5. The variation seen at the individual speaker and individual word level that is not accounted for by the fixed predictors is evidenced in the R^2 value of 0.319 for the random effects in contrast to an R^2 of 0.153 for the fixed effects. In other words, the mixed-effects model explains more of the variation than a fixed-effects model.

structured nature of their immersion, but did not reach the same accuracy levels. The greater accuracy of our participants is most likely due to the fact that they spent a much longer time in immersion than his. In contrast, our participants did not fare as well as those of Face's (2018) ultimate attainment study, which demonstrated 75.7% accuracy in taps, however, these results are expected since his participants had experienced a much longer immersion – sometimes decades more – than our participants. Considering only intervocalic taps, our participants at 52.4% accuracy performed similarly to Face's (2006); his fourth semester participants were 48.5% accurate, but ours did not reach the accuracy level of his advanced majors and minors, who were 78.7% accurate. It is logical that our participants fell between these two groups considering that eight of the eleven had an initial OPI rating between intermediate-low and intermediate-mid, and seven participants had studied Spanish in college for more than two years. It should be noted that Weech's (2009) participants, who demonstrated between 96–100% accuracy depending on the context, performed well beyond those of previous studies, aligning more closely with the NSs in Face (2018). In the case of Weech's participants, it is unclear why they were so much more successful than L2 learners living abroad for both longer periods (Face 2018) and shorter periods (i.e. the current study).

Phonological context was also a significant predictor of tap accuracy, with participants more likely to produce the target in an intervocalic position (52.5%) and in consonant clusters (47.7%) than in a syllable-final position (22.1%). These results are in line with those of Face (2018) who found the three positions to fall in the same order in terms of accuracy, although the levels of accuracy were higher in each of the contexts for Face (again, likely due to the prolonged amount of time in immersion). Face (2018: 72) mentions that the high accuracy in intervocalic position may be due to the importance of this context from the perspective of accurate communication; that is, that learners, aware of the phonemic contrast between taps and trills, may be more likely to produce target rhotics, whereas in the other contexts, where a phonemic contrast does not exist, a non-target-like rhotic will not cause a change in meaning and therefore there is less riding on their ability to produce target rhotics. High accuracy in the intervocalic position may also be related to a hypothesis put forth by Olsen (2012) – that L1 articulatory routines affect those in the L2. Since in English, the tap (pertaining to /t/ and /d/) always occurs in an intervocalic position, it may be easier for L2 Spanish speakers to produce the sound in the same context in which it already exists in their L1. This may also be the reason that a syllable-final rhotic is much harder to acquire; that is, unlike the intervocalic position L1 English speakers are used to, in the syllable-final position there is no vowel following the short interruption in airflow created by the tap. In the same vein, we suggest that the consonant cluster position is easier than the syllable-final rhotic for our participants precisely because the tap is still followed by a vowel. Another factor possibly

contributing to the difficulty of syllable-final rhotics is the fact that it is a variable context, which the participants may find confusing.

When looking at cross tabulations for phonological context and interval, one interesting finding is that for intervocalic taps – the position that favors highest accuracy; participants did not demonstrate consistent growth at each interval. For the two other phonological positions – consonant cluster and syllable-final – however, participants evidenced growth at each interval. This finding suggests that learners may be aware earlier in the acquisitional journey of the importance of intervocalic rhotic realization due to its phonemic status in that position, but may be less conscious of target-like pronunciation in other positions (similar to claims made by Face (2018)). It could also reflect that the immersion is more powerful in improving the contexts in which the tap does not occur in the L1 (consonant cluster and syllable-final) since the participants are accustomed to hearing the tap in intervocalic position but need additional input to acquire it in other positions.

Participants were also more likely to produce target taps in the interview as compared to the reading task. Although increased attention to speech usually correlates with forms that the speaker would consider more "correct," in this case we find the opposite effect. We suggest that this may be the result of the grapheme <r> representing a different phoneme in English, perhaps triggering English cues. Indeed, it is precisely because of this grapheme impact that some textbooks designed to teach L1 English students Spanish phonetics choose to circumvent the grapheme influence by including pronunciation exercises based on images alone (e.g., Morgan 2010).

The last significant factor group was word class, with conjunctions, prepositions, and conjugated verbs favoring accuracy, while those more lexical in nature – nouns, adverbs, adjectives, and infinitives – favored inaccuracy. We suggest that this effect may be similar to that working on style; participants may rely more on visual representations of these lexical items, perhaps learning vocabulary along with their visual cues such as the grapheme <r> that may trigger English transfer. On the other hand, since many conjunctions and prepositions are high frequency words that serve a grammatical function– in particular *pero* 'but' (conjunction), *por* 'by/for' (preposition), and *para* 'for' (preposition) – it is likely that the participants received a greater quantity of input of these words during immersion than less frequent ones, resulting in a denser mental representation of native-like taps for those words. Also potentially influencing word class is the fact that infinitives by definition have a syllable-final rhotic, and therefore the low accuracy seen among this word class might be affected by the phonological position of the rhotic and not necessarily the word class alone.

Just as the significant factor groups tell us important information about the acquisition of target taps, the insignificant groups do the same. Most strikingly was the

fact that both measures of initial proficiency – the Versant score (continuous) and the OPI score (discrete) – did not predict accuracy. This is a curious finding given that in cross-sectional studies such as Face (2006), participants varied in rhotic accuracy based on how long they had studied the language, logically with those with greater experience performing better than those with less. The fact that our results do not show the same tendency may be a result of our limited number of participants. Perhaps a larger participant pool would indeed show a proficiency effect. It is important to note, however, that in cross-sectional studies, different proficiency levels receive distinct levels of input, whereas in the current study, participants of different initial proficiency levels all lived in the same immersive environment. Furthermore, as participants' language abilities were not tested past their initial evaluation, it is impossible to know whether *final* proficiency, that is, at the end of the twelve-month stay, played a role in accuracy.

Similar to proficiency level, a study abroad experience prior to the volunteer year was not a significant predictor of accuracy. In fact, one of the two participants who previously studied abroad for one semester or more, Katie, was the second most accurate in tap production of the group at 57.8%, but the other participant, Jack, was the least accurate of the entire group at 3.2%, despite being in the middle of the group in terms of proficiency. This finding is incongruent with that of Hurtado and Estrada (2010) which did find that the more classes abroad their participants had, the greater their accuracy in rhotic production. The lack of effect again may be due to the limited number of participants, or simply reflect the variability of interlanguage, like that found in Face (2006, 2018) and Major (1986). Whatever the case, it suggests that learners do not follow the same trajectories in terms of the different skills they develop over time, even when they share an experience such as study abroad.

Trill analysis

Similar to the results of previous studies (Face 2006; Reeder 1998), trills were found to be significantly more difficult for learners to acquire than taps, with an overall accuracy rate of 12.1%. Our participants fare similarly to Face's (2006) fourth semester and advanced majors/minors, who produced accurate trills 5.1% and 26.6% of the time, respectively, and similarly to those of Reeder (1998), whose intermediate undergrads demonstrated 13% accuracy. They do not, however, align with those of Weech (2009), whose participants achieved 56% accuracy. However, like his tap results, Weech's trill results fall well outside of the range of previous studies, with his participants being more accurate than many of Face's (2018) L2s who spent decades

in immersion and even producing more trills than some of Face's NSs. Although it was not surprising to find that trills were difficult for participants to produce, it was surprising to see that interval was an insignificant predictor, meaning that in general, learners did not improve in their trill accuracy over the course of the immersion experience. However, considering that learners do not approximate native-like trills even after decades of immersion, as in the case of the participants of Face (2018), it is understandable that our participants were low-performing and stagnant in their trill production. Given the dearth of improvement seen in uninstructed immersion and considering that Hurtado and Estrada (2010) and Reyes Morente (2019), among others, have found a positive effect of explicit instruction on trill production, we recommend that instructors consider teaching pronunciation of the trill in particular in order to speed up the development of rhotic accuracy.

Lastly, our data supports previous research (Face 2006, 2018; Major 1986; Weech 2009) claiming that learners often utilize the strategy of substituting taps for trills, rather than only substituting English-like variants. This is interpreted as a developmental error by Major (1986, 2001), or an error resulting from the substitution of a perceptively similar and often simpler sound from the target phonological system, rather than a transfer error, which is the result of transferring a similar sound from the L1. According to his Ontogeny Model (Major 1987), developmental errors first increase and then decrease over the course of language learning process. Among our participants, the tap-for-trill substitution strategy increases across the recording intervals. Applying the Ontogeny Model to our data, then, it would suggest that our participants are still in the first half of the developmental phase of language learning (see Figure 11, adapted from Major 1986).

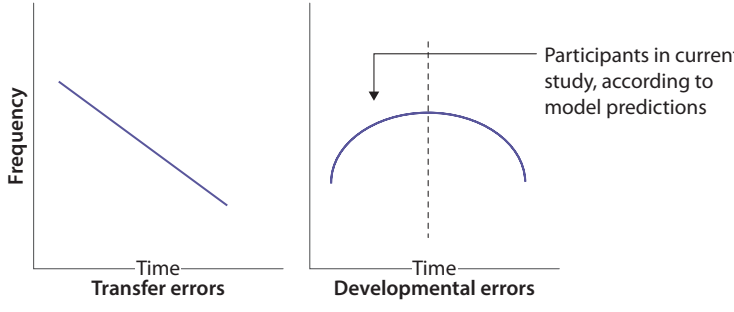

Figure 11. Relationship of transfer and developmental processes to time, adapted from Major (1986), and the application of the ontogeny model to current data

Conclusion

This study contributes to the growing body of SLA research that leverages sociolinguistic methodology in order to better understand the multiple factors contributing to variation in interlanguage. Specifically, we examine how learners navigate the rhotic system of Spanish – considered a form of Type 2 variation – in an understudied context: uninstructed immersion. While there is a substantial amount of research on Spanish rhotic development, there are some gaps within the field. Specifically, we identified a need for longitudinal (as opposed to cross-sectional) studies, those that focus on uninstructed learners, and those that take into consideration multiple factors – both fixed and random effects – in their statistical analysis of variables that may be conditioning the use of one sound over another. Responding to those gaps, we perform a longitudinal analysis of rhotic development of L1 English L2 Spanish uninstructed learners living and working in coastal Ecuador as humanitarian volunteers over the course of one year, using a mixed-effects model (Rbrul, Johnson 2009) to understand the factors contributing to their rhotic production.

Our data shows that while the participants progressed in their tap production, their trill production did not improve. These findings differ from those of Pozzi (Chapter 8, this volume), who, in studying three sociolinguistic variables in the Spanish of L2 speakers studying in Argentina, found that perceptually salient forms were more likely to be adopted than less salient ones. In this study, despite the trill being perceptually salient (Amengual 2016), we see very low rates of production among participants.

Furthermore, it was discovered that phonological context, word class, interval abroad, and speech style were all significant predictors of tap realization, but no fixed variables were significant predictors of the trill. Our findings do support those of previous research that demonstrate great variation in individual language acquisition. It remains for future investigation to delve deeper into the individual trajectories of each participant in their rhotic development. Moreover, qualitative ethnographies may help to shed light on the highly variable individual differences seen among the participants. Finally, an additional avenue for future study is to further tease apart the independent variable effects of word class and phonological context, as significant overlap exists between the two, particularly between the syllable-final rhotic and infinitive verbs as well as the frequent conjunction and preposition *pero* and *para* and an intervocalic context.

In adding to the body of knowledge regarding Spanish rhotic development, we would like to note that the findings from this real time study can inform classroom instruction in important ways. First, the phonological context of syllable-final position detracted from a target-like tap realization, suggesting that explicit instruction on tap production should dedicate more time to this particular context. Second, the

fact that a reading style disfavored target-like tap production suggests that perhaps instructors should explicitly emphasize the differences between the grapheme *r* and the particular phonemes it represents in the two languages and even that reading should not be the first form of introduction to vocabulary. Third, as aforementioned, while learners may eventually acquire a tap after several months abroad, the trill most likely will not be acquired, and explicit instruction may be essential for the development of this sound.

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Appendix A. Background questionnaire

This form asks a few questions about your experience learning/speaking Spanish prior to traveling to Ecuador. Please complete all questions to the best of your ability.

First and last name:
Age:

Did you speak any other language(s) apart from English at home growing up?
This could include languages you spoke to parents, extended family, caregivers, etc.

☐ Yes
☐ No

If your answer is 'yes', please state what language(s) you spoke and to what extent you currently speak that language.

Did you study Spanish prior to entering college?
Choose all that apply

☐ Yes, in elementary school
☐ Yes, in middle school
☐ Yes, in high school
☐ No, I did not study Spanish in school

Did you study Spanish during college?

☐ Yes, for one year or less
☐ Yes, for 2–3 years
☐ Yes, for 4+ years
☐ No, I did not study Spanish in college

If you have studied other languages in school BESIDES SPANISH, either prior to college or during college, please mention them here and include approximately how long you studied the language.

Have you spent any time abroad in a Spanish-speaking country? If so, where did you go and how long did you stay?

How would you currently self-assess your Spanish abilities? To what extent are you able to communicate in Spanish? Which skills (speaking, listening, writing, reading) do you think are your strongest? And your weakest?

Is there anything else about your life experience that has had an impact on how you speak Spanish?

Why did you choose to serve as a volunteer with *Rostro de Cristo*?
Please feel free to elaborate as much as you would like.

What are you looking forward to most about your time in Ecuador?

Appendix B

Instructions: Please read each sentence below aloud, pausing between each one.

María dice clase de nuevo.
María dice viajar de nuevo.
María dice esquema de nuevo.
María dice libro de nuevo.
María dice asco de nuevo.
María dice listo de nuevo.
María dice llaves de nuevo.
María dice casco de nuevo.
María dice respeto de nuevo.
María dice vista de nuevo.
María dice bastante de nuevo.
María dice puerta de nuevo.
María dice especial de nuevo.
María dice hasta de nuevo.
María dice fresco de nuevo.
María dice cuaderno de nuevo.
María dice chiste de nuevo.
María dice español de nuevo.
María dice rubio de nuevo.
María dice vecino de nuevo.
María dice respuesta de nuevo.
María dice chispa de nuevo.
María dice brusco de nuevo.
Juan dice los extranjeros.
Juan dice con permiso.
Juan dice las paredes.
Juan dice varios libros.
Juan dice las comidas.
Juan dice mis perritos.
Juan dice la luz.
Juan dice dos primos.
Juan dice diez trenes.
Juan dice esta oportunidad.
Juan dice más tarde.
Juan dice juegas pelota.
Juan dice con ellos.
Juan dice tus cuentas.
Juan dice los tigres.
Juan dice unas clases.
Juan dice para ustedes.
Juan dice ves colores.
Juan dice tienes tiempo.
Juan dice el refresco.

Juan dice tener hambre.
Juan dice los trabajos.
Juan dice comes carne.
Juan dice por favor.
Juan dice cuántos parques.
Raquel dice ya sabes.
Raquel dice el ratón.
Raquel dice los hermanos.
Raquel dice tengo miedo.
Raquel dice mis amigos.
Raquel dice comes uvas.
Raquel dice con razón.
Raquel dice vas a la casa.
Raquel dice las iglesias.
Raquel dice con cuidado.
Raquel dice tus amores.
Raquel dice quieres aquella.
Raquel dice mil disculpas.
Raquel dice las estrellas.
Raquel dice Estados Unidos.
Raquel dice los hongos.
Raquel dice prestar dinero.
Raquel dice tus hombros.
Raquel dice tomas agua.
Raquel dice mi oficina.
Raquel dice me llamo.
Raquel dice tienes ideas.
Raquel dice los otros.
Raquel dice todos ustedes.

CHAPTER 7

Linguistic variation and second language Spanish

A study of progressive and habitual marking by English-speaking learners

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Research on progressive and habitual aspectual marking in Spanish provides a productive test case for second language variation research. In Spanish, two forms can be used to reference ongoing action at speech time (simple present and present progressive) while English predominantly makes use of the present progressive (Torres Cacoullos 2000). Nevertheless, the patterns of use and their acquisition are complex. One key difference for advanced non-natives (as compared to natives) is related to the range of lexical bases (e.g., *estar* 'to be,' *andar* 'to walk,' *venir* 'to come,' etc.) that form the progressive (Fafulas 2015). Additionally, the alternation between the simple present and the progressive is conditioned by a host of linguistic factors, such as lexical aspect, the presence of an adverb, clause type, and animacy, among others (Geeslin & Fafulas 2012). Finally, differences exist between these same two forms cross-linguistically for habitual aspectual marking such that the simple present is more likely to occur in English in habitual contexts than in Spanish and this constitutes another context for these variable forms (Fafulas 2012). Thus, the predictions for English-speaking learners are highly context-dependent.

The present study uses a written contextualized task designed to examine patterns of selection across the categories of lexical aspect (e.g., activities, statives, etc.) in combination with the influence that the presence or absence of adverbial phrases may have. We employ a cross-sectional design, collecting data from learners from multiple levels of enrollment, and compare these to native speakers of Spanish and to native speakers of English (tested in English). Our analysis provides an account of the patterns attested in English, in Spanish, and across levels of second language Spanish development.

Keywords: second language (L2) variation, progressive aspect, habitual aspect, aspectual marking, second language (L2) Spanish, sociolinguistic competence, written contextualized task, cross-sectional design, cross-linguistic contrast

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Introduction

Canale and Swain's (1980) seminal paper on communicative competence, as well as subsequent calls to incorporate an account of the social aspects of language acquisition into research on language learning, such as Firth and Wagner's special issue of the *Modern Language Journal* (1997), have led to an increased interest in the intersection of sociolinguistics and second language acquisition (SLA). Studies in this area have grown to include a wealth of information on the acquisition and use of variable aspects of language across a wide range of L2s. Scholars working on L2 Spanish, for example, have built on the foundation established through research primarily conducted on L2 English (e.g., Adamson and Regan 1991; Bayley & Preston 1996) & French (e.g., Regan, Howard & Lemée 2009; Rehner, Mougeon & Nadasdi 2003) to identify the features of Spanish that vary according to speaker, interlocutor and context of interaction, and to chart the paths of acquisition of a broad range of variable structures (e.g., Gudmestad 2012; Kanwit 2017, 2018; Kanwit & Geeslin 2020; Kanwit, Geeslin & Fafulas 2015; Schmidt 2018; Solon, Linford & Geeslin 2018). In general, this work has shown that learners are able to modify both the rate of use of a socially, geographically, or stylistically variable linguistic structure and the contexts in which those variants appear, thereby aligning their L2 with the norms of the target speech community (see Geeslin 2011; Geeslin & Long 2014; Kanwit 2018, for overviews). Through this body of work, we have gained a greater understanding of the nature of sociolinguistic competence as well as the path and process of SLA. Additionally, work on Spanish in particular has added an important geographic dimension to the study of variation as a result of the many varieties to which learners have access in the US classroom context and the many areas of the world which US-based students elect to study in abroad. The current investigation builds on the existing knowledge base, using an up-close examination of the expression of progressive and habitual aspect to exemplify the value of research methods that enable us to tease apart linguistic, geographic, and L1 influences.

Research on progressive and habitual aspectual marking in Spanish has proven to be a productive line of inquiry into L2 sociolinguistic competence because it provides a unique test case. Spanish allows for the use of two forms in referencing ongoing action at speech time (simple present and present progressive) while English predominantly makes use of the present progressive (see Torres Cacoullos 2000). Thus, it is commonly stated that Spanish-English bilinguals use progressive forms at higher rates than monolingual native speakers of Spanish, given the frequent use of these forms in English (Klein 1980; Sánchez-Muñoz 2004). Nevertheless, there are several reasons that the patterns of use and their acquisition are more complex than a straightforward overuse of one form due to English language influence. First, research on L2 Spanish progressive use has shown that a key difference for advanced

non-natives (as compared to natives) was more closely related to the range of lexical bases (e.g., not only *estar* 'to be' but also *andar* 'to walk,' *venir* 'to come,' etc.) employed to form the progressive, rather than the mere frequency of use (Fafulas 2015). Additionally, the alternation between the simple present and the progressive is conditioned by a host of linguistic factors, such as lexical aspect, the presence of an adverb, clause type, and animacy, among others (Geeslin and Fafulas 2012). Finally, we see differences between these same two forms cross-linguistically for habitual aspectual marking, such that the simple present is more likely to occur in English in habitual contexts than in Spanish, and this constitutes another context in which both simple present and progressive forms are in variation (Fafulas 2012). Thus, consideration of both progressive and habitual aspect is needed to arrive at a comprehensive understanding of how simple presents and present progressives develop in L2 Spanish varieties. In short, the predictions for English-speaking learners are far from monolithic and will require careful scrutiny.

The present study uses a written contextualized task designed to examine patterns of selection across categories of lexical aspect (e.g., activities, statives, etc.) in combination with the influence that the presence or absence of different classes of adverbial phrases (e.g., marking ongoing or habitual actions) may have. We employ a cross-sectional design, collecting data from learners from multiple levels of enrollment, and compare these to a group of native speakers of Spanish. In keeping with the idea that pan-dialectal input, varied study abroad experiences, and a host of communities in the US where varieties of Spanish are in contact are a reality for US-based learners, making educated bilingual speakers from various regions an appropriate target (Ortega 2013), we include native speakers from both Mexico and Spain, all of whom were residing in the same US-based speech community as the learners at the time of the study. Finally, we include an equivalent number of monolingual English speakers in the same community who completed an English-language version of the same instrument in order to separate cross-linguistic influence from other factors. Our analysis provides a detailed account of the patterns attested in English, in Spanish, and across levels of L2 Spanish development for this variable structure.

Previous research

L2 variation

Research on L2 sociolinguistics now has a well-established history of research. Beginning with important work in the late 1970's and continuing to today, variationist researchers focusing on L2s have identified the trajectory learners follow

as they develop the ability to use a range of forms to denote a single function, the linguistic and social predictors of the use of those forms, and relative influence of those factors (see Geeslin & Long 2014; Kanwit 2018, for overviews). While early work focused nearly exclusively on English, and later included L2 French and Spanish (e.g. Adamson & Regan 1991; Bayley & Preston 1996; Geeslin 2003; Kanwit 2017; Kennedy Terry 2017; Knouse 2012; Regan et al. 2009; Rehner et al. 2003), in recent years we have seen expansion to new languages and new language pairs, including Chinese (e.g. Cheng, Lu & Giannakouros 2008; Li 2010, 2014), Korean (e.g. Gnevsheva 2015; Long & Geeslin 2018), and varieties of German and English (e.g. Ender 2017; Gnevsheva 2015). We have also begun to have sufficient investigations to start to address a single grammatical structure across multiple languages. For example, structures such as subject forms (e.g. Geeslin & Gudmestad 2016; Li 2014; Nagy 2015), forms of address (e.g. Belz & Kinginger 2003; Rau & Rau 2016; van Compernolle 2010; Villareal 2014), and future time marking (e.g. Gudmestad, Edmonds, Donaldson & Carmichael 2018; Gudmestad & Geeslin 2013; Kanwit 2017, 2019; Tremblay et al. 2019) have been studied across several language pairs. Likewise, this body of work has incorporated insights from a range of allied fields, allowing for the study of language attitudes (e.g. Clark & Schleef 2010; Davydova, Titus, & Schleef 2017; Geeslin & Schmidt 2018; Nagy 2018; Yang 2013), the role of frequency in patterns of use and acquisition (e.g. Linford & Shin 2013; Linford, Long, Solon & Geeslin 2016; Solon et al. 2018), and the influence of social networks on language (e.g. George 2018; Isabelli-García 2006; Kennedy Terry 2017). In sum, this body of work is now quite robust and provides the foundation for close examination of increasingly focused research questions.

Research on L2 variation is generally subsumed under the umbrella term, communicative competence (Canale & Swain 1980), which was developed to capture the insight that the abilities L2 learners must acquire extend beyond grammatical competence alone and encompass abilities related to use of language in real-life contexts. The common insight is that language is context-dependent and patterns of use are influenced by the linguistic and social factors in a particular context or interaction. By connecting the careful study of variation in L2s to broader issues in language acquisition and L2 learning, we now have a clearer idea of the input to which learners are exposed (e.g. Gurzynski-Weiss, Geeslin, Long & Daidone 2017; Gurzynski-Weiss et al. 2018; Rehner et al. 2003), the variable nature of the L2 targets, and the ways in which learner identity and experience may interact with the acquisition of L2s (e.g. Geeslin et al. 2010; Geeslin & Schmidt 2018; George 2014; Kanwit et al. 2015; Knouse 2012; Nagy 2018; Ringer-Hilfinger 2012; Schmidt 2009). What is more, these developments in the field allow us to return to long-standing

issues but with new detail. For example, we can use the tools of variationism to assess the reasonable target for learners (given their own individual context of learning) and to describe the nature of the pan-dialectal Spanish to which most English-speaking classroom-based learners have access. Likewise, we are now able to capture the variability in the first and the target language and account for cross-linguistic influence in greater detail. It is this last issue that the present study was designed to explore.

Variable progressive aspectual marking in Spanish and English

Progressive aspect is morphologically encoded in Spanish and English (Comrie 1976). While both languages have equivalent constructions, as shown in (1), their functions and distribution differ in each language (Fafulas 2013; Gabriele & Canales 2011). In Spanish, the progressive typically denotes action in progress but it is also used to mark continuous action outside the scope of present-time reference (Fafulas 2012). The English progressive is more strictly focused on action in progress at speech time. The simple present is also available for reference to action in progress in Spanish while this function is not available for the simple present in English, as shown in (2). The simple present in English is much more restricted to habitual action.

(1) *Ahora **estoy viendo** el partido de futbol, te llamaré un poco más tarde, ¿vale?*
*Right now, I **am watching** the soccer game, I'll call you a bit later, cool?*

(2) *Ahora **veo** el partido de futbol, te llamaré un poco más tarde, ¿vale?*
Right now, I **watch the soccer game, I'll call you a bit later, cool?*

As shown in these examples, in Spanish, in addition to the commonly-used *estar* progressive, it is possible to use simple present morphology to express ongoing action (King & Suñer 1980; Klein 1980; Westfall 1995). In English, however, ongoing action at speech time is overwhelmingly marked with the *be* progressive, relegating the simple present to contexts of habitual action (Bardovi-Harlig 2000; Bybee, Perkins & Pagliuca 1994).

Research on L1 or bilingual variation of Spanish simple present and *estar* progressive forms (for example, Cortés-Torres 2005; Cuza 2010; Fafulas 2012, 2013, 2015; Fafulas & Díaz-Campos 2010; Gabriele & Canales 2011; Geeslin & Fafulas 2012; Klein 1980; Sánchez-Muñoz 2004; Torres Cacoullos 2000) indicates that lexical aspect, co-occurring adverbs, clause type, polarity, animacy, and temporal aspect of the sentence are key predictors in speaker selection/use of these forms.

Table 1. Key independent variables for the variation of Spanish simple present and *estar* progressive. All examples from Geeslin and Fafulas (2012) unless otherwise noted

Variable	Categories	Example
Lexical aspect	Stative	*Creo que son peras* 'I believe they are pears'
	Activity	*Él hombre que está recolectando las peras* 'The man that is gathering the pears'
	Accomplishment	*Las ponen en la cesta* 'He puts them (the pears) in the basket'
	Achievement	*El chico se cae de la bicicleta* 'The boy falls off the bicycle'
Co-occurring adverbs	Immediate	*Los tres chicos que pasan comiendo peras en este momento* 'The three boys that pass by eating pears in that moment'
	Frequentative	*Corro en el parque todos los días después del trabajo* 'I run in the park everyday after work' (current study)
	None	*El hombre que está recolectando peras* 'The man that is gathering pears'
Clause type	Subordinate	*Creo que baja otra vez,* 'I believe that he gets down again'
	Other (e.g. Main, Coordinate)	*En la mañana, un señor está cortando peras* 'In the morning, a man is cutting pears'
Polarity	Negative	*Al principio no se ve bien dónde está él* 'At first you can't see where he is.'
	Positive	*Pero, después se ve que él baja por la escalera* 'But, then you see that he climbs down the ladder'
Animacy	Animate subject	*Un hombre está recogiendo peras* 'A man is gathering pears'
	Inanimate subject	La bicicleta es bien grande 'The bicycle is really big'
Temporal aspect of the sentence	Durative	*Entonces, aquí él está haciendo un apartamentito, de aquí para allá* 'So, he is making a little apartment, from here to there' (Cortés-Torres 2005)
	Progressive	*Estoy hablando de síquicos* 'I am talking about psychics' (Cortés-Torres 2005)
	Limited duration	*Israel está buscando con quién jugar golf* 'Israel is looking for someone with whom to play golf' (Cortés-Torres 2005)
	Habitual	¿Desde nene está trabajando entonces? 'Since childhood you are working then? (Cortés-Torres 2005)
	Frequentative	*El doctor Ramírez está llegando tarde a la oficina todos los días* 'Dr. Ramirez is arriving late to the office everyday' (current study)

This cross-linguistic difference between the Spanish and English simple present and present progressive sets the stage for the current investigation.[1] We set out to explore the specific contexts in which these forms are accepted by manipulating contexts in a controlled instrument with different adverbials, forcing either an immediate or habitual/frequentative interpretation.[2] Additionally, given that we aim to track learner development and interpretation of the core meanings of the simple present and present progressive, we include an equal number of contexts that do not contain adverbial cues. Our first step was to test whether these forms are in fact used distinctly in Spanish and English as previously suggested. Additionally, our analysis includes the lexical aspectual classes of activity, stative, accomplishment, and achievement verbs (see Vendler 1967) as these have been further found to constrain form-function pairings across these languages, serving as prototypical categories for learners, with statives more strongly associated with simple present morphology, and activity verbs more likely to be paired with progressive morphology. The semantic values of dynamic, punctual, and telic help distinguish lexical aspectual classes, with dynamic predicates involving action, including activity, achievement and accomplishment verbs, while stative verbs lack this property and persist over time without being altered by physical activity. Achievements and accomplishments are both telic, with a specifiable endpoint, while activities and stative verbs lack an identifiable endpoint. Achievements are punctual as they capture the beginning or end of an event (see Dowty 1979; Smith 1997; Verkuyl 1993). However, the addition of an adverb can produce 'aspectual coercion' whereby, for example, a verb phrase depicting a one-time punctual event may be viewed as a repeated activity (De Swart 1998). There is also evidence to suggest that these lexical aspectual classes behave somewhat differently cross-linguistically in that English is said to allow for more progressive morphology across all lexical aspectual classes (Aarts, Close & Wallis 2010), including stative verbs, while this use is more restricted in Spanish, as in the example of McDonald's slogan 'I'm lovin' it' as opposed to the Spanish language advertisement version 'Me encanta.' (me-DAT please-3SG 'I love'). Once

1. The simple present and present progressive are also used to encode futurate and narrative readings, showing additional cross-linguistic differences; however, we do not focus on these functions in the current investigation (see Gabriele & Canales 2011 for further discussion on futurate and narrative readings).

2. We acknowledge that existing studies make use of different terms in referencing immediate/ongoing/continuous action vs. repetitive/frequentative/habitual action. Unless specifically noted otherwise, we use the terms in these two broad categories interchangeably in the current paper. For example, in contexts with the adverb *ahora* 'now' we seek to test use of simple presents and progressives in referencing 'ongoing' action or 'immediate' action, while in contexts with the adverb *todos los días* 'everyday' we test these forms in referencing habitual/frequentative action.

we establish baseline patterns (i.e., an English baseline and a Spanish baseline), we then move on to an analysis of cross-sectional data obtained from 4 distinct levels of Spanish-speaking learners in order to examine the path of L2 development.

Two hypotheses serve as foundations for our assumptions about learner development of tense and aspect in the current study. The first, known as the Prototype Hypothesis, posits that learners will "acquire a linguistic category starting with the prototype of the category and later expand its application to less prototypical cases" (Shirai & Andersen 1995: 758). The prototype of the progressive is an unbounded activity with duration, meaning that learners initially pair progressive morphology with activity verbs denoting ongoing action. As a consequence, habitual or futurate uses of the progressive are more peripheral to this prototype, as is progressive morphology with punctual, non-repetitive events, as in those depicted by achievement verbs, or with verbs showing no physical activity, such as statives. Bardovi-Harlig (2000, 2012) shows that L2 learners use the progressive primarily with activities to encode an ongoing reading and much less frequently to refer to repeated (habitual) or futurate events. The other main hypothesis guiding our work is the Aspect Hypothesis, made up of four testable claims (Bardovi-Harlig 2000):

a. Learners first use perfective past marking on achievement and accomplishment verbs and only later with activity and stative verbs.
b. Perfective appears before imperfective, in languages that distinguish between these two, and imperfective use begins with statives and passes to activities, accomplishments, and finally achievements in that order.
c. In languages that have this aspect, progressive marking begins with activities, extending next to accomplishments and finally achievements.
d. Progressive marking is not incorrectly overextended to statives.

Most previous studies on the SLA of tense and aspect have focused on the encoding of 'pastness' (see Bardovi-Harlig & Comajoan-Colomé 2020 for a critical overview and Fafulas 2013 for an exception). In contrast, our study stands to offer insights on claims (c) and (d) of the Aspect Hypothesis. One additional point concerns the input to which learners are exposed. A similar distributional bias has been observed regarding native speaker morphological encoding and lexical aspectual classes of verbs (Andersen 2002; Andersen & Shirai 1994, 1996; Shirai & Andersen 1995). For this reason, as previously stated, we believe it is crucial to observe the baseline patterns that might serve as input for the learners in the same speech community.

Second language Spanish research on variable progressive aspect marking

One of the first studies to test use of the simple present and present progressive in L2 Spanish was Geeslin and Fafulas (2012). In their study, they elicited oral production of simple present and present progressive forms by 13 advanced L2 Spanish speakers and 13 L1 speakers of Spanish. Their analysis included linguistic variables (lexical aspect, clause type, person, object, animacy, and adverb) as well as the amount of time abroad, level of proficiency, and gender of their participants. Results indicated that L2 Spanish speakers produced significantly higher rates of the *estar* progressive form than L1 Spanish speakers (13.3% vs. 5.5% respectively). Their analysis further showed that for both groups, the *estar* progressive was favored with activity verbs, as well as in subordinate clauses and with plural, full noun phrase direct objects. However, none of the extra-linguistic factors were significantly related to the patterns of use.

A subsequent study designed to test the development of the *estar* progressive as well as a range of other progressive constructions (i.e., *andar*, *ir*, *venir*, *seguir* + V-*ndo*) in L2 Spanish (Fafulas 2015) gathered data from learners at several levels of proficiency. His analysis of simultaneous film narrations presented evidence that learners pass through clear stages in their development of simple present and *estar* + V-*ndo* progressive forms, including an initial stage in which learners produce forms that are not attested in NS Spanish, such as *los chicos son comiendo peras* 'the boys are (*ser* copula) eating pears.' These forms were highest among the lowest level learners, 2nd Year Spanish, and decreased as proficiency increased. Once learners passed on to a stage in which they abandoned non-native progressive constructions, only then, at the 4th year level, did they begin to produce progressive constructions other than the *estar*-based one. Still, it remains unknown whether learners come to use the simple present and *estar* progressive similarly to L1 Spanish speakers across distinct lexical aspectual classes and in specific contexts that either portray action as ongoing or habitual.

Gabriele et al. (2015) tested interpretation of the simple present and present progressive with 49 English speakers in their third semester of university Spanish study, considered low proficiency based on a standardized test, as well as with 20 NSs of Spanish from Costa Rica. Participants completed an interpretation task that was embedded in a short story with adverbial support. Learners were asked to judge whether each sentence was possible or not for a native speaker of Spanish. The authors targeted participant pairing of simple present and present progressive (*estar* + V-*ndo*) in contexts with a continuous/ongoing, habitual, temporary habitual, and futurate interpretation. The authors hypothesize that only once learners acquire the core meaning of the progressive and simple present will they then be able to move on to acquire more peripheral functions of these forms, such as the

present progressive with temporary habituals and the simple present with futurates. Results showed that L2 learners did show a preference for the present progressive as opposed to the present indicative for contexts describing ongoing activities. Given their study only included one group of learners in their third semester of Spanish, we seek to build on these results with multiple levels of proficiency using a controlled instrument to test development of simple present and present progressive interpretation in ongoing and habitual contexts.

Cuza and López-Otero (2016) explored the interpretation of simple present and present progressive forms in contexts of immediacy and habitual action through elicited production, an acceptability judgment, and a forced preference task. Their participants included a group of native Spanish-speaking controls from various countries with less than 5 months in the USA, an intermediate group of L2 Spanish speakers, and a group of heritage speakers of Spanish. The results of their study contradicted a number of their predicted hypotheses, specifically as it relates to the learner group. The authors conclude that "It appears as if the L2 learners are not quite sure as to when the progressive and the simple present should be used" (481). However, given that their baseline group included native speakers from various countries and learners from only one proficiency level, it is not clear if changes based on proficiency or exposure to a local target norm influenced learner development. Moreover, given these authors did not examine lexical aspectual class, we are not aware of the influence that lexical semantics may play in learner development of simple present and present progressive forms. The current study specifically tracks the development of simple present and present progressive forms by learners of various proficiency levels as it relates to lexical aspect and habitual vs. ongoing events.

Research questions

Given the general lack of research on simple present and present progressive forms in L2 Spanish and the need for a better understanding of how learners acquire variable linguistic forms in specific form-meaning contexts, our study investigates learner selection of simple present and present progressive forms against baseline data from English and Spanish in order to determine whether learners acquire more peripheral/non-prototypical contexts for each form more slowly than core meanings and how this development follows the theoretical predictions outlined above.

Our study was guided by the following research questions:

1. What are the rates of selection of simple present and *estar* + V-*ndo* progressive constructions on a written contextualized elicitation task?

2. For all speaker groups, what is the relationship between these rates of use and the lexical aspect of the verbal phrase and rates of use the presence/absence of an adverbial phrase in each context of the written contextualized elicitation task?
3. How do the English and Spanish baselines compare across the categories of these variables?
4. What changes can be observed as learners increase in Spanish proficiency?

Methods

Participants

We analyzed data from 115 participants in the current study. Our corpus includes responses from four L2 Spanish proficiency levels: second year (within the 4-semester language requirement), third year, fourth year and graduate level, corresponding to Groups 1, 2, 3 and 4 respectively. Additionally, we collected baseline data from two groups: a local native English-speaking group with limited experience with Spanish, and a local US-based native Spanish-speaking group. This last group included Spanish-English bilinguals with an average of just under 5 years of residence in the US. The rationale for including these two baseline groups is addressed below. Tables 2 and 3 offer some of the key information for the purposes of the present analysis.

Table 2. Baseline speaker groups in the current study

Group	N	Gender	Relevant information
English baseline	20	7M/13F	US-born, English-speaking parents, minimal Spanish
Spanish baseline	20	9M/11F	Born and educated in Mexico or Spain, US 4.8 years average

Table 3. Learner groups in the current study

Group	N	Gender	Mean prof. score	Mean Age	3+ months experience abroad
Group 1: 2nd Year	20	8M/12F	10.0	19.8	5%
Group 2: 3rd Year	19	6M/13F	14.4	20.7	31.6%
Group 3: 4th Year	17	7M/10F	18.7	22.5	64.7%
Group 4: 5th+ Year	19	8M/11F	23.5	28.1	100%

Our learner and native baseline participants all resided in the same community located in Indiana, about 50 miles south of the capital, Indianapolis. All participants are of a similar socioeconomic status and had at least a university degree or were in the process of obtaining one. All learners were enrolled in university-level courses or teaching in the same university. These L2 Spanish participants were grouped according to level of enrollment and this grouping was corroborated by scores on a multiple-choice test of formal grammatical knowledge (see Linford 2014 for reliability tests of this instrument). Unsurprisingly, the average age increased slightly with level as did the percentage of students with experience over 3 months in a target-language environment. This large-scale cross-sectional design allows us to see how patterns change as level and experience with the language increase.

The L1 Spanish-speaking baseline group included an equal number of participants born in Mexico and Spain, all of whom were educated in their respective countries. Initial reviews of participant responses from Mexico and Spain revealed similar tendencies across all instruments (see next section), thereby justifying our decision to combine these separate geographic regions into one group. The rationale for including this group is to set the boundaries for norms of use and to have a sense of the general patterns attested by native speakers in the speech community of our learners. We selected Mexico and Spain as countries of origin because they correspond well to the most popular study abroad programs for this university. We do not claim, nor would it be appropriate to do so, that we have identified a singular target for our learner group. Instead, we recognize that the likely target for learners in this English-dominant learning environment is a variety of pan-dialectal Spanish that is at least initially acquired in the classroom, rather than real-life (i.e., community), interactive contexts. As is common for educated native English speakers, our participants in the English baseline group had some knowledge of Spanish as is required or offered in the curriculum by most schools in the US. However, none of these English baseline participants had completed a semester of university-level Spanish nor had any extended experience abroad. Because we seek to address cross-linguistic patterns of use, it is also important to understand how these forms are used in English under the same conditions.

Measures

We elicited information via three measures: a background questionnaire, an in-house level test, and a written contextualized task. The written contextualized task contained 12 questions embedded in a storyline placing the participants in a doctor's office and presenting them with different scenarios, in which they were asked what they would say in each context. Following each context, participants

indicated a preference for sentences with a simple present or *estar* + V-*ndo* form or for both (three-way dependent variable). The English baseline group completed a version of this task in English while the L2 Spanish and baseline Spanish groups received versions in Spanish.

The written contextualized task was designed to test the influence of lexical aspectual class, based on the Vendler (1967) categorization of stative, activity, accomplishment, and achievement verbs, on the one hand, and of adverbs portraying the context as either happening at speech time (immediate adverb; e.g. *ahora* 'now'), repetitive/habitual in nature (frequentative adverb; e.g. *todos los días* 'everyday') or in a context lacking an adverb (none). The written contextualized task's 12 items represent the combination of all four aspectual classes in each of the three adverbial contexts, with an adverb of immediacy, frequentative action, or no adverb. The decontextualized verb phrases used in the present study are shown in their infinitival form in Table 4.

Table 4. Verbs and lexical aspectual classes used in the written contextualized task

Aspectual class	Spanish	English
stative verbs	*querer (algo)*	'to want (something)'
	necesitar tomar una siesta[a]	'to need to take a nap'
	saberlo	'to know it'
activity verbs	*cantar canciones de cuna*	'to sing lullabies'
	jugar con muñecas	'to play with dolls'
	correr en el parque	'to run in the park'
accomplishment verbs	*comer una galleta*	'to eat a cookie'
	construir algunos edificios nuevos	'to build some new buildings'
	comer dos manzanas	'to eat two apples
achievement verbs	*despertar(se)*	'to wake up'
	llegar	'to arrive'
	recordarlo	'to remember it'

a. In response to one reviewer's question about whether the addition of this V+V combination introduces an additional variable in the choice of simple present and present progressive forms, we examined this issue further and confirmed that in our dataset both the native speaker baseline and Spanish-speaking learner groups behaved similarly across the contexts/items embedded with stative verbs, regardless of being a one or two-verb construction. We acknowledge the concern, but opted to include these items because we do not find an alternative construction with a single stative verb that expresses the same notion in Spanish.

Example (3) is one of the 12 items embedded in the written contextualized task. This context was coded as containing an achievement verb (*llegar* 'to arrive') and an adverb reinforcing a habitual/frequentative reading of the action (*todos los días* 'everyday'). As in the rest of the questionnaire, the use of progressive forms in the context was avoided. Additionally, the task was created with a mix of first and third

person forms, both singular and plural in number. All subjects were animate and were presented in positive polarity contexts. In short, these additional variables were controlled in order to avoid additional sources of influence.

(3) Entra a la sala de espera un hombre vestido como médico. El hombre saluda a la secretaria y a la enfermera y desaparece detrás de una puerta. La secretaria mira a la enfermera y le dice:
A. "El doctor Ramírez está llegando tarde a la oficina todos los días."
B. "El doctor Ramírez llega tarde a la oficina todos los días."
___ Prefiero A. ___ Prefiero B. ___ Ambos.
A gentleman dressed as a doctor enters the waiting room. He says hello to the nurse and secretary and disappears behind an office door. The secretary looks at the nurse and says:
A. "Everyday Doctor Ramirez is arriving late to the office."
B. "Everyday Doctor Ramirez arrives late to the office."
___ I prefer A. ___ I prefer B. ___ Both.

Coding and analysis

As described earlier, the dependent variable in the present study is the form selected (present indicative, progressive or both) and the linguistic independent variables are the lexical aspectual class of the verb phrase and the type and presence of the adverbial. The decontextualized items from the written contextualized task appear in Table 5 along with the linguistic matrix showing the coding for lexical aspectual class and adverb attested in each scenario. Additional independent variables related to the participants include native language, participant gender and level.

Following the coding of the data, we used SPSS (version 23) to explore our data. First, we calculated the overall selection rates for each participant group. Next, we analyzed the selection rates across the categories of each linguistic factor and participant group. Lastly, we conducted a series of Generalized Estimating Equation binary logistic models, taking into account repeated measures, in order to determine whether certain correlations and patterns in the data reached significance.

Table 5. Items in written contextualized task with lexical aspect and adverb coding

Item	Token	Linguistic matrix
1	¿Qué quiere/está queriendo la bebé ahora?	stative + immediate
2	Emilia se está despertando/se despierta después de un sueño profundo.	achievement + none[a]
3	Ellos le cantan/están cantando canciones de cuna.	activity + none
4	La bebé necesita/está necesitando tomar una siesta todos los días al mediodía.	stative + frequentative
5	La secretaria lo está sabiendo/sabe, pregúntale a ella	stative + none
6	Mamá, ahora Julio está comiendo/come una galleta para aguantar hasta el almuerzo.	accomplishment + immediate
7	En este momento ella juega/está jugando con sus muñequitas.	activity + immediate
8	El doctor Ramírez está llegando/llega tarde a la oficina todos los días.	achievement + frequentative
9	Es cierto. Construyen/Están construyendo algunos edificios nuevos cerca del centro comercial y el tránsito está medio complicado.	accomplishment + none
10	Estoy comiendo/Como dos manzanas todos los días.	accomplishment + frequentative
11	Estoy corriendo/Corro en el parque todos los días después del trabajo.	activity + frequentative
12	Ahora lo estoy recordando/recuerdo, fue el año pasado, en noviembre.	achievement + immediate

a. We acknowledge that there is temporal reference in the sentences that we tested with no overt adverbial phrase. We take this up in the discussion of results in order to explain why learner patterns were more varied in the contexts lacking an overt adverbial phrase to force an interpretation of the temporal aspect of the sentence as immediate or frequentative.

Results

The answers to our research questions are dependent on an analysis of the rates of form selection and how these rates are distributed across the categories of each independent variable. We provide a detailed account of these issues here and then connect these facts to our research questions in the discussion that follows.

Frequency of form selection by participant group

The overall rates of selection of *estar* 'to be' present progressive, simple present, and 'both' responses on the written contextualized task for each group are displayed in Table 6. A total of 1380 tokens were collected for analysis. Table 6 also includes a

final column which is a combined category termed 'progressive allowed' reflecting responses for which the participant groups indicated that either the progressive or the 'both' option were permissible. In this way, we created a binary variable (simple present vs. progressive allowed) for further analyses.[3]

Table 6. Distribution of forms

Group	Simple Present		Present Progressive		Both		Progressive Allowed	
	#	%	#	%	#	%	#	%
English baseline	134	55.8	89	37.1	17	7.1	106	44.2
Group 1: 2nd year Spanish	144	60.0	81	33.8	15	6.3	96	40.0
Group 2: 3rd year Spanish	148	64.9	50	21.9	30	13.2	80	35.1
Group 3: 4th year Spanish	142	69.6	36	17.6	26	12.7	62	30.4
Group 4: 5th+ year Spanish	126	55.3	49	21.5	53	23.2	102	44.7
Spanish baseline	121	50.4	84	35	35	14.6	119	49.6

Regarding the progressive form, the English baseline group selected the be + V-*ing* at a higher rate (37.1%) than the Spanish baseline (35%) and Spanish learner groups. The L1 Spanish baseline group indicated a potential optionality of simple present and present progressives by selecting 'both' on the task at a rate of 14.6% while the English baseline only chose the 'both' option in 7.1% of all contexts observed. This could lend support to the notion that the use of simple present and present progressive forms is less variable in English than in Spanish. It is also noteworthy that the L2 Spanish groups show an eventual increased acceptance of the possibility of both forms as their proficiency increases. Group 4, which consists of students at the graduate level of Spanish proficiency, surpassed the Spanish baseline group in their rate of selection of both forms on the written contextualized task. Observing the rates of use of each form in the specific contexts depicted in the written contextualized task will tell us whether specific lexical aspectual and adverbial combinations contribute to our understanding of these patterns.

3. The decision to group "both" responses with the selection of progressive forms follows the standard in the field by which the form undergoing extension is grouped with the 'both" option and contrasted with categorical preference for the historically-conservative form. We note that in this case this decision reflects a change in Spanish (that of allowing greater use of progressive over time) rather than one in English through which simple present is extended (See also Torres Cacoullos (2000)).

Effects of linguistic factors by group

For the remaining analyses, we focus on the binary dependent variable of simple present vs. progressive allowed. Our initial Generalized Estimating Equation (GEE) binary logistic regression model was significant $p < .001$ (intercept $X^2 = 41658.75$). All main effects were significant except for participant gender which we excluded from further models. The results for all significant main effects and interactions are summarized in Table 7.

Table 7. GEE linear mixed model for progressive allowed vs. simple present

Factor	Wald X^2	df	*p*
Speaker Group	309255.886	5	.000
Lexical Aspect	49754.352	3	.000
Adverb	66.537	2	.000
Lexical Aspect * Adverb	66.574	6	.000
Speaker Group * Lexical Aspect	362309.378	14	.000
Speaker Group * Adverb	43.956	10	.001

All of the linguistic factors, and interactions, as well as the factor 'Speaker Group' are significant, warranting further exploration. Consequently, we conducted individual GEE binary logistic regression models for each participant group. These results are summarized in Table 8.

Table 8. GEE linear mixed model for progressive allowed vs. simple present by group

Group	Lexical Aspect		Adverb		Lexical Aspect * Adverb	
	Wald X^2	*p*	Wald X^2	*p*	Wald X^2	*p*
English baseline	1351.327	.000	970.745	.000	18.387	.000
Group 1: 2nd Year NNS Spanish	17.677	.001	6.181	.045	4.746	.577
Group 2: 3rd Year NNS Spanish	697.052	.000	1572.615	.000	2.640	.620
Group 3: 4th Year NNS Spanish	84.908	.000	294.333	.000	572.370	.000
Group 4: 5th Year+ Spanish	653.509	.000	543.869	.000	16.534	.001
Spanish baseline	4452.414	.000	310.453	.000	16.453	.000

We observe that neither Group 1 Spanish nor Group 2 Spanish revealed significance for the interaction of lexical aspect and adverb, which is what the items on the written contextualized task were designed to test. This observation is key when considering the results in the next section. We do note that both baseline groups reach levels of significance of $p < .001$ for all factors tested, and the upper level L2 Spanish groups, Group 3 and Group 4, reach almost identical levels of significance

as compared to the Spanish baseline. This is meaningful because even when frequency of selection differs, these more advanced second language learners have come to rely on the same cues as the NSs.

Analyses by lexical aspectual class and adverb condition

In this section, we present more detailed analyses by examining percentages for each lexical aspectual type in the three adverbial contexts tested: adverbs lending to a reading of immediate/ongoing action, frequentative/habitual action, or no adverb present. We proceed by first offering a cross-linguistic comparison of the baseline English and Spanish groups. In this way, we seek to highlight those contexts with more or less variation between languages. Then, we move to an analysis of the L2 Spanish groups in order to see whether they reached similar rates of selection in those contexts with little or no cross-linguistic variation/differentiation among the baseline groups. In other words, we first show empirically, with our own baseline data collected from the same instrument with speakers in the same speech community as the learners, what is predicted in each context and only then reveal what is attested by the L2 Spanish groups.

Stative verbs: Cross-linguistic baselines and second language learners

Table 9 displays the percent distribution of form responses (simple present vs. progressive allowed) for stative verbs in contexts with adverbs of immediacy, with frequentative adverbs, or with no adverbial support by the baseline and learner groups.

Table 9. Simple present vs. progressive allowed (%) by baseline and learner groups for stative verbs

	Immediate		Frequentative		None	
	Simple present	Progressive allowed	Simple present	Progressive allowed	Simple present	Progressive allowed
English baseline	80	20	100	0	100	0
Spanish baseline	100	0	100	0	100	0
Group 1: 2nd year Spanish	55	45	80	20	75	25
Group 2: 3rd year Spanish	84.2	15.8	94.7	5.3	100	0
Group 3: 4th year Spanish	88.2	11.8	100	0	94.1	5.9
Group 4: 5th+ year Spanish	94.7	5.3	100	0	100	0

The comparison of the two baseline groups predicts a relatively straight-forward path of acquisition for the L2 Spanish learners with stative verbs. While some progressives might be expected in immediate contexts (see Example (4)), as these would reinforce the ongoing action meaning portrayed by the progressive, and indicate the extension of the progressive to more functions/uses in English, an observation already made by other authors (Aarts et al. 2010; Binnick 2012; Mair 2006), we observe that in the frequentative and no adverb contexts there is no variation in that the simple present is categorically selected by both the English and Spanish baseline groups in our study.

(4) Primero, entra en la sala de espera una pareja con su bebé. El hombre escucha el grito del bebé y le pregunta a la mujer:
A. "¿Qué quiere el bebé ahora?"
B. "¿Que está queriendo el bebé ahora?"
___ Prefiero A. ___ Prefiero B. ___ Ambos.
First, a couple and their baby enter the waiting room. The man hears the cries of the baby and he asks his wife:
A. "What does the baby want now?"
B. "What is the baby wanting now?"
___ I prefer A. ___ I prefer B. ___ Both.

The learner groups in our study do move toward the Spanish baseline for stative verbs in immediate, frequentative, and no adverbial contexts, and at the highest level they demonstrate near-native-like patterns, perhaps with the exception of adverbs of immediacy.

For stative verbs in contexts with an immediate adverb, there is a slight difference cross-linguistically among our baseline groups. This property appears to be overextended/transferred in the Spanish of Group 1 whose use of the *estar* progressive reaches 45% in contexts with an immediate adverb. Likewise, in contexts with frequentative adverbs as well as in contexts without an adverb, the learner Group 1 overuses the progressive with stative verbs, which is in line with Fafulas' (2015) findings of non-canonical uses at lower levels of proficiency, such as *ser* + V-*ndo*. With the exception of this group, we see that from Group 2 on learners do align with the baseline Spanish patterning.

Activity verbs: Cross-linguistic baselines and second language learners

Table 10 details the percent distribution of form responses (simple present vs. progressive allowed) by each baseline and learner group in contexts with activity verbs across each of the three adverbial conditions.

Table 10. Simple present vs. progressive allowed (%) by baseline and learner groups for activity verbs

	Immediate		Frequentative		None	
	Simple present	**Progressive allowed**	**Simple present**	**Progressive allowed**	**Simple present**	**Progressive allowed**
English baseline	0	100	90	10	60	40
Spanish baseline	5	95	60	40	35	65
Group 1: 2nd year Spanish	40	60	65	35	50	50
Group 2: 3rd year Spanish	0	100	78.9	21.1	52.6	47.4
Group 3: 4th year Spanish	11.2	88.2	100	0	47.1	52.9
Group 4: 5th+ year Spanish	5.3	94.7	73.7	26.3	26.3	73.7

In the immediate adverbial contexts with activity verbs, there is little variation, as the progressive is nearly categorically paired with the immediate adverbs for both the English and Spanish baseline groups. Still, we do observe more variability in the frequentative adverbial contexts for Spanish (see Example (5)), in that both simple present and present progressives were selected (60% simple present vs. 40% progressive allowed), while in English they are more restricted with the simple present being favored 90% of the time. This is an area where Spanish and English differ cross-linguistically (see Fafulas 2012). In contexts lacking adverbial support, we also observe that both forms are possible, creating yet another potentially variable target.

(5) La enfermera se te acerca y te dice que el doctor Ramírez está listo ahora para recibirte. Pasas a su consultorio. El doctor Ramírez te saluda cordialmente y te dice, antes que nada, que tiene algunas preguntas básicas para ti.
…Ahora él quiere saber de la cantidad de tiempo que haces ejercicios. Le cuentas sobre tu rutina diaria. Le dices:
A. "Estoy corriendo en el parque todos los días después del trabajo."
B. "Corro en el parque todos los días después del trabajo."
___ Prefiero A. ___ Prefiero B. ___ Ambos.
The nurse approaches you and tells you that Doctor Ramirez is ready to see you. You enter into his office. Doctor Ramirez introduces himself and tells you that before anything else he has a few basic questions to ask you.
…Then he wants to know how much time you dedicate to exercise each week. You tell him about your weekly routine. You explain to him:
A. "Every day after work I am running in the park."
B. "Every day after work I run in the park."
___ I prefer A. ___ I prefer B. ___ Both.

Learners move toward the Spanish baseline in contexts with adverbs of immediacy, and are quite close to the baseline of 95% by Group 4 Spanish. For the frequentative adverbial contexts, we see that learners stay intermediary between the English and Spanish baseline norms rather than approaching the native speaker Spanish baseline. Lastly, in those contexts lacking adverbial support, the advanced learners in group 4 surpass the Spanish baseline group with a rate of 73.7%, but are still more in-line with the baseline rate of 65% than the lower proficiency groups.

Activity verbs in contexts with an immediate adverb represent the strongest prototypical pairing for progressives (see Andersen & Shirai 1996, Bardovi-Harlig 2000, 2012). It is precisely in this context where the English and Spanish baseline groups coincide with nearly categorical selection of the progressive. As our hypothesis predicts, learners move to the Spanish baseline from Group 2 onward in the less variable contexts. Activity verbs in frequentative contexts represent a greater acquisitional challenge in that there are cross-linguistic differences whereby English almost categorically prefers the simple present in repetitive contexts while Spanish allows for more variation between the simple present and present progressive (Fafulas 2012). Learner development is non-linear and even higher level learner patterns do not correspond to the Spanish baseline in this context.

Accomplishment verbs: Cross-linguistic baselines and second language learners

Table 11 displays the distribution of responses in percentages for simple present and progressive allowed by the English and Spanish baseline groups as well as learners with accomplishment verbs in combination with adverbs of immediacy, frequentative adverbs, and without an adverb.

Table 11. Simple present vs. progressive allowed (%) by baseline and learner groups for accomplishment verbs

	Immediate		Frequentative		None	
	Simple present	Progressive allowed	Simple present	Progressive allowed	Simple present	Progressive allowed
English baseline	5	95	85	15	0	100
Spanish baseline	0	100	60	40	0	100
Group 1: 2nd year Spanish	35	65	70	30	35	65
Group 2: 3rd year Spanish	21.1	78.9	78.9	21.1	42.1	57.9
Group 3: 4th year Spanish	11.8	88.2	100	0	11.8	88.2
Group 4: 5th+ year Spanish	0	100	73.7	26.3	5.3	94.7

For accomplishment verbs in contexts with an immediate adverb, the English and Spanish baseline groups show little variation and almost unanimously reject selection of the simple present in those contexts. This pattern is also true for contexts with accomplishment verbs and no temporal adverb (see Example (6)). In contrast, the Spanish baseline group allows both progressive and simple present in contexts with a frequentative/habitual interpretation (60% simple present vs. 40% progressive allowed) while the English baseline group more strongly favors the simple present at a rate of 85%. Thus, similar to the patterns observed in the previous section for activity verbs, this is a context in which Spanish and English differ cross-linguistically (see Fafulas 2012).

(6) Lees un periódico mientras esperas. Algunos minutos después, entra a la sala de espera un hombre vestido como médico. El hombre saluda a la secretaria y a la enfermera y desaparece detrás de una puerta. La secretaria mira a la enfermera y le pregunta:
"¿Qué le pasa al doctor Ramírez? Llega/Está llegando tarde a la oficina todos los días."
La enfermera asiente y le dice a la secretaria:
A. "Es cierto. Lo que pasa es que construyen algunos edificios nuevos cerca del centro comercial y el transito está medio complicado."
B. "Es cierto. Lo que pasa es que están construyendo algunos edificios nuevos cerca del centro comercial y el transito está medio complicado."
___ Prefiero A. ___ Prefiero B. ___ Ambos.
A gentleman dressed as a doctor enters the waiting room. He says hello to the nurse and secretary and disappears behind an office door. The secretary looks at the nurse and asks:
"Is Doctor Ramirez okay? Every day he comes/is coming to work late."
The nurse nods and says to the secretary:
A. "I know. I think it is because they build new offices by the center and traffic is bad."
B. "I know. I think it is because they are building new offices by the center and traffic is bad."
___ I prefer A. ___ I prefer B. ___ Both.

The learners in our study move toward the Spanish baseline norm for progressive allowed in contexts with immediate adverbs and those with no adverbial support, however, they remain intermediary to the English and Spanish baselines in those contexts with a frequentative adverb, similar to the contexts with activity verbs.

For Accomplishment verbs in contexts of immediate action, Group 1 and Group 2 Spanish may show some delay because of the lexical aspect hypothesis and prototypicality (Bardovi-Harlig 2000) given that accomplishments show less

prototypical pairing with progressive morphology. Still the context forced by an adverb of immediacy guides the learners and by Group 3 they are more aligned with the Spanish baseline rates.

Progressive use with accomplishment verbs in contexts of frequentative/habitual action are another area in which the prototype hypothesis predicts that these less core meanings of the progressive would be more challenging to acquire. This is also augmented by the strong association of the simple present in frequentative contexts in the learners' L1, thus making this one of the last acquired areas given the differences between Spanish and English (Fafulas 2012). This might be similar to other morphosyntactic structures that are not very frequent in the input: subjunctive, etc. As far as progressive use with accomplishment verbs in contexts with no adverb, learners must rely on lexical aspect alone. There is strong agreement cross-linguistically, and the learners do move toward the Spanish norm, however, they do so over several levels of proficiency, likely because they do not have the extra support of an adverb to guide them. Still, by Group 3 they start to align with the Spanish baseline selection rates.

Achievement verbs: Cross-linguistic baselines and second language learners

Table 12 shows the percentage of simple present and progressive allowed with achievement verbs in contexts of immediacy, frequentative action, or with no adverbial support, for the English and Spanish baseline, as well as the learner, groups.

Table 12. Simple present vs. progressive allowed (%) by baseline and learner groups for achievement verbs

	Immediate		Frequentative		None	
	Simple present	Progressive allowed	Simple present	Progressive allowed	Simple present	Progressive allowed
English baseline	85	15	60	40	5	95
Spanish baseline	80	20	60	40	5	95
Group 1: 2nd year Spanish	75	25	80	20	60	40
Group 2: 3rd year Spanish	63.2	36.8	94.7	5.3	68.4	31.6
Group 3: 4th year Spanish	94.1	5.9	94.1	5.9	82.4	17.6
Group 4: 5th+ year Spanish	78.9	21.1	84.2	15.8	21.1	78.9

The English and Spanish baseline groups show little variation and more strongly prefer the simple present (85% and 80%, respectively) in contexts with an achievement verb and immediate adverb (see Example (7)). In contexts with achievement verbs and no temporal adverb, both groups almost unanimously favor the progressive at rates of 95%. In contrast, the English and Spanish baseline groups allow a variation between simple present and progressive in contexts with a frequentative/habitual interpretation (60% simple present vs. 40% progressive allowed). Thus, this is another potentially variable context for learners.

(7) Él (el doctor) te pregunta cuándo fue la última vez que te hiciste un examen médico completo. Tardas en recordar e piensas algunos minutos. Después le dices:
A. "Ahora lo estoy recordando, fue el año pasado, en noviembre."
B. "Ahora lo recuerdo, fue el año pasado, en noviembre."
___ Prefiero A. ___ Prefiero B. ___ Ambos.
He (the doctor) asks you when the last time you had a complete medical checkup was. You take a while to remember but finally reply:
A. "Now I am remembering, it was last year in November."
B. "Now I remember, it was last year in November."
___ I prefer A. ___ I prefer B. ___ Both.

Learners in our study maintain relatively low rates of progressive selection in contexts with achievement verbs and an immediate adverb. Thus, while development is not linear, rates do not deviate much from the Spanish baseline. In contexts with no adverb, learners progress very gradually toward the Spanish baseline, and only approximate Spanish baseline rates of selection by Group 4. This pattern is similar to what we observed for accomplishment verbs, but learners do not reach the Spanish baseline and follow a less linear trajectory. Again, we hypothesize that this is because progressive use with achievement verbs is a less prototypical function.

In contexts with achievement verbs and frequentative adverbs, learners do not align with the Spanish baseline norms, even by Group 4. Again, as pointed out by Fafulas (2012), progressive use and variation with the simple present in frequentative contexts is an area of investigation which warrants further study to determine how contact with English shapes bilingual Spanish grammars. Additionally, progressive morphology with achievement verbs constitutes a peripheral case given that achievement verbs denote actions that are less durative while the core meaning of the progressive is durative and non-punctual (Bardovi-Harlig 2012). We now turn to a more detailed discussion of these findings.

Discussion

The current study was designed to answer four research questions. The answers to the first two, rate of use and influence of lexical aspect and adverb type on those rates, provide a description of selection for each of the baseline groups and for each learner group. Regarding rates of selection of each form, in general, we see that the Spanish baseline group allows for both forms (the both response) at a higher rate than the English baseline group, perhaps as an indicator of greater variability at present in Spanish than in English. Additionally, the English baseline group selected the present progressive at a slightly higher rate than the Spanish baseline group. Nevertheless, the English baseline group also selected the simple present at a higher rate than the Spanish baseline group and, thus, it will be the analysis of the degree to which this changes across linguistic contexts that explains these patterns more clearly. Regarding the learner groups, the balance between simple present and allowance of the present progressive does not change considerably across levels. However, the selection of the both response does show a linear increase with learner level.

The second research question examined the role of two factors, lexical aspect and adverb type in the rates of selection of each response. These factors when considered independently were significantly related to form selection for all groups, except for the group 1 learners, whose use was influenced by lexical aspect but not by the adverb type. The interaction of lexical aspect and adverb did not reach levels of significance ($p < .05$) for group 1 or group 2. When considered together for each group, we see differing trends by lexical aspectual category. For stative verbs, we see that both baseline groups allow relatively few instances of progressive (the highest being 20 percent for the English baseline group with immediate adverbs). For learners, there is clear movement toward near-complete selection of the simple present for all adverbial contexts from the third year onward. Activity verbs show greater variability, both cross-linguistically and by adverbial class. Although the highest level group of learners does appear to converge on Spanish norms, the trend across learner groups is not nearly as linear as for stative verbs. For both achievement and accomplishment verbs, there is little difference between the two baseline groups, but learners do show a move toward the native norms over time, beginning the path of acquisition with relatively little use of the progressive, despite this possibility in both the native and target language. For example, both English and Spanish native speakers allow progressive nearly exclusively in both immediate contexts and those with no adverb present. Nevertheless, learners in the lowest level group allow progressives 65 percent of the time in these same contexts and do not surpass 85 percent until group four. In the context where there are the greatest cross-linguistic differences, those with accomplishment verbs paired with frequentative adverbs, English speakers allow the progressive only 15 percent of the

time and native Spanish speakers allow the progressive 40 percent of the time. The learners, in this same context, show variability across levels and do not demonstrate a linear trend toward either norm. While this summary is not exhaustive, it gives a sense of the description our analysis provides in terms of rate and predictors of form selection. It further demonstrates the tools we provide for accounting for cross linguistic differences (research question three) and development across levels (research question four). Finally, we explore these findings in the context of the Aspect Hypothesis and Prototype Theory. We turn our attention to each of these issues in the sections that follow.

Contrasting use in English and Spanish

In our study, we followed suggestions of best practices for conducting SLA studies by Ortega (2016), who recommends including local baselines and target groups in order to track learner gains. This ensures that we contextualize learner acquisition within the context of the L2 input to which they are most likely exposed. To be sure, this is not the lone source of input for learners who have access to different instructors, course materials, and study abroad experiences. Nevertheless, it avoids the unfounded comparison to an arbitrarily selected monolingual norm which may not be a realistic or logical target for the learners in our study.

Our analysis of these local baseline groups uncovered a number of combinations of lexical aspectual type and ongoing or repetitive action contexts which showed contrasting selection rates of simple present and present progressive forms in Spanish and English, as summarized in Figure 1.

Our findings show how studies of L2 variation, when an adequate number of target and baseline tokens are collected, can also contribute to sociolinguistic knowledge of L1 or bilingual variation more generally. Along these lines, our investigation adds to discussions of Spanish-English contact and the progressive. As already mentioned, a major hypothesis (i.e. Cuza 2010; Klein 1980) centers on the claim that Spanish in contact with English will result in the influence of English morphosyntactic patterns on Spanish, thereby leading to increased frequency of use of the progressive, at the expense of the simple present, in referencing ongoing action at speech time. However, our data show that while the English baseline group did select the progressive more than the Spanish baseline group (37.1% vs. 35%, respectively), this difference is minimal. Moreover, when we combined the responses in which participants demonstrated allowance of both forms with those for the progressive only, the category 'progressive allowed' revealed that in fact the Spanish baseline group allowed the progressive at a rate of 49.6% and the English baseline group exhibited a selection of 44.2%. This is in part due to the fact that we tested progressive use in contexts of immediacy as well as those representing

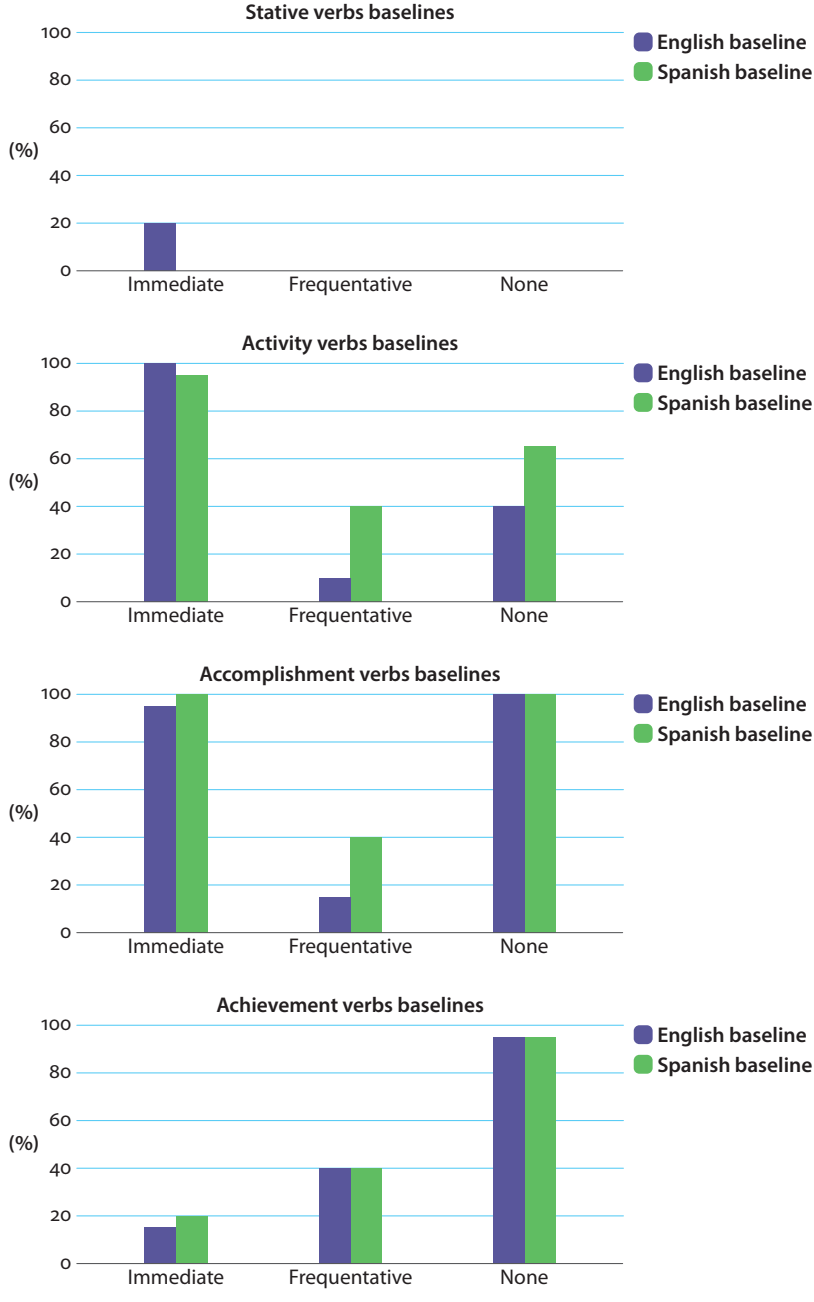

Figure 1. Baseline progressive allowed (%) by lexical aspectual verb class and adverbial context

frequentative/habitual action which, similar to Fafulas (2012), shows that when the entire Tense Aspect Mood paradigm is considered, Spanish employs the progressive at higher rates than previously documented. We can also add to the discussion the findings of Fafulas (2015) revealing that increased proficiency in Spanish (as exhibited by L1 speakers of Spanish and advanced L2 speakers) results in a wider range of progressive constructions, beside the frequently studied *estar* progressive. What this points to is that the Spanish progressive is a much more complex target than previously suggested, in that there are multiple constructions competing across multiple aspectual paradigms (temporal and lexical), and in competition with the simple present form. Torres Cacoullos (2000) already refuted the claim that use of the Spanish progressive increases due to contact with English, instead relying on language internal and grammaticalization theory to suggest that Spanish is changing diachronically, regardless of contact with English. Our study adds to these findings by including results from a more controlled questionnaire to show that contact with English may or may not accelerate the frequency of use of the Spanish *estar* progressive, but equally as important, it can cause shifts in the contexts of use across lexical aspectual classes and temporal aspect.

Path of acquisition

Our fourth and final research question sought to better understand the path of development for a cross-sectional sample of learners in these linguistic contexts. It was hypothesized that the degree of parity between English and Spanish as well as the strength of a tendency toward (near) categorical patterns of use might influence the distinct paths of development within the cross section of these categories of lexical aspect and adverbial class. Our analysis allowed us to track changes in the degree to which each increasingly advanced group allowed present progressive for contexts within each verb type and adverb condition, and to contextualize this within the patterns for our L1 and L2 baseline groups. These changes across groups are characterized in Figure 2, which shows the paths for each verb type separately.

For stative verbs, where English and Spanish baseline groups both opt for categorical use of simple present (except for 80% for immediacy in English), we see a trend among the learners of gradual reduction of allowance of progressives over time. We note that contexts of immediacy start with higher rates of progressive allowed than the other two baselines and also that by the time learners are in group two (third year, majors and minors), selection of progressive allowed has already fallen (and remains) below 20 percent. In this case both the L1 and the L2 baseline groups behave similarly and contexts do not differ across adverb conditions. As predicted, this leads to a relatively straightforward path of acquisition.

In the case of all other verb classes, the adverbial conditions present differences in patterns of selection which in turn present additional complexities for learners.

What is more, as is the case of activity verbs, there are also greater distinctions in the paths attested by the baseline groups. Whereas English and Spanish pattern similarly for activity verbs with adverbs of immediacy, allowing progressive nearly exclusively, they are more restricted in allowance of the progressive in the other two conditions, with frequentative contexts allowing the least progressive and with English allowing less progressive than Spanish for the baseline groups. For activity verbs, we see two acquisitional challenges. First learners must distinguish the three adverbial contexts from one another as each patterns differently (in both the L1 and the L2). Secondly, learners must gradually increase allowance of progressives for all but contexts of immediacy, which already allow progressives at near categorical rates. Learners appear to move toward near exclusive selection of progressive with adverbs of immediacy by the time they are in group two. Again, this path is similar to all contexts for stative verbs which also similarly shows matching and near categorical use in both languages. In contrast, for frequentative adverbs we see a non-linear change in selection with rates of allowing progressive remaining below the baseline Spanish group even for the most advanced group of learners. These results are somewhat surprising and we note that the u-shaped pattern attested here may indicate a complex restructuring in the learner grammar in which differentiation between immediate and frequentative adverbs comes first, and pushes rates in frequentative contexts to extreme non-use prior to moving back toward baseline Spanish variable rates. Another possibility, is that as learners advance in proficiency and begin to incorporate a range of progressive constructions (Fafulas 2015), they may show a stronger form-function pairing with an auxiliary other than *estar*, such as *seguir* (to continue), in frequentative contexts, as this base would add to the semantic notion of repetitive action.

For accomplishment verbs, the baseline groups both show near-categorical allowance of progressives except with frequentative adverbs. Additionally, the English baseline group shows even greater restriction of allowance of progressives with frequentative adverbs than the Spanish baseline group, which allows the progressive in 40% of the cases (vs. 15% for English). Learners show a distinction between contexts with frequentative adverbs and those without, even in the least proficient group. We see a steady rise toward allowance of progressives over time in non-frequentative contexts, but the trend for frequentative contexts is not linear. Instead the lowest level group and the highest level group both allow the progressive at rates similar to the Spanish baseline group, but the levels in between show a u-shaped path, falling to categorical use of simple present before rising back to the more variable norms attested by the Spanish baseline group. These changes in allowance of progressive in frequentative contexts are relatively small and we further note that the differentiation between contexts may be the primary force driving these patterns.

The rates of allowance of progressives with achievement verbs is similar to the cross-linguistic comparison established for statives in the sense that both baseline

groups show nearly identical patterns across all contexts. The difference, however, is that these matching patterns do not show a categorical preference for a single form (although in the absence of an adverb achievement verbs allow progressives nearly categorically in both languages). This means that for achievement verbs learners must converge on a variable path of allowing progressives but to slightly different degrees for immediate and frequentative contexts. They do not, however, need to move away from L1 baseline rates.[4] It is not until the highest level group that learners differentiate the contexts without an adverb from those in the other two conditions and even at that advanced level the learners do not exhibit the slightly greater allowance of progressives in contexts with frequentative adverbs (over immediate, although both contexts allow progressives 40% or less of the time) that both the English and Spanish baseline groups showed. This appears to corroborate the hypothesis that contexts in which input is likely to be variable present unique acquisitional challenges.

The detailed analysis of the path of acquisition in each context serves to remind us of the importance of the interplay between various influencing linguistic factors. It is consistent with other cross-sectional studies of the SLA of variable structures which show that a mere comparison of rates of use of a given form in the L1 and the L2 does not allow us to predict the path or rate of acquisition and, additionally, that even when frequency of selection matches in the L1 and the L2, we often see a u-shaped pattern as learners work out the relative importance of the various influencing factors in the new languages (Geeslin et al. 2010; Geeslin, Linford & Fafulas 2015).We conclude by noting that with one exception, the selection of progressive with achievements in frequentative contexts, the learners did converge on the path attested by the Spanish baseline group. In short, variable structures are acquired in second languages and their rate of acquisition is often a function of the variability in the input to which learners are exposed.

Connection to previous studies of L2 Spanish simple present/present progressive

We found that it was not until the upper two levels that learners showed sensitivity to the interaction of lexical aspect and adverbial type in their selection of simple present and *estar* progressive forms. Similarly, Fafulas (2015) found that it was not until the 4th year Spanish level that the oral production of 'other' canonical progressives emerged in a corpus of simultaneous narratives and learners showed sensitivity to the factors of adverbial type and lexical aspect on a judgment task

4. We acknowledge that there may well be other cross-linguistic differences but limit our discussion to rates of selection in the contexts examined in the present study.

incorporating multiple lexical bases. This supports our general conclusion that the L2 development of the simple present and present progressive is not monolithic in that it is much more than a straightforward realignment of the simple present to include ongoing action, instead requiring years of exposure to the target language and the acquisition of a complex interplay of multiple linguistic factors (Geeslin & Fafulas 2012), including lexical semantics, temporal aspect, the interplay of adverbials, as well as the inclusion of a range of bases that form the progressive in Spanish (Geeslin 2011). Similarly, Gabriele and Canales (2011: 671) argue that the acquisition of aspectual interpretation includes the successful integration of properties of the verb phrase, morphological marking, temporal adverbials, and the socio-pragmatic context (see also De Swart 1998), all of which are at play in learner development of the simple present and present progressive.

Gabriele et al. (2015) found that learners and NS of Spanish accepted (i.e. as 'possible') the present progressive more when judging contexts with a habitual meaning when the activity was surprising and repeated during a limited period of time rather than with habituals that were more durative. Their finding supports our call for future research on the SLA of the progressive to include sentences with habitual/frequentative adverbs. Additionally, they found that the majority of the 3rd semester learners of Spanish in their study (34 out of 49 total) accepted the progressive 'across the board,' in ongoing/immediate contexts as well as the habitual contexts, which they interpret as a lack of sensitivity to adverbial context. In other words, these authors also found some evidence for a stage in which learners simply select the progressive before moving on to a more nuanced understanding of the interplay between form and semantics, similar to what the results of our GEE models showed for the lower level group in our study, who also rendered non-significant results for adverb in their model. However, all of the test sentences in Gabriele et al.'s study included activity verbs which may have also inflated the tendency to allow the present progressive.

Cuza and López-Otero (2016) report results on a preference task including a progressive habitual condition. The intermediate-level L2 learners in their study showed a preference for the simple present 83 percent of the time in the progressive habitual condition, while heritage speakers chose the simple present 71 percent of the time and the native speaker controls chose the simple present 40 percent of the time in the same condition. In other words, their native speaker controls showed a preference for the progressive in these habitual contexts at a rate of 60 percent while the learners struggled to accept the progressive in the habitual contexts designed to test this form-function pairing. These results corroborate our findings that learners struggle with the progressive in frequentative/habitual contexts and the affirmation of Fafulas (2012) that the progressive is more widespread in Spanish in frequentative contexts than it is in English.

Connection to the prototype theory and aspect hypothesis

Finally, we connect our findings to general SLA theories of prototypes and lexical aspect. Previous research suggests that non-prototypical meanings of a form or structure are less likely to be transferred and are harder to acquire in the L2 (Andersen & Shirai 1996; Gass & Ard 1984). The Aspect Hypothesis (Bardovi-Harlig 2000) predicts that L2 progressive marking begins with activities, extending next to accomplishments and finally to achievements, while not being overextended to statives. Figure 2 represents the learner trends found in our investigation based on lexical aspectual type and adverbial context. In observing the contexts of immediacy, we note that learners appear to follow the predictions of the Aspect Hypothesis in that they employ the progressive robustly with activity verbs at lower levels of proficiency while showing a slower rise with accomplishment verbs and a non-linear trend with the least prototypical pairing of achievement verbs. For stative verbs, we found that learners do indeed overextend the progressive to this verbal class at the lowest levels. This result is similar to Muñoz and Gilabert (2011) who found that Catalan-Spanish instructed learners of English also matched progressive morphology with stative verbs. More recently Zeng, Shirai, and Chen (2021) tested three distinct L1s (Chinese, Spanish and German) and found that English learners used the progressive with statives, leading them to conclude that the L1, lexical aspect of verbs, and proficiency levels jointly drive the acquisition of tense and aspect. In our study, we were able to show that the lower level groups might use progressive morphology with stative verbs as a reflection of the English-speaking patterns in the speech community. This supports the findings of Muñoz and Gilabert and Zeng et al. in that it might be more a function of input than L1 transfer in learner use of the progressive with stative verbs. Similarly, Bardovi-Harlig (1987) found that English learners in her study, from a diverse set of L1s, acquired preposition stranding instead of the typologically less marked variant, pied piping, against the predictions of the markedness hypothesis, as a result of salience (i.e. frequency) in the input. Additionally, in certain areas where there were cross-linguistic differences between the baselines in our study, we were able to see different acquisition trends than for those with similarities across the baseline languages in our study. What our findings suggest, then, is that while the principles of the Aspect Hypothesis and Prototype Theory are robust and likely adhere to underlying cognitive 'universal' properties (Andersen & Shirai 1994) of learner processing and pairing of verbal morphology and lexical class, it is still necessary to include local baseline comparisons to better understand certain patterns in the input to which learners are exposed.

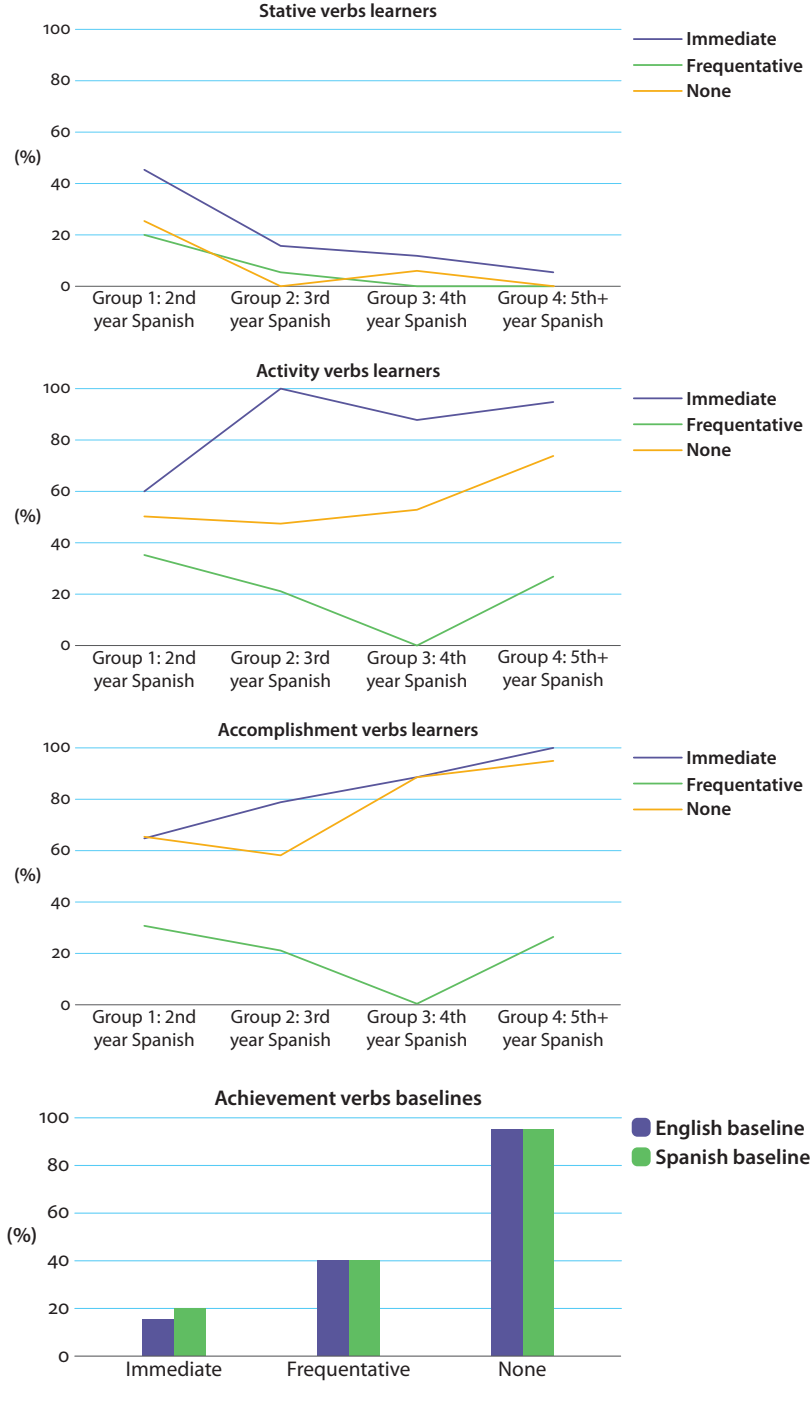

Figure 2. Learner progressive allowed (%) by lexical aspectual verb class and adverbial context

Conclusions and future directions

While we were able to show how analyses of cross-linguistic variation may help better predict patterns of learner development, we believe there are a number of avenues for future investigations to build on and improve our findings and general model. For example, it would be fruitful to observe learner patterning against Spanish baseline data from multiple geographic regions, and contact communities including the languages under investigation. Along these same lines, it would be worthwhile to collect data from different regions in the US where Spanish has a greater representation than the community observed in the current study (i.e. Chicago, Atlanta, Santa Cruz). We also acknowledge the need to supplement our data and findings with data collected from corpora or sociolinguistic interviews, as well as introspective data that might help uncover how learner attitudes and identity help shape their adoption of certain linguistic forms in contexts where both variants are possible. And, in order to fully document the developing bilingual system, future studies should include data collected in English as well as Spanish among the L2 groups to unveil bi-directional effects. Additionally, it will be worthwhile to explore a range of progressive types, beside the *estar* progressive observed in the current study, as well as to document learner patterns longitudinally in study abroad programs, where Spanish is the dominant language of the local community.

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CHAPTER 8

Acquiring sociolinguistic competence during study abroad

U.S. students in Buenos Aires

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Recent research suggests that students make gains in the acquisition of dialectal features during study abroad; however, much of the research conducted on this topic in Spanish-speaking contexts has focused on features characteristic of Spain. This chapter examines the acquisition of three features of Buenos Aires Spanish by 23 North American students studying in Buenos Aires: (1) *sheísmo/zheísmo*, the realization of /ʝ/ as either the voiceless palatal fricative [ʃ] or the voiced palatal fricative [ʒ]; (2) /s/-weakening; and (3) *voseo*, the use of the informal second person pronoun *vos* and its corresponding conjugations. By the end of the semester, learner rates of use of [ʃ] or [ʒ] are over 90% and their rates of use of *vos* are over 70%. However, /s/-weakening rates remain low throughout the semester. These results suggest that students seek to adopt the features of the local variety to which they are exposed while abroad, particularly when they are highly salient and/or prestigious.

Keywords: second language development, sociolinguistic variation, phonological features, morphosyntactic features

Introduction

Considering that a study abroad (SA) experience provides a wide range of contexts in which language learners might interact, it is widely believed to be an ideal setting for the development of sociolinguistic competence, or the ability to interact appropriately in different situations with various interlocutors. This crucial ability is reflected in the linguistic choices one makes in SA, including whether to adopt linguistic features commonly used in the host community.

Existing studies on the acquisition of regional features in SA suggest that learners tend to move towards but not reach native speaker (NS) norms, and these results often vary greatly across participants, SA contexts, and the linguistic features

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under investigation. Most studies on this topic in Spanish-speaking contexts have focused primarily on peninsular features, such as the interdental fricative [θ] (George 2013, 2014; Knouse 2012, Ringer-Hilfinger 2013), the uvular fricative [χ] (George 2014; Ringer-Hilfinger 2013), and the second person plural pronoun *vosotros* and its corresponding conjugations (George 2013; Reynolds-Case 2013; Ringer-Hilfinger 2013), with a few notable exceptions, including /s/-weakening in coastal Ecuador (Escalante 2018), as well as the prepalatal fricatives [ʃ] and [ʒ], and the second person singular pronoun *vos* and its corresponding conjugations (Hoffman-González 2015) in Buenos Aires, Argentina. The latter study on the acquisition of the Argentine features, however, was quite small, including seven participants, few tokens, and a lack of multivariate analysis regarding the factors that influenced feature production. With this in mind, considering that Argentina is a popular SA destination (Institute of International Education 2016), L2 use of features of Argentine Spanish should be further investigated.

This chapter explores the production of three features characteristic of Buenos Aires Spanish (BAS) by 23 L2 learners studying abroad there for a semester: (1) *sheísmo/zheísmo*; (2) /s/-weakening; and (3) *voseo.* The first feature, *sheísmo/zheísmo*, refers to the pronunciation of the graphemes "y" and "ll" as sibilant postalveolar fricatives in Buenos Aires. While most BAS speakers exhibit *sheísmo* in which they realize "y" and "ll" as a postalveolar voiceless fricative [ʃ], pronounced as in the English word *sheep* (Hualde 2005; Hualde, Olarrea, Escobar & Travis 2010), some older BAS speakers still exhibit *zheísmo*, in which they produce "y" and "ll" as a postalveolar voiced fricative [ʒ], pronounced as in the English word *pleasure* (Hualde et al. 2010). The focus of the analysis in this study, however, is whether L2 learners acquire either of the BAS fricatives [ʃ] or [ʒ]. The second feature, /s/-weakening, occurs in many parts of the Spanish-speaking world, has been well-studied among NS populations, and is often stigmatized. In BAS, coda /s/ aspiration is expected in pre-consonantal position ([mohka] *mosca*), but it is stigmatized before a word that starts with a vowel or in sentence final position (*[lohoxoh] *los ojos,* Terrell 1978, 1979). Deletion of /s/ is both less common (Hualde 2005) and stigmatized in BAS (Colantoni & Kochetov 2016). The third feature, *vos*, refers to the use of the informal second person pronoun *vos* (and its corresponding conjugations) rather than *tú.* It is a frequent, salient (Schreffler 1994), prestige norm used to address a single locutor (Fontanella de Weinberg 1992) uniformly across social levels throughout Argentina (Lipski 1994). In sum, *sheísmo/zheísmo* and *voseo* are salient, prestige norms used across social classes in Buenos Aires. In contrast, /s/-weakening is socially stratified, realized in distinct ways (aspirated or deleted) in different phonological contexts, and is often stigmatized in the Spanish-speaking world. In addition, previous studies suggest that lower level learners may not be aware of or perceive /s/-weakening (Geeslin & Gudmestad 2008; Schmidt 2011).

The present study investigates L2 production of the aforementioned features and the linguistic and extralinguistic factors that influence this use. Over 4,800 tokens of [ʃ] and [ʒ], more than 13,000 tokens of /s/-weakening, and approximately 1,200 tokens of *vos* were collected before or right after the start of SA, mid-semester, and at the end or immediately following the conclusion of SA in Buenos Aires. In order to elicit [ʃ] and [ʒ], sociolinguistic interviews, a reading passage, and a word list were used. Instances of /s/-weakening were extracted from the sociolinguistic interviews. *Vos* was elicited by means of an oral discourse completion task (DCT, based on George 2013) and two role plays (based on Kinginger 2008; Villareal 2014). Multivariate analysis was conducted in order to determine the extent to which linguistic and extralinguistic factors influenced the production of these features throughout the semester using Rbrul (Johnson 2009). Results indicated that L2 learners quickly adopted the prestigious, salient features of *sheísmo/zheísmo* and *voseo*, but they rarely exhibited use of the less salient, often stigmatized variant of /s/-weakening during SA.

Several implications might be drawn from this study. First, salience and stigma seem to play a role in the acquisition of the target features since participants used highly prestigious, salient variants frequently but produced the less salient, often stigmatized variant minimally, if at all. Moreover, results for individual speakers indicate the importance of proficiency level and social networks on the acquisition of all three of these regional features. This research not only provides one of the first accounts of the acquisition of linguistic features specific to BAS, but it also compares acquisition across several BAS features. The next section reviews previous literature on L2 acquisition of dialectal variation in the Spanish-speaking world in addition to exploring research on the target features of BAS. The subsequent section explains the methods used to conduct this study, followed by a presentation of the results. This chapter concludes with implications of the study for SA programs and for the acquisition of sociolinguistic competence.

Previous research

The acquisition of region-specific phonological features in Spanish-speaking countries

Several studies on the acquisition of sociolinguistic variation in Spanish-speaking contexts have focused on L2 production of phonological features characteristic of Spain, including the voiceless interdental fricative [θ] (e.g., realizing the word *vez* "time" as [béθ] instead of [bés]) and the strident post velar fricative [χ] (e.g., pronouncing the word viejo "old" as [bje.χo] instead of [bje.xo] or [bje.ho]). NSs of Castilian Spanish tend to use [θ] categorically for "z" and for "c" before "i" or "e"

(this phenomenon is known as *distinction*); however, they vary their use of [χ] with the fricative dorsal-velar [x] and the fricative glottal [h] for "j" and for "g" before "i" or "e". Although English speakers may be less likely to adopt [θ] in their speech because they might view it as a lisp (Aronson 1973), they may be more likely to produce this stable variant in a target-like way (Regan et al. 2009) as opposed to a feature such as [χ], which exhibits variation and thus entails "catching a moving target" (Geeslin 2011, p. 303).

Several studies have found overall minimal use of [θ] among L2 learners in SA, and this use tends to vary a great deal among individuals. For example, Ringer-Hilfinger (2013) found that L2 learners produced [θ] 17.9% of the time by the end of a semester in Madrid, Knouse (2012) found that only seven out of fifteen students studying in Salamanca for six weeks used [θ], and George (2013, 2014) found that L2 learners used the feature less than 7% of the time by the end of a semester in Toledo. Moreover, in their investigation of L2 use of [θ] in the United States, Geeslin and Gudmestad (2008) found that just nine of 150 students produced [θ] and seven of those nine students had spent time in Spain.

L2 acquisition of [χ] has received less attention in the literature, and these studies have found that L2 learners produce [χ] at a relatively similar rate as [θ]. Ringer-Hilfinger (2013) found that L2 learners produced the feature 15.5% of the time by the end of a semester in Madrid and George (2013, 2014) found that eight of 25 students used the variant more (26–35% of the time) than the other 17 students (1–2% of the time). Overall, these studies found relatively low production of these target phonological features of Peninsular Spanish. Moreover, the role of proficiency level in L2 production of these features was not always clear. For example, Ringer-Hilfinger (2013) and Geeslin and Gudmestad (2008) found that learners with greater proficiency levels produced the target features ([χ] and [θ], respectively) more often. Nevertheless, Knouse (2012) found that intermediate learners used [θ] more than beginning or advanced learners.

Few studies have explored the acquisition of phonological features characteristic of Latin American varieties of Spanish. These studies have focused on learner use of /s/-weakening in coastal Ecuador (Escalante 2018) and *sheísmo/zheísmo* in Buenos Aires, Argentina (Hoffman-Gonzalez 2015). Nevertheless, NS use of these features has been the focus of several studies in sociolinguistic research. For example, studies on NS use of /s/-weakening indicate that while it is a widespread phenomenon in the Spanish-speaking world, it is more common among speakers of lower socioeconomic status in vernacular speech (File-Muriel 2007; Lipski 1999; Terrell 1979). BAS in particular is known to be an /s/-weakening variety of Spanish (Rasmussen & Zampini 2010) in which /s/ tends to be maintained before a vowel or a pause and aspirated or deleted before a consonant within a word or in word-final position (Hualde 2005). Table 1 shows /s/-weakening rates in BAS as presented by Bybee (2000), based on data from Terrell (1977, 1978, 1979).

Table 1. /s/-weakening in BAS

Buenos Aires				
	[s]	**[h]**	**0**	**Tokens**
_C	12%	80%	8%	4150
_##C	11%	69%	20%	5475
_##V	88%	7%	5%	2649
_//	78%	11%	11%	2407

Adapted from Bybee (2000).

As seen in Table 1, although coda /s/ aspiration is often exhibited before a consonant in BAS, it is produced less and considered stigmatized before a word that starts with a vowel or in sentence final position (Colantoni & Kochetov 2016). Moreover, /s/ deletion is less common and stigmatized in any phonological context in BAS (Colantoni & Kochetov 2016). Considering this, the stigmatization of /s/-weakening in BAS is complex, as it depends not only on the type of weakening involved (aspiration or deletion), but also on the phonological context in which this weakening takes place.

Studies on NS use of *sheísmo/zheísmo*, on the other hand, indicate that these phenomena are considered prestige norms in BAS. Although upper class BAS speakers have historically exhibited less devoicing than speakers from other social classes (Wolf & Jiménez 1979), devoicing among the upper class has appeared to increase over time (Wolf 1984). Nevertheless, some BAS speakers still seem to associate the voiced variant [ʒ] with higher socioeconomic status (King 2009). In addition, while some older speakers of BAS still use the voiced variant [ʒ], the devoiced variant [ʃ] is used most often, especially among younger speakers, and thus the devoicing of these fricatives in Buenos Aires has neared or reached completion (Chang 2008; Rohena-Madrazo 2015). With this in mind, L2 acquisition of prestigious target features that exhibit little variation among NSs of BAS, such as *sheísmo/zheísmo*, may differ from L2 acquisition of features like /s/-weakening, which are often stigmatized and are produced to varying degrees in different phonological contexts across speakers.

Studies on L2 acquisition of /s/-weakening (Escalante 2018; Geeslin & Gudmestad 2008; Sayahi 2005; Schmidt 2011) have found limited production and perception of the feature in different contexts. Regarding the production of /s/-weakening in Ecuador, Escalante (2018) found that participants weakened /s/ 4.6% of the time overall and one of the participants was responsible for most of this use (74.1%). Similarly, Sayahi (2005) found that L2 learners maintained /s/ 94% of the time in Morocco, and Geeslin and Gudmestad (2008) found that only five out of 130 L2 learners exhibited /s/-weakening in the United States. Geeslin and Gudmestad (2008) also found that students with higher proficiency levels weakened /s/ more and

that lower level students may not be aware of the feature. Regarding the perception of /s/-weakening, Escalante (2018) found that nearly all of her eleven participants made significant gains in perception of the variant and that learners with higher proficiency levels were more likely to perceive it. The same pattern was evident in Schmidt (2011), who found that perception of /s/-aspiration in the United States emerged at the high intermediate level and continued to increase at advanced levels.

In contrast, Hoffman-González's (2015) study on the acquisition of *sheísmo/zheísmo* (which did not distinguish between the use of [ʃ] and [ʒ] in the analysis) among seven learners studying abroad in Buenos Aires found great gains in their production of the feature by the end of a semester in the host community (74% of the time in free speech and 95% of the time in a reading passage). The fact that learners in these studies exhibited minimal use of the stigmatized feature, /s/-weakening and extensive use of the prestigious features, *sheísmo/zheísmo*, suggests that L2 learners may take into consideration the stigma and/or prestige of a feature when choosing whether to adopt it in their speech.

The acquisition of region-specific morphosyntactic features in Spanish-speaking countries

In research on the acquisition of regional variation, studies have found a range of increase in learner production of morphosyntactic features in French and Spanish, focusing on clitics in Spanish (Geeslin, García-Amaya, Hasler-Barker, Henriksen, and Killam 2010; Salgado-Robles 2011) and address forms in French and Spanish (Dewaele 2004; George 2013; Hoffman-González 2015; Kinginger 2008; Kinginger & Farrell 2004; Rehner, Mougeon & Nadasdi 2003; Reynolds-Case 2013; Ringer-Hilfinger 2013; Sax 2003). As Kinginger (2008) points out, L2 development of the latter is particularly relevant to L2 acquisition of both sociolinguistic and grammatical competence, since the choice of an address pronoun also determines the appropriate verb morphology. Research conducted on this topic in Spanish-speaking SA contexts has paid particular attention to L2 development of region-specific address forms, especially that of *vosotros* in Spain (George 2013; Reynolds-Case 2013; Ringer-Hilfinger 2013).

Among these studies, Ringer-Hilfinger (2013) found that L2 learners used *vosotros* in a written elicitation task 34.7% of the time by the end of a semester in Madrid, George (2013) found that learners used it in an oral task 20.96% of the time at the end of a semester in Toledo, and Reynolds-Case (2013) found that by the end of a four week SA program in Madrid, most students increased appropriate use of *vosotros* and decreased use of *ustedes* on a written questionnaire. Although results of these studies indicated an increase in learner production of *vosotros* during SA sojourns of varying lengths, the amount of the increase varied, which

may be related to task type and design. Reynolds-Case (four-week sojourn, 2013) and Ringer-Hilfinger (four-month sojourn, 2013), who found higher L2 production of *vosotros* (65% and 34.7% upon sojourn conclusion, respectively), utilized a written elicitation task. On the other hand, George (three-month sojourn, 2013), who found less *vosotros* use (20.96% at the end of the semester), utilized an oral Discourse Completion Test (DCT), which elicited more spontaneous responses. In addition, George (2013) found that students who received explicit instruction on *vosotros* increased their production of the form.

The acquisition of morphosyntactic features in Latin America has received considerably less attention. For example, although the second person singular informal pronoun *vos* is used in Argentina and in several other parts of the Spanish-speaking world, only one study (Hoffman-Gonzalez 2015) has explored learner acquisition of this feature. Findings indicate that participants used *vos* 59.6% of the time in a total of 38 tokens at the end of their semester in Buenos Aires or several weeks after returning home from the sojourn. If learners had participated in the final oral elicitation tasks exclusively at the end of SA, perhaps their *vos* production would have been higher. Nonetheless, the fact that learners in Buenos Aires produced *vos* at a much higher rate in oral tasks (59.6% in Hoffman-González 2015) than learners in Spain produced *vosotros* in oral tasks (20.96% in George 2013) suggests that further investigation regarding L2 acquisition of *vos* is necessary. Additional research on this topic is also important since *vos* is not often taught in Spanish classes or addressed in Spanish textbooks in the United States, and, consequently, U.S. students who study in Argentina tend to be surprised to hear *vos* used and struggle to form its conjugations (Cameron 2012).

Considering all this, the present study seeks to answer the following questions.

1. When and to what degree do L2 learners studying for a semester in Buenos Aires, Argentina produce *sheísmo/zheísmo*, /s/-weakening, and *vos*?
2. What are the linguistic and extralinguistic factors that significantly influence this production?

Methods

Speakers

A variety of SA programs in Buenos Aires hosted the 23 L2 learners who participated in this study and who spoke English as their first language. The 19 female and 4 male participants were between the ages of 19 and 26 and lived with host families, in apartments alone, with Argentines, or in university residences. The majority had not been to Argentina or had little to no contact with Argentines prior to SA.

Their proficiency level was determined by means of pre-departure placement tests: there were 3 beginners, 6 intermediate learners, and 14 advanced students. Table 2 provides participants' pseudonyms, along with their background information and living situation.

Table 2. Participant characteristics

Speaker	Age	Gender	Proficiency	Living situation
Valerie	22	F	Advanced	Host family
Melanie	20	F	Intermediate	Host family
Brittany	22	F	Advanced	Host family /apartment alone
Chelsea	20	F	Beginning	Host family
Jenny	22	F	Advanced	Apartment with Argentines
Erin	21	F	Advanced	Host family
Kelly	23	F	Advanced	Apartment alone
Mary	20	F	Advanced	Host family /apartment alone
Andrew	26	M	Intermediate	Dorm-style residence / apartment alone
Alicia	19	F	Advanced	Host family
Kim	20	F	Beginning	Host family
Julia	20	F	Beginning	Dorm-style residence
Kathryn	20	F	Beginning	Host family/Dorm-style residence
Amy	23	F	Advanced	Apartment alone
Emily	19	F	Advanced	Host family
Alison	20	F	Advanced	Host family/dorm-style residence
Ryan	22	M	Advanced	Host family/Apartment alone
Mariah	19	F	Intermediate	Host family
Camille	21	F	Intermediate	Host family
Eddie	20	M	Intermediate	Host family
Kerry	20	F	Advanced	Host family
Andrea	22	F	Advanced	Apartment with Argentines
Tyler	19	M	Advanced	Host family

* Those who have more than one living situation listed changed their place of residence during SA.

Data collection

Data were collected from participants at three interview times: once before departure for Buenos Aires or immediately after their arrival, once midway through their time there (after approximately 2.5 months), and once at the end of their stay or right after their return to the United States (after approximately 5 months). Several instruments were used to elicit the target features at each interview time. In order to elicit *sheísmo/zheísmo,* a sociolinguistic interview (approximately 20 minutes via Skype regarding students' SA experiences and topics of interest), a reading

passage (10 comic strips from a larger collection of 28 comic strips from *Todo Mafalda*, Quino 2007, which had been used by Chang 2008), and a word list based on Davies' (2006) frequency dictionary (made up of 24 tokens that appeared in the comic strips and 28 distracter items) were used. In order to study /s/-weakening, the sociolinguistic interview was conducted. Regarding *vos,* an oral DCT (based on that used to elicit *vosotros* in George 2013) and 2 role plays (based on Kinginger 2008; Villareal 2014) were administered. The oral DCT involved four scenarios with 28 situations (16 of which elicited *vos* in the imperative or indicative forms and the remaining 12 served as distracters) that participants responded to in Spanish. The role play scenarios were designed to have participants gather information about their interlocutors, forcing them to use an address form pronoun to do so (Villareal 2014). This design allowed the researcher to (1) elicit *vos* without revealing this objective to participants and (2) maintain spontaneous speech and turn taking as in real life interactions (Bardovi-Harlig 2013). In addition to the tasks administered to elicit the target features in this study, several instruments were used to gather information regarding extralinguistic factors. For example, a background questionnaire was conducted prior to or shortly after the beginning of SA. Moreover, at each interview time, a semi-structured interview and a social network strength scale (SNSS, Kennedy 2012; Kennedy Terry 2017; Milroy & Milroy 1978) were used to gather information regarding learners' experiences and to quantify learners' social networks, respectively.

Transcription

Sheísmo/zheísmo

Each instance of "y" and "ll" in the sociolinguistic interviews, the reading task, and the word list was coded using symbols from the International Phonetic Alphabet, including [ʃ], [ʒ], [ʝ], and [ʤ]. Since most NSs of BAS use [ʃ] and some older NSs tend to use [ʒ], participants were expected to produce [ʃ] the most, followed by [ʒ]. Instances of [ʝ] and [ʤ] occurred primarily during the first interview. I initially transcribed each instance of a BAS palatal using impressionistic analysis. Then, an applied linguist and NS of BAS was trained to perform impressionistic analysis of the features as well. After her initial training, we transcribed 95% of the features the same way. Then, she independently listened to and transcribed over 3,000 palatal tokens and her transcriptions were compared to mine. When there were discrepancies in our transcriptions, I used Praat (Boersma & Weenink 2016) to perform acoustic analysis and verify the transcription. When necessary, I also used Audacity 2.0.5 to reduce background noise and amplify the sound before using Praat again to verify the transcription.

/s/-weakening

In line with previous research that examines /s/-weakening, this study employed auditory analysis of the feature (File-Muriel & Brown 2011) to classify each occurrence of coda /s/ in the sociolinguistic interviews as either maintained (as in *mosca* "fly" realized as [moska]) or weakened (including aspiration as in [mohka] and deletion as in [moØka]). I trained a linguistics student and NS of BAS to perform impressionistic analysis of these features as well. A random sample totaling 10% of the total tokens was verified by the researcher and interrater reliability was 98%.

Vos

With respect to *vos*, I transcribed participants' responses from the oral DCT and the role plays, marking each verb that was clearly in the *tú* or *vos* form, regardless of whether an overt pronoun was used. Since the analysis focused on verb forms and not pronouns, subject pronouns such as *vos* as in *Sé que vos estudiás mucho* ("I know that you study a lot") and disjunctive pronouns as in *Quiero hablar con vos* ("I want to talk to you") were not counted in the analysis. Instances of indirect object pronouns (as in *quiero escucharte* "I want to listen to you") and possessive pronouns (as in *tu casa* "your house") were not counted either since these forms are not different in the *tú* and *vos* forms and they do not constitute verb forms.

Coding and analysis

Each analysis consisted of coding for feature use as well as the linguistic and extralinguistic factors that might influence this use. For *sheísmo/zheísmo*, over 5,000 tokens were coded and submitted to Rbrul for multivariate analysis. Data were coded for the linguistic factors of orthographic representation, lexical item, morphological status, phonological environment, and frequency. Most of these factors were determined based on previous literature on NSs of BAS (Chang 2008), with the exception of frequency, which was recommended for examination by Rohena-Madrazo (2011) in his research on NS production of BAS palatals, and lexical item, which was included since particular words such as *yo* "I" affected the initial analysis performed regarding L2 use of BAS palatals in this study. These data were also coded for the extralinguistic factors of social network strength scale (SNSS, Kennedy 2012; Kennedy Terry 2017), age of the member in the social network with whom the learner had most contact (Chang 2008; Rohena-Madrazo 2013, 2015), speech style (Rohena-Madrazo 2013), proficiency level (Bayley 1996; Bayley & Langman 2004; Geeslin & Gudmestad 2008; Ringer-Hilfinger 2013), and interview time (Kennedy 2012) based on previous research on NS use of BAS prepalatal fricatives and L2 acquisition of sociolinguistic variation. The age of the

member of the social network with whom the learner had the most contact was considered because previous work on the phonetic realization of the palatal phoneme in BAS found that younger people tend to produce it as [ʃ] more than as [ʒ]. Moreover, in order to quantify the amount and quality of student interaction with NSs in SA, Kennedy Terry's (2017) SNSS was modified and used for this study to examine information regarding the interlocutors with whom participants interact as well as the activities they do together. Finally, speaker was included as a random effect in the multivariate analysis.

For /s/-weakening, over 13,000 instances of the feature were coded and submitted to Rbrul. The linguistic factors examined in the analysis included phonological context and function of /s/, and the extralinguistic factors were SNSS, proficiency level, and interview time. In addition, speaker was included as a random effect. The linguistic factors of phonological context (File-Muriel 2007; Lipski 1999) and function of /s/ (Poplack 1980) were determined based on previous research on NS /s/-weakening in the Spanish-speaking world, and the extralinguistic factor of proficiency level was included in the analysis due to previous research on L2 acquisition of /s/-weakening (Escalante 2018; Geeslin & Gudmestad 2008). Nevertheless, since results of this study indicated that there was only a total /s/-weakening rate of 1% among all participants, individual analyses were conducted on those who used the feature the most in lieu of performing multivariate analysis to determine factors that significantly influenced feature use overall.

As for *vos* production, over 1,200 tokens of the feature were submitted to Rbrul to determine the influence of multiple factors on this use. The analysis focused on the use of *vos* verb forms as opposed to *tú* verb forms in the present indicative and the imperative, the two moods in which *vos* conjugations differ from *tú* conjugations. Only verbs that are conjugated differently in the *tú* and *vos* forms were counted (verbs such as *estás* and *vas* were not included in the analysis since those conjugations are the same in both forms. Time 1 data was removed from the analysis since learners categorically produced *tú* prior to SA. In addition, the data from two speakers who categorically used *vos* by interview 3 (Brittany and Ryan) were not included in the multivariate analyses. The linguistic factor included in the analysis was mood and the extralinguistic factors included were task, SNSS, proficiency level, explicit instruction, and interview time. Again, speaker was included as a random effect.

Results

Results suggest that the English-speaking participants who studied abroad in Buenos Aires made rapid gains in target-like production of *sheísmo/zheísmo* and *voseo*; however, they barely exhibited /s/-weakening at all. Participants (including those who produced the features categorically) used the phonological features characteristic of BAS, the voiceless or the voiced variant ([ʃ] or [ʒ]) as opposed to other realizations ([j] or [ʤ]), 4.7% of the time prior to or right after the start of SA, 85.6% of the time after 2.5 months, and 91.4% of the time after 5 months. Similarly, although students did not produce *vos* before or at the beginning of SA, they produced it 65.3% of the time after 2.5 months and 70.4% of the time post-SA. In contrast, participants exhibited /s/-weakening 0% of the time before or right after SA started, .56% of the time mid-program, and 1% of the time after 5 months in Buenos Aires, with two students accounting for most of this /s/-weakening.

Feature 1: *sheísmo/zheísmo*

Of the three features examined in this study, L2 production of *sheísmo/zheísmo* ([ʃ] or [ʒ]) increased the most, reaching 91.4% of the time at the conclusion of SA (including categorical speakers). Several factors significantly influenced the production of *sheísmo/zheísmo* as it was being acquired. The last column in Table 2[1] shows the factor weight (with a range of 0 to 1, with a weight of .50 or higher indicating positive influence on the use of the feature, see Bayley 2013) for each factor in each factor group that significantly influenced L2 production of *sheísmo/zheísmo*. The results shown in Table 3 do not include categorical speakers since the aim of the study was to determine the factors that significantly constrained learners' use of *sheísmo/zheísmo* as they were acquiring it, not after it was acquired (used categorically).

Within the factor group of lexical item, words such as *ella* that included vowel-ll-vowel were produced more often with a BAS palatal ([ʃ] or [ʒ]*)*, as indicated by the factor weight of .702. In contrast, the word *yo* was produced more with a non-BAS palatal ([j] or [ʤ]*)*, as indicated by the factor weight of .340. This analysis of *yo* production was conducted because participants often realized *yo* as [jo], which may have been set as their internal or exemplar representation early on in their learning trajectories as it was likely one of the first words they learned (Bybee, 2013).

1. In the results presented here and in subsequent tables, both logodds and factor weights are shown. Both measures support the interpretation in this study, with only minor differences in ordering, e.g. "Other" vs. "*Yo*" in Table 3.

Table 3. *BAS* ([ʃ] or [ʒ]) *versus Non-BAS* ([j] or [ʤ]) *(application value* = [ʃ] or [ʒ])

Factor group	Factor	Logodds	N	% BAS	Weight
Lexical item	Vowel-ll-vowel (*ella*, etc.)	0.899	1577	63.2	.702
	Other	−0.278	2392	53.3	.421
	Yo	−0.621	890	57.9	.340
Phonological environment – location	Initial	0.421	2034	57.2	.620
	Medial	−0.421	2825	57.4	.413
Time	3	2.614	1570	89.0	.940
	2	1.898	1571	83.1	.884
	1	−4.512	1718	4.7	.012
Total	Input		4859	57.3	.508

Similar to *yo*, other words that contained "y" or "ll" were more often produced with a non-BAS palatal ([j] or [ʤ]), as indicated by the factor weight of .421.

Phonological environment – location was also found to significantly influence L2 production of *sheísmo/zheísmo*. When "y" and "ll" were in word-initial position they were more likely to be produced with a BAS palatal (factor weight of .62) as opposed to when they were in word-medial position (factor weight of .413). This may be because BAS palatals could be more noticeable to learners in word-initial position.

The final factor group that significantly influenced participants' production of *sheísmo/zheísmo* was the amount of time spent in the host community. Prior to or just following the beginning of SA, students who did not produce a BAS palatal categorically used a BAS palatal 4.7% of the time (factor weight of .012, primarily due to a student who had just taken a Spanish course at her home university in which she learned about the use of *sheísmo/zheísmo* in Buenos Aires, and due to another student who participated in the first interview from Medellín, Colombia, where she perceived "y" and "ll" to be produced as BAS palatals as indicated in her pre-SA interview). By mid-SA, students who did not produce BAS palatals categorically produced a BAS palatal 83.1% of the time (factor weight of .884), and post-SA they produced a BAS palatal 89% of the time (factor weight of .94). These findings suggest that the greatest gains in BAS palatal production occur in the first months of immersion.

Finally, there was a great deal of individual variation in the phonetic realization of the palatal phoneme in BAS. This variation was evident among non-categorical BAS palatal users (data from two categorical BAS palatal users mid-SA–Kelly and Brittany–and six categorical BAS palatal users post-SA–Amy, Andrea, Brittany, Ryan, Kelly and Mary–were removed from the analysis). The categorical BAS palatal users were advanced students and five of them were the only participants to earn high SNSS scores.

Feature 2: /s/-weakening

The overall production of /s/-weakening was minimal throughout SA and reached a total use of only 1% by the end of the sojourn. As such, it was not possible to determine the statistically significant influence of linguistic and extralinguistic factors on the acquisition of this feature. Nevertheless, at least impressionistically, the findings of the /s/-weakening analysis indicate that only four participants (Brittany, Ryan, Tyler, and Emily) out of 23 produced /s/-weakening (see Table 4), and each of them began SA with advanced proficiency. Two of those participants (Brittany and Ryan) exhibited /s/-weakening increasingly during the mid- and post-SA interviews, at which times they achieved a score of high on the SNSS. The other two students who exhibited /s/-weakening, Tyler and Emily, who produced ten and three tokens respectively, earned SNSS scores of mid at the only interview time in which they produced /s/-weakening, the post-SA interview. To better understand the factors that might be related to these /s/-weakening patterns, I examined the target feature production of Brittany and Ryan, the speakers who exhibited the most /s/-weakening by the end of SA (35.3% and 9.8% of the time, respectively).

Table 4. Percentage of /s/-weakening by individual, SNSS score, and interview time

	SNSS score	**Interview time**		
		1	**2**	**3**
Brittany	high	0	22.9	35.3
Ryan	high	0	5.3	9.8
Tyler	low, mid	0	0	3.3
Emily	mid	0	0	1.1

Notes: When two SNSS scores are displayed, the first is from Time 2 and the second is from Time 3. When only one SNSS score is displayed, the SNSS score at Time 2 and 3 was in the same range.

Brittany was a 22-year-old student who lived first with a host family and later moved to an apartment alone because she felt it would be a better fit for her as she was used to living on her own in college. When she started the SA program, she had already achieved advanced proficiency in Spanish and she had previously studied abroad in Chile, but she had never visited Argentina. During her time in Buenos Aires, she made several Argentine friends using the dating application *Tinder*. She reported meeting people through *Tinder*, becoming friends with those people, and being introduced to the friends of those people, which allowed her to build a large social network. In addition, she took dance classes with locals including tango, salsa, and folklore, and she reported that she spoke Spanish with NSs from the community 90% of the time. Moreover, she said that early on in her SA program she noted

that her friends sometimes had difficulty understanding her but that as time went on, she felt proud when she managed to say things the way Argentines would, as it made her feel like "part of the gang" (Mid-SA interview).

Brittany did not use the target features under investigation at the beginning of her time in Argentina. In fact, in her first interview, she described her Spanish as slow and non-native. By mid-SA, she used *sheísmo/zheísmo* categorically and she often used *vos* in present tense conjugations. She indicated that she sometimes used *tú* commands, but when she did so she would normally correct herself to use *vos* command forms instead. During her mid-SA interview, she used *vos* nearly categorically and said she felt she "fit in" due to her Argentine Spanish. By the end of SA, she used *sheísmo/zheísmo* and *voseo* categorically and exhibited the use of /s/-weakening 35.3% of the time, the most of any of the participants in this study.

Similar to Brittany, Ryan was a 22 year-old advanced Spanish-speaker who had previously studied abroad (in Spain) but had not visited Argentina. He also first lived with a host family and later moved to an apartment alone. He felt that the latter was more in line with his lifestyle, as he made several Argentine friends at his university, enjoyed going out with friends all night, and regularly had parties at his apartment. By mid-SA, he said that all of his friends were Argentine and he spoke Spanish all the time. He reported feeling like part of the community and taking pride in his Argentine accent, citing instances in which locals asked if his parents were Argentine due to the accuracy and authenticity of his accent, and describing encounters with Argentines who could not believe he was from the United States because he sounded and even used gestures like an Argentine. In fact, he indicated a desire to maintain his Argentine accent in the future in Spanish, as he came to associate it with his identity, saying "voy a hablar así para siempre" [I am going to speak like this forever] (Post-SA interview).

Ryan reported noticing *sheísmo/zheísmo* and *vos* right away in Argentina and he said that he began adopting these features and losing his peninsular accent during his first weeks in Buenos Aires, although he indicated that *sheísmo/zheísmo* was difficult for him to use at first. He mentioned that he began to speak like an Argentine quickly and easily because of his constant interaction with Argentines. He also said that he had adopted less peninsular features during his previous SA sojourn in Spain, where he spent most of his time with other U.S. students and did not have many Spanish friends. In contrast, by the middle of SA in Argentina, Ryan used *sheísmo/zheísmo* and *voseo* nearly categorically and /s/-weakening 5.3% of the time. At the end of SA, he used *sheísmo/zheísmo* and *voseo* categorically and /s/-weakening 9.8% of the time.

Feature 3: *Vos*

While participants (including categorical speakers) did not produce *vos* before or right after the start of SA, they used it 65.3% of the time by mid-SA and 70.4% of the time at the conclusion or immediately following the 5-month sojourn in Argentina. Although L2 learners did not use *vos* as much as they used *sheísmo/zheísmo*, they used it a great deal more than /s/-weakening. In addition, similar to the findings regarding *sheísmo/zheísmo*, these results suggest that the greatest gains in *vos* production occur during the first months of immersion.

Several linguistic and extralinguistic factors (task, mood, SNSS, and proficiency level) significantly influenced L2 production of *vos* during SA in Buenos Aires, as seen in Table 5, which does not include data from the two participants who used *vos* categorically during the post-SA interview (Brittany and Ryan).

Table 5. Vos verb forms versus tú verb forms (application value = vos verb forms)

Factor group	Factor	Logodds	N	% *Vos*	Weight
Task	Oral DCT	0.236	514	65.8	.545
	Role plays	−0.236	315	65.1	.427
Mood	Present indicative	0.589	652	68.9	.563
	Imperative	−0.589	177	53.1	.284
SNSS	High	1.154	158	99.1	.793
	Mid	−0.210	403	70.2	.494
	Low	−0.944	268	43.3	.319
Proficiency	Advanced	0.681	487	77.2	.606
	Beginning	−0.180	143	46.9	.394
	Intermediate	−0.500	199	50.3	.321
Total	Input		829	65.5	.713

With respect to linguistic factors, the factor group that significantly influenced L2 use of *vos* was that of mood. Specifically, *vos* was used more in the present indicative (factor weight of .563) than in the imperative (factor weight of .284). This finding is logical, considering the greater frequency of the present indicative as opposed to command forms as well as the cognitive challenge the conjugations of imperatives seem to pose for L2 learners (albeit anecdotally).

Regarding extralinguistic factors, within the task factor group, L2 learners produced *vos* more during the oral DCT (factor weight of .545) than the role plays (factor weight of .427). This result is not surprising since L2 learners presumably learned the *tú* form in their Spanish classes in the United States, and therefore may have been more likely to default to its use during the more meaning-focused task (the role plays). As seen in the SNSS factor group, participants whose SNSS scores

were in the high range used *vos* nearly categorically (99.1% of the time with a factor weight of .793), those with mid-range SNSS scores used it most of the time (70.2% with a factor weight of .494) and those with low SNSS scores used it less than half of the time (43.3% of the time with a factor weight of .319). These findings suggest that the stronger the social network the learner built in the host community, the more they used *vos* conjugations. In addition, advanced L2 learners used *vos* (77.2% of the time with a factor weight of .606) more than beginning (46.9% of the time with a factor weight of .394) and intermediate learners (50.3% of the time with a factor weight of 321). The slightly higher use of *vos* among beginning as opposed to intermediate learners may have been due to the explicit instruction beginners received, while only some intermediate learners received such instruction. Finally, as is to be expected in second language acquisition research, there was significant individual variation in *vos* production, as learners produced *vos* anywhere from 52.3% of the time (with a factor weight of .269) to 84.4% of the time (with a factor weight of .785).

The two speakers who produced *vos* categorically during the post-SA interview, Brittany and Ryan, were the same students who exhibited /s/-weakening the most of all of the participants in this study. They also reached categorical *sheísmo/zheísmo* production post-SA, along with four other participants (Amy, Andrea, Kelly, and Mary). As such, the data from Brittany and Ryan was removed from the analysis regarding the influence of linguistic and extralinguistic factors on *vos* production. Nevertheless, considering that these speakers had advanced proficiency in Spanish and high SNSS scores, proficiency level and social networks seem to be crucial in achieving targetlike production of the BAS features under investigation.

Discussion

The results of this study demonstrate that L2 learners (including those who produced the target features categorically) used the salient, prestigious features of *sheísmo/zheísmo* (4.7% of the time pre-SA, 86.7% of the time mid-SA, and 91.4% of the time post-SA) and *vos* (0% of the time pre-SA, 65.3% of the time mid-SA and 70.4% of the time post-SA) a great deal during SA, with the greatest increase in production occurring during the first months of immersion and the most production occurring at the end of the sojourn. Nevertheless, participants rarely exhibited use of the less salient, often stigmatized feature of /s/-weakening throughout the sojourn abroad (0% of the time pre-SA, .56% of the time mid-SA, and 1% of the time post-SA). In addition, the factors that significantly influenced L2 production of *sheísmo/zheísmo* (lexical item, phonological environment, and time), *vos* (mood, task, SNSS, and proficiency level), and /s/-weakening (too few tokens to determine)

varied across features. Overall, this study's findings regarding the amount of feature production as well as the factors that significantly constrained this production were in line with previous literature.

First, the results regarding the most produced feature in this study, *sheísmo/zheísmo* (91.4% of the time during the post-SA interview, including categorical speakers), are in line with Hoffman-González (2015), who found that seven learners studying in Buenos Aires for a semester produced [ʃ] and/or [ʒ] 74% of the time in free speech and 95% of the time in a reading. Nevertheless, [ʃ] and/or [ʒ] seem to be used much more than the peninsular features of [θ] (7–8% of the time during SA in George 2013, 2014 and 18% of the time post-SA in Ringer-Hilfinger 2013) and [χ] (13% post-SA in George 2013, 2014 and 15.5% post-SA in Ringer-Hilfinger). This may be because *sheísmo/zheísmo* is realized for the graphemes "y" and "ll" in all phonological contexts, and thus it could be simple for learners to acquire, whereas the specific phonological contexts in which peninsular variants are used may be more difficult for learners to remember and use accordingly ([θ] for "z" and for "c" before "i" and "e" and [χ] for "j" and for "g" before "i" and "e"). Moreover, *sheísmo/zheísmo* is the prestige norm in Buenos Aires, which may be attractive for learners to acquire, as opposed to the peninsular [θ], which has been perceived as a so-called lisp by some L2 learners (Aronson 1973). Finally, *sheísmo/zheísmo* might be acquired quickly by L2 learners because it is highly salient, which has been defined as very different than the representation students developed early in their Spanish learning (Ghia 2011). In fact, *sheísmo/zheísmo* has been described as the most salient feature of BAS for speakers of other varieties of Spanish (McLeod 2014). As such, *sheísmo/zheísmo* may be so salient that L2 learners do not need to have strong social networks or high proficiency levels to notice or adopt it.

Regarding the factors that constrained the phonetic realization of BAS palatals among L2s (lexical item, phonological environment, and time), as part of the lexical item factor group, the word *yo* was often produced using non-BAS palatals, specifically [ʝo], perhaps because it was among the first words learned in Spanish and thus participants' exemplar representation of this word may have been fixed early on in their learning trajectory (Bybee 2013). Regarding phonological environment, the finding that participants produced a BAS palatal more in word-initial position than in word-medial position is in line with previous research on L2 acquisition of [χ] in Spain, which also found that learners produced the feature more word-initially than word-medially (George 2013). This may be because word-initial BAS palatals could be more noticeable to learners. Finally, with respect to the time factor group, the more time participants spent abroad, the more BAS palatals they produced, a trend that is consistent with previous research on the acquisition of sociolinguistic competence (Geeslin et al. 2010; Sax 2003).

Second, this study's findings regarding /s/-weakening (a total use of 1% of the time by the end of SA, with the majority of those tokens being produced by two participants) are also in line with previous literature on the topic. For example, Escalante (2018) found learner use of /s/-weakening a total of 4.6% of the time during a year in coastal Ecuador, with the majority of tokens being produced by one individual, Gustavo. Although Gustavo seemed motivated to produce /s/-weakening due to his desire to embrace his Ecuadorian heritage, he also indicated that he wanted to seem Ecuadorian in the way he spoke (Escalante 2018). Similarly, the two L2 learners in this study who produced the most tokens of /s/-weakening (Brittany and Ryan), said in their interviews that they wanted to "fit in" (Brittany, mid-SA interview) or "pass as Argentine" (Ryan, mid-SA interview) based on their linguistic choices. Finally, in this study, proficiency level and social networks seemed to play a role in the production of /s/-weakening, as all four participants who exhibited the feature (Brittany, Ryan, Tyler and Emily) had advanced proficiency and either mid or high SNSS scores at the interview time in which they exhibited use of the feature.

Third, the present study's findings regarding *vos* production (a total use of 70.4% of the time post-SA, including categorical speakers) were similar but slightly higher than those of previous research on the feature (59.6% of the time post-SA in Hoffman-González 2015). The lower *vos* production in Hoffman-González's (2015) study could be due to the post-SA interviews being conducted up to several weeks after SA. Moreover, L2 production of *vos* in Argentina, as indicated in both the present study and that of Hoffman-González (2015), seems to be greater than that of *vosotros* in Spain, particularly when compared with the results of the peninsular study that employed an oral elicitation task (George 2013), which found post-SA *vosotros* production 20.96% of the time. The greater *vos* production in Argentina may be because speakers tend to address one interlocutor informally more frequently than they address groups (informal or formally), and it would be relatively simple for L2 learners to replace their use of *tú* with that of *vos* once they learn the conjugations. In contrast, since L2 students learn to use *ustedes* to address groups in their U.S. classrooms but are challenged to learn *vosotros* conjugations and then remap *ustedes* to address formal groups and *vosotros* to address informal groups in Spain, learner use of *vosotros* may pose a greater cognitive challenge to acquire.

The factors that significantly influenced *vos* production (mood, task, social networks, and proficiency level) were in line with previous literature. This study's finding that *vos* was used significantly more in the present indicative as opposed to the imperative was similar to George's (2013) finding that *vosotros* was used more in the present tense than in commands. In addition, this study's finding that *vos* was used significantly more in the oral DCT than in the role plays may be related to less attention being paid to form in a more meaning-focused task (role plays),

resulting in less use of the recently learned feature *vos*. Furthermore, the significant influence of social networks on *vos* production is consistent with Kennedy (2012) and Kennedy Terry (2017), who found a positive correlation among social networks and target-like production of phonological features in French. Finally, the results regarding the influence of proficiency on L2 use of *vos* are to be expected since proficiency is important for the acquisition of sociolinguistic competence (Sax 2003).

Conclusions

The findings of this study indicate that L2 learners increased their production of the salient, prestigious features of *sheísmo/zheísmo* and *voseo* greatly during SA, especially during the first months of immersion, but they scarcely exhibited the less salient, often stigmatized feature of /s/-weakening throughout the sojourn. This suggests that L2 learners do, in fact, adopt target dialectal features during SA, especially when they are salient and/or prestigious; however, they do not necessarily use less salient features and/or features that are generally considered to be stigmatized.

In addition, this study's findings suggest that the extralinguistic factors of social networks with NSs and proficiency level are important in the acquisition of all three of the BAS features under investigation, even though these factors were only found to be significant predictors of *vos* production. With respect to *sheísmo/zheísmo*, the six participants who categorically produced BAS palatals post-SA (Amy, Andrea, Brittany, Ryan, Kelly and Mary) had advanced proficiency and five of them earned high SNSS scores. Moreover, regarding /s/-weakening, the only two students who exhibited the feature more than 4% of the time at the end of the sojourn (Brittany and Ryan) were also categorical BAS palatal users and they were the only students to exhibit categorical use of *vos* post-SA. As such, social networks and proficiency level seem to be key factors in achieving high accommodation to target-like norms of use of these features.

There were a number of limitations to this study. First, although participants were asked to go to a quiet location with a fast internet connection for the interviews, they took place via Skype. Moreover, while the *sheísmo/zheísmo* analysis involved impressionistic coding and the use of PRAAT to verify this production, the /s/-weakening analysis was conducted impressionistically to determine the maintenance or weakening (aspiration or deletion) of /s/. Future studies might employ the use of sound-proof booths for recording interviews, investigate L2 perception in addition to production of /s/-weakening, and perform acoustic analysis to determine whether students maintain, aspirate, or delete /s/. In addition, future studies could investigate whether L2 learners approximate target-like norms with respect to the

phonological contexts in which /s/-weakening is expected and stigmatized in BAS, which depends on the type of weakening (aspiration or deletion) and phonological context (Colantoni & Kochetov 2016).

Despite these limitations, the present study has several implications. First, since learners seem to adopt salient, prestigious features to a greater extent than less salient, often stigmatized ones, students might benefit from explicit instruction, particularly regarding less salient, stigmatized features prior to and/or during SA. Such instruction might address not only how to produce these features but also the ways in which linguistic choices (those of NSs and those of the students themselves) might be perceived in the target community. Second, it is crucial that students who study abroad create social networks with NSs in the host community. This might be achieved through making local friends by means of social media, through dating applications such as *Tinder*, or through participation in communities of practice through service learning, internships, sports, clubs, and classes, etc. Third, achieving advanced proficiency before or while abroad might facilitate the creation of these social networks as well as the acquisition of target-like features during SA. In conclusion, the results of this study suggest that (1) stigma and salience may play important roles in L2 acquisition of variable features and (2) advanced proficiency and strong social networks with NSs might affect L2 use of such features abroad.

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CHAPTER 9

Variation in choice of prepositions with place names on the French L1–L2 continuum in Ontario, Canada

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This study examines the use of prepositions *à* ('in/to'), *au* ('in the/to the'), and *en* ('in/to') with place names across the French first-language – second-language continuum in Ontario, Canada. The study draws on speech corpora collected among seven groups of students who use French and English to varying extents in daily life. Choice of expected prepositions in French is determined by complex rules reflecting a place name's category and morphological and phonological properties, while in English it reflects the '+/– motion' feature of the verb. The findings reveal that rates of expected preposition use are influenced to varying extents by the relative difficulty of the prepositions, the students' position on the continuum, their individual use of French, and their susceptibility to the influence of inter-systemic transfer.

Keywords: acquisition of French, highly-advanced FSL students, Ontario French immersion students, Franco-Ontarian students, French/English bilingualism, prepositional usage, place names

Introduction

Canada, a country where English and French are the two official languages, adopted in 1982 a new constitution that guaranteed the right to French-medium schooling for French-speaking (FL1) minorities outside of Quebec. The new constitution also guaranteed the right to be educated in English to the English-speaking minority in Quebec, Canada's only province where Francophones are in the majority. This historic measure reversed previous decades of assimilationist policies that banned French-language education in nearly all Canadian provinces, except Quebec. The goal of this historic measure was to curtail the erosion of French in FL1 minorities outside Quebec. In 1988, the Federal Government renewed its commitment

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to bilingualism by revising and strengthening its Official Languages Act, which guaranteed services in French and English in Federal Government agencies and other institutions falling under its jurisdiction. While French-language schooling probably slowed down the linguistic assimilation of FL1 minorities, it did not stop it (see R. Mougeon's 2014 analysis of the national census returns of the last five decades). There are two main reasons for this. First, a growing number of the FL1 children who attend French-language schools are raised in homes where English rather than French is the primary medium of communication (e.g., homes where one parent is a unilingual speaker of English). Second, in localities where French speakers are clearly outnumbered by English speakers, FL1 students receive considerably more exposure to English than French outside the schools and communicate (much) more often in English than in French in their daily activities (R. Mougeon & Beniak 1991). Thus, in such localities, the French-language competence of some of these FL1 students may not be that much different from that of (very) advanced FL2 speakers.

In keeping with its renewed emphasis on official bilingualism, the Federal Government also provided special funding to the provinces to encourage the growth of improved French-as-a-second-language (FL2) education such as French immersion programs, programs in which students learn French primarily as the result of being educated partially or entirely through the medium of French. This measure was meant to increase rates of official bilingualism among English-speaking Canadians outside Quebec that had remained low up to that point. Over the last four decades, FL2 education has undergone considerable transformation in Canada. French immersion programs have grown steadily and vigorously (Lepage & Corbeil 2013), and other programs such as *Français intensif* ('intensive French') and Core French programs, where FL2 students learn French as a subject, have been developed, revised, and improved. As a result of these changes, there are now FL2 students in Canada who have the necessary skills to engage in interactions with FL1 students and eventually achieve advanced or very advanced levels of French language proficiency. This raises the possibility that the French language competence of such students may be comparable to that of some FL1 students who use French and English in daily life.

As such, rather than viewing FL1 and FL2 students as two distinct and separate groups, the notion of a FL1–FL2 continuum may be more helpful in understanding how the respective strength of French and English impacts the students' communicative repertoire. To date, variationist research which has investigated this issue has focused almost entirely on the sociolinguistic competence of such students but has limited itself to comparing high school French immersion students with bilingual FL1 high school students, both residing in Ontario (see R. Mougeon, Nadasdi & Rehner 2010). What is needed now is more variationist research that is focused on

the linguistic (rather than sociolinguistic) competence of FL1 and FL2 students and that includes FL2 students who are more advanced in their acquisition of French than the high school French immersion students (like R. Mougeon, F. Mougeon, & Rehner's in press study of third personal plural subject-verb agreement). The present study fills these two gaps. First, it examines the use of prepositions to express the notions of motion to or location in a geographic place. This aspect of French morpho-syntax is governed by a complex set of rules which are at variance with their English counterparts. As such it constitutes a good candidate for comparative research which examines the linguistic competence of students on the FL1–FL2 continuum. Secondly, it draws on data collected among seven groups of students that represent a wide spectrum of the FL1–FL2 continuum, namely: (i) FL1 students attending French-language high schools and residing in a FL1 majority community in Quebec; (ii) FL1 students attending French-language high schools and residing in a FL1 majority community in Ontario; FL1 students attending French-language high schools, but residing in one of three FL1 minority communities in Ontario, namely (iii) Cornwall, (iv) North Bay, and (v) Pembroke; (vi) highly-advanced FL2 students attending an English/French bilingual university college in Toronto, a city where competence in English is needed for integration into the local economy and for use of local public and private institutions; and (vii) FL2 high school students enrolled in French immersion programs across the wider Toronto area who are less advanced in their acquisition of French than are the university students.

Complexity and inter-systemic transfer

The present study focuses on prepositions *à* ('in/to'), *au* ('in the/to the'), and *en* ('in/to') used with geographic place names. According to *Banque de dépannage linguistique* (BDLP), an online reference tool on Standard Quebec French published by *Office Québécois de la langue française,* 'Quebec Office of the French Language' (http://bdl.oqlf.gouv.qc.ca/bdl/), each of these prepositions can express location in or motion to geographic places (e.g., *j'habite à Toronto* 'I live in Toronto'; *je vais à Toronto* 'I'm going to Toronto'), and the choice of the appropriate preposition is determined by the category of the place name and features of the phonology and morphology of the name. Below, we provide a summary of the complex rules governing choice of these prepositions, based on BDLP's web pages:[1]

1. Adding to the complexity of the rules governing choice of preposition with geographic place names, there is only a partial overlap between these rules and those that govern the use of these same prepositions with spatial entities other than place names (e.g., buildings, rooms).

- *à* is used with
  - cities, towns, and villages
    - without an article (e.g., ***à*** *Trois-Rivières*)
    - with the feminine article *la* (e.g., ***à*** *la Nouvelle-Orléans*)
  - islands
    - without an article (e.g., ***à*** *Cuba*)
    - with an article (e.g., ***à la*** *Jamaïque,* ***à l'****Ile-du-Prince-Édouard*);
- *au* is used with
  - singular masculine names of countries, states, provinces, etc. whose initial segment is a consonant (e.g., ***au*** *Canada*, ***au*** *Luxembourg*)
  - singular masculine names of cities used with the masculine definite article *le* (e.g., *le Caire* → ***au*** *Caire*);[2]
- *en* is used with
  - feminine names of countries, states, provinces, etc. (e.g., ***en*** *France*, ***en*** *Belgique,* ***en*** *Californie*)
  - countries, states, provinces, etc. whose initial segment is a vowel (e.g., ***en*** *Ontario,* ***en*** *Alberta*).

The rules governing preposition choice with place names in English avoid much of the complexity found in French in that the same two locative prepositions are used in English across the different categories of place names (e.g., ***in/to*** *Toronto,* ***in/to*** *Ontario,* ***in/to*** *Canada*). However, the English rules introduce their own layer of complexity since they require preposition *in* to express location in a place (i.e., with '– motion' verbs, for example *I am living* ***in*** *Toronto*) and preposition *to* to express motion to a place (i.e., with '+ motion' verbs, for example *I am going* ***to*** *Toronto*).

Context and continuum

The province of Ontario is a good setting in which to conduct research on the FL1–FL2 continuum, as its population includes substantial numbers of FL1 and FL2 speakers. According to the 2016 Canadian census, there are 525,983 Ontarians who report French as their mother tongue (Franco-Ontarians, for convenience).[3] Franco-Ontarians reside in communities resulting from migratory waves originating primarily from the neighboring province of Quebec. They represent 4.1% of

2. With plural masculine place names French uses preposition *aux*. We did not include this preposition in our study due to the low number of tokens in our corpora.

3. Franco-Ontarians represent the largest French-speaking community in Canada outside Quebec.

the provincial population, which also includes other non-English-mother-tongue minorities and an English-mother-tongue majority. In a few localities, Franco-Ontarians constitute a strong majority and can use French most of the time in daily life. In most other localities, however, they are clearly outnumbered by the English mother-tongue residents, and they must use English in addition to French in their daily activities. The extent to which they do so is conditioned by the demographic strength of their community but is also a matter of personal choice (see R. Mougeon & Beniak 1991). Thus, Franco-Ontarians include individuals who, in daily life, communicate mostly in French, others who communicate regularly in both French and English, and still others who communicate primarily in English. In other words, Franco-Ontarians, including those FL1 students focused upon in the present study, occupy different points on the FL1–FL2 continuum. Ontario's population also includes, according to the 2016 Canadian census, 892,825 individuals for whom French is not their mother tongue, but whose knowledge is 'high enough to hold a conversation in this language,' the measure used in the census to assess bilingualism. All the FL2 speakers examined in this study have this minimal ability to converse in French. However, since these speakers have had varying levels of curricular and extra-curricular opportunities to interact with FL1 speakers in a range of settings, some of them have reached (very) advanced levels of spoken French proficiency. Thus, like the Franco-Ontarian students mentioned above, the FL2 speakers included in this study also occupy different points along the FL1–FL2 continuum.

Prior research

Ontario French immersion students vs. Franco-Ontarian students

As mentioned above, the bulk of variationist research comparing FL2 high school immersion students with bilingual FL1 high school students in Ontario focused on their sociolinguistic competence. The findings of this research are synthesized in Chapter 5 of R. Mougeon et al. (2010). These authors examined 14 sociolinguistic variables featuring an alternation between informal/vernacular and formal/standard variants. They compared the French immersion students with two groups of Franco-Ontarian students: those who communicate in daily life outside the school mostly in French (i.e., unrestricted users of French) and those who communicate mostly in English (i.e., restricted users of French). In almost all cases of sociolinguistic variation under study, the authors found the following pattern. The French immersion students used the formal/standard variants more often and the informal/vernacular variants considerably less often than did the restricted users of

French, that is the FL1 students who, like them, were predominant users of English outside the school. Further, they found that the restricted users of French used the informal/vernacular variants less frequently than did their classmates, who were unrestricted users of French. According to Mougeon, Nadasdi and Rehner, as far as the French immersion students and the restricted users of French were concerned, this basic pattern reflected both the linguistic properties of some of the variants (e.g., morphologically complex variants were used less often) and the extent to which the students were exposed to the variants through the input provided by the educational context (e.g., variants not featured in teachers' speech were used less often). As for the unrestricted users of French, the fact that they had the highest rate of use of informal/vernacular variants reflected these students' frequent use of French outside the school and in particular in the societal domains associated with vernacular French.

F. Mougeon and Rehner (2015) examined the sociolinguistic competence of FL2 students attending a bilingual university college in Toronto. As mentioned above, these students are more advanced in their acquisition of French than are the high school French immersion students examined by R. Mougeon, Nadasdi and Rehner (2010). F. Mougeon and Rehner examined four of the sociolinguistic variables investigated by R. Mougeon et al. Comparing the findings of these two studies, for two of these four variables, the FL2 university students who were highly engaged in interactions with FL1 speakers on and off campus had rates of use of the formal/standard and the informal/vernacular variants that were in line with those of the FL1 restricted (and even unrestricted) users of French but that were markedly different from those of the FL2 immersion students. This finding reflected the fact that the highly-engaged FL2 university students had had more opportunities to interact with FL1 speakers than had the FL2 immersion students. That said, for the other two variables, the rates for the highly-engaged FL2 university students did not approach those of the FL1 students and, instead, were not much different from those of the FL2 immersion students. Thus, as in R. Mougeon et al.'s (2010) study, there is variation in the extent to which the FL2 students approach the FL1 norms according to the variables examined.

Variation in preposition choice by Franco-Ontarian students

Variation in preposition choice by Franco-Ontarian students has been examined by R. Mougeon and/or his associates. Their studies were based on the R. Mougeon and Beniak corpus collected in 1978 via one-on-one semi-directed interviews with Grade 9 and 12 students (aged 14–18 years) who were attending unilingual French-medium schools. The corpus was gathered in the majority Francophone

community of Hawkesbury and in the three Francophone minority communities of Cornwall, North Bay and Pembroke. The students were categorized according to how frequently they used French in daily life outside the French-medium schools. In the present study, we will use a more recent Franco-Ontarian student corpus collected in 2005 in these same communities.

Directly relevant for the present study is Alexandre (1995). She examined prepositional use with geographic place names in the R. Mougeon and Beniak Franco-Ontarian corpus and in R. Mougeon's 1978 Quebec City corpus. In Quebec City in the 1970s, Francophones represented nearly all of the local population. She found that the students from Quebec City and the majority Franco-Ontarian community of Hawkesbury used the expected prepositions (almost) categorically and that, in contrast, in the Franco-Ontarian minority communities, the students also used a range of prepositional variants, which were symptomatic of the difficulty they had 'sorting out' the complex rules governing choice of the expected prepositions. She arrived at similar results when assessing the influence of the students' frequency of use of French in their daily life. The students from the majority communities and the unrestricted users of French across the communities had much higher rates of the expected prepositions and lower rates of the alternate forms. Alexandre also found that with place names requiring *à,* speakers were more likely to use preposition *en* with '– motion' verbs than with '+ motion' ones. She ascribed this finding to the influence of inter-systemic transfer from English, since, as mentioned above, English uses preposition *in* with '– motion' verbs and preposition *to* with '+ motion' ones.

R. Mougeon, Nadasdi and Rehner (2005) and R. Mougeon and Beniak (1991) examined aspects of preposition use in the 1978 Mougeon and Beniak corpus. They arrived at results similar to those of Alexandre. For instance, they found that the students from the minority communities and the restricted users of French made frequent use of the novel preposition *sur* (modeled on English preposition *on*) before the words *radio* and *télévision* and before the names of radio and TV stations. In contrast, in these contexts, the students from the majority community and the unrestricted users of French across the communities used the expected locative preposition *à* almost categorically.

Results such as those above reflect the impact of the concentration of Francophones in the community and of the frequency of use of French in daily life by the students on their acquisition of aspects of prepositional use that are difficult or vulnerable to transfer from English.

Variation in preposition choice by FL2 speakers

R. Mougeon et al. (2010) examined, among other things, the notions of 'motion to' or 'location at/in' one's home. These authors found that French immersion students who had had significant opportunities to stay with a FL1 family exhibited a much higher rate of use of *chez*, a semantically opaque preposition, than did students without such opportunities. These latter students, in contrast, showed a strong preference for *à la maison*, a variant which is not only semantically transparent, but which also, like its English equivalents, combines a general locative preposition (i.e., *à*) and a noun referring to a home (i.e., *la maison*). Bourvon (2014), using a corpus of recorded interviews with advanced FL2 speakers who had learned French in naturalistic settings, focused on, among other things, sequences of place names. She found that the FL2 speakers had a difficult time choosing the appropriate preposition and the appropriate article and that they also sometimes either deleted the expected preposition or used a preposition where none was expected. Burger and Chretien (2001) examined the oral production of FL2 students enrolled in a sheltered introductory Psychology course taught in French at the University of Ottawa. The main goal of their study was to assess the impact of the course on students' spoken French proficiency. They found that while, overall, the sheltered course had a beneficial effect on proficiency, correct preposition use continued to be a source of difficulty even for the most advanced learners. Finally, Lapkin and Swain (1977) analyzed cloze test data collected among three groups of Grade 5 students (aged 9–10 years): (i) French immersion students attending schools in the Ottawa area, (ii) students attending a French-medium school in an undisclosed locality referred to as a bilingual community, and (iii) unilingual Quebecois students. Among other things, the authors examined preposition *de*/*d'* 'of'. They found that the Franco-Ontarian and French immersion students had almost identical error rates and that their rates were higher than those of the unilingual controls, who used *de*/*d'* almost categorically correctly. Lastly, they found that both the French immersion and Franco-Ontarian students made erroneous substitutions of other prepositions for *de*/*d'* (e.g., *dans* 'in', *pour* 'for'). Research on FL2 speakers, thus, has underscored the special status of prepositions as a particularly challenging aspect of French morpho-syntax for such speakers.

Methods

Corpora

The present study draws on four corpora of spoken French collected among the following seven groups: (i) high school FL1 students residing in Quebec City; high school FL1 students residing in (ii) the majority Franco-Ontarian community of Hawkesbury or in one of three minority Franco-Ontarian communities, namely (iii) Cornwall, (iv) North Bay, and (v) Pembroke; (vi) undergraduate FL2 students attending a bilingual university college in Toronto; and (vii) FL2 high school students from French immersion programs in the Greater Toronto Area.

Quebec city student corpus (Group 1)
The Quebec City corpus was collected by R. Mougeon in 1978 among 15 students aged 14–15 and 17–18 years, who took part in face-to-face semi-directed interviews. All 15 students were attending unilingual French-medium schools and were raised in unilingual French-speaking homes. Further, and to their chagrin, their knowledge of English was almost nil. Thus, in contrast with the other corpora, the Quebec City students are very close to being monolingual in French and occupy the position closest to the FL1 end of the FL1–FL2 continuum.

Franco-Ontarian student corpus (Groups 2, 3, 4, 5)
The Franco-Ontarian student corpus was collected in 2005 by R. Mougeon, Nadasdi and Rehner with recorded face-to-face semi-directed interviews in Hawkesbury, Cornwall, North Bay and Pembroke, Ontario. It included 182 Grade 9 and 12 students who were attending French-medium high schools in these four communities. The interviews focused on topics comparable to those broached with the Quebec City students. Prior to attending French-medium high schools, the 182 students had attended French-medium elementary schools. Thus, the students had been schooled entirely in French.[4] All students in the corpus came from homes where at least one parent was French-speaking.

In Hawkesbury, Cornwall, North Bay and Pembroke, Francophones represent respectively 80%, 27%, 14%, and 6% (according to the 2001 Canadian census). As shown by R. Mougeon (2014), the proportional representation of Franco-Ontarians locally determines their ability to develop a network of autonomous economic and cultural institutions in which they are exposed to French. Consequently, in their respective community of residence, the students received varying levels of

4. The only subject which was not taught in French is English Language Arts. This subject is typically introduced in Grade 3 (i.e., around age eight) in the French-medium schools.

local exposure to French and concomitantly varying levels of exposure to English. However, the students exhibited variation in the extent to which they actively used French in daily life. Forty seven students used French 80% of the time or more (i.e., unrestricted users); 52 students used French 79% to 41% of the time (i.e., semi-restricted users); and 83 students used French 40% of the time or less (i.e., restricted users). We will be referring to these three groups according to their level of individual use of French (IUF) as follows: high IUF, mid IUF, and low IUF.

FL2 university student corpus (Group 6)

The FL2 university student corpus was collected by F. Mougeon in 2005 and 2008 on the bilingual (French-English) campus of a university college in Toronto. Data collection consisted of surveys and semi-directed interviews with 61 undergraduate FL2 students who were in their first or fourth year of study. The interviews followed a similar protocol to that used with the Franco-Ontarian and Quebec City students. The 61 students were all taking undergraduate French-as-a-second language courses. In addition, they could also enroll in French-language courses and interact across the campus with FL1 staff, administration, service providers, and fellow students. The students also provided information on the extent to which they engaged in extra-curricular interactions involving an active commitment to using French (e.g., part-time work in a local Francophone business, friendship ties with Francophones, past-time activities in French). On the basis of that information, F. Mougeon and Rehner (2015) distinguished three categories of students: (i) highly-engaged, (ii) moderately-engaged, and (iii) minimally-engaged, which we will use in the present study as high, mid, and low IUF.

FL2 high school student corpus (Group 7)

The FL2 high school student corpus was collected by R. Mougeon and Nadasdi in 1996 among 41 Grade 9 and 12 students enrolled in French immersion programs housed in English-medium schools located across the wider Toronto area. These programs were characterized by 50% French-medium instruction in Grades 5 to 8, followed by 20% from Grades 9 to 12. Further, in the schools where the programs were located, the great majority of the administrative, teaching, and maintenance staff, and also students, were not French speaking. In other words, the classrooms where these 41 students took their courses in French and the resource rooms attached to the French immersion program were about the only school settings in which the students had the opportunity to use and be exposed to French. Outside of the school, in daily life, the students never used French or used this language marginally, reflecting the local scarcity of Francophones. However, 9 students reported having had opportunities to interact with FL1 speakers by staying with a

Francophone family, for the most part in Quebec. The average length of stay was 16 days. The remaining 32 students did not report having had such an opportunity. In the present study, we refer to those with such a stay as mid IUF and to those without as low IUF.

Summary of corpora

As the summary provided in Table 1 shows, the corpora drawn upon in the present study are remarkably consistent in their methods of collection and the ages of the students.

Table 1. Summary of characteristics of corpora

Corpus		Number of students	Age	Method
FL1 Majority	Quebec City	15	14–18	semi-directed interview
	Hawkesbury	50	14–18	semi-directed interview
FL1 Minority	Cornwall	51	14–18	semi-directed interview
	North Bay	50	14–18	semi-directed interview
	Pembroke	31	14–18	semi-directed interview
FL2	University, Toronto	61	19–22	semi-directed interview
	High school, Toronto area	41	14–18	semi-directed interview

However, as captured in Table 2, these corpora also clearly differ in terms of (i) the medium of instruction offered in the schools in which they were collected, (ii) the strength of the local French-speaking community in the localities from which these corpora were drawn, and (iii) the students' IUF. As can be seen, there is a connection between the strength of the French-speaking community and the representation of the three categories of IUF. For instance, in Quebec City, where the French-speaking community is very strong, all of the students have very high IUF scores. In contrast, in Pembroke, the weakest of the FL1 minority communities, all but one of the students have low IUF. Likewise, while the three categories of IUF are represented for the FL2 university students, reflecting the fact that they are housed on a bilingual campus and are old enough to seek extra-curricular opportunities to use French on their own, this is not the case for the FL2 high school students. It is important to recall that, as pointed out above, the methods used to quantify and categorize the students according to IUF were not the same across the original projects from which the seven student groups are being drawn. Therefore, in our examination of the impact of IUF on the students' expected preposition use, such impact will be measured within each community rather than across communities.

Table 2. Summary of levels of French language exposure across the corpora

Corpus	Medium of instruction	Strength of French-speaking community	Individual use of French (number of students)		
Quebec City	Unilingual French	Very high	Very high (15)		
Hawkesbury	Unilingual French	High	High (37)	Mid (13)	–
Cornwall	Unilingual French	Weak	High (8)	Mid (21)	Low (22)
North Bay	Unilingual French	Weaker	High (2)	Mid (17)	Low (31)
Pembroke	Unilingual French	Very weak	–	Mid (1)	Low (30)
FL2 university	Bilingual	Very weak	High (12)	Mid (22)	Low (27)
FL2 high school	Bilingual	Very weak	–	Mid (9)	Low (32)

With these differences in French-language use and exposure in mind, the seven student groups in the present study can be placed along the FL1–FL2 continuum as follows (see Figure 1):

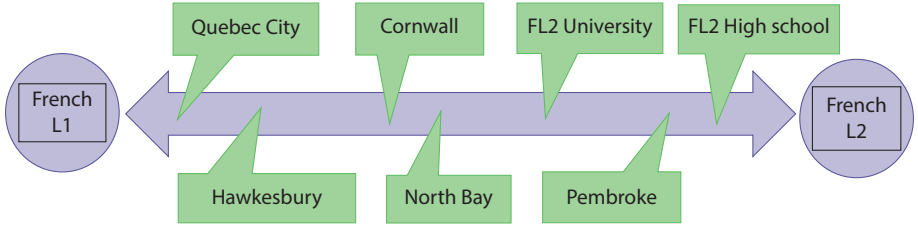

Figure 1. Placement of corpora along the FL1–FL2 continuum

Data analysis

To determine the range and frequency of use of *à*, *au*, and *en* with geographic place names by the students at various points along the FL1–FL2 continuum, all instances of use or deletion of these prepositions with place names in each corpus were coded for: (i) the type of preposition, (ii) the place name, (iii) the corpus in which they were found, (iv) the students' IUF, and (v) the '+/– motion' feature of the verbs with which the prepositions were used or deleted. With respect to preposition deletion, we distinguished cases of permissible omission of the same prepositions in a series of place names headed by use of a given preposition (e.g., *je suis allé* ***à*** *Montréal,* ***Ø*** *Ottawa, et* ***Ø*** *Toronto* 'I went to Montreal, Ottawa, and Toronto') from cases of omission in a context where use of a preposition is obligatory (e.g., *je travaille* ***Ø*** 'I work in Toronto'). Occurrences of the first type of omission were considered as instances of use of the expected preposition, while occurrences of the second type of omission were considered erroneous.

Frequency counts, percentages, factor weights, log-odds (estimates), standard errors, and p values (relative to the reference value, with all other values held constant) were calculated and assessed using Rbrul. For the factor weights, values over .500 indicate a positive influence and values under .500 a negative one. The closer to the maximum of .999, the stronger the positive influence, and the closer to the minimum of .001, the stronger the negative influence. For log-odds, the neutral value is 0.0 rather than .05, and in this study reflect the same findings as the weights. To determine the best run in each analysis, the following evaluation criteria were used: R2, AIC, AICc, and Somers. R was used to calculate Significance for the p value, which was set at 0.05. Conditional inference trees were also used to reveal clusters across the seven speaker groups.[5]

Examples of expected use of the prepositions drawn from the student corpora for each of the three contexts are provided below, followed by examples of unexpected prepositional choices made by the students in each of the contexts:

Place names requiring à

Expected use

j'ai des cousins ***à*** *Cambridge* (Hawkesbury student #40) 'I have cousins in Cambridge'
on est allé à Kingston ***Ø*** *Toronto* ***Ø*** *North Bay ces places là pour le hockey là* (Hawkesbury student #36) 'we went to Kingston Toronto North Bay these kinds of places for hockey'

Unexpected use

les personnes français ***au*** *Pembroke ils sont comme Franco-Ontariens* (Pembroke student #5) 'the French people in Pembroke they are like Franco-Ontarians'
euh je vivais ***en*** *North Bay comme presque toute ma vie* (North Bay student #47) 'um I have been living in North Bay like almost all of my life'
ah je suis allée ***à la*** *Londres* (immersion student #32) 'oh I went to London'
ah non on est allés ***dans*** *Toronto* (North Bay student #28) 'oh no we went to Toronto'[6]
j'ai toujours grandi ***Ø*** *Ottawa* (university student #I405-06-2) 'I always grew up in Ottawa'

5. We would like to gratefully acknowledge Dennis Preston's (University of Kentucky) immeasurable assistance with the statistical models used to analyze the data in the present study.

6. As pointed out by Grevisse (1988), with place names such as localities, it is possible to use preposition *dans* as a specific locative in order to emphasize the territorial boundaries of the place. None of the uses of *dans* with place names found in our corpora were of this type. Thus, they were categorized as unexpected uses of *dans*.

Place names requiring au

Expected use

*j'ai venu **au** Canada quand j'avais trois ans* (university student #I105-3) 'I came to Canada when I was three years old'

*ahm j'allé au Michigan **Ø** Wisconsin **Ø** New York* (immersion student #31) 'um I went to Michigan Wisconsin New York'

Unexpected use

*elle a été **à** Venezuela* (North Bay student #40) 'she went to Venezuela'

*en France on voit le "stop sign" mais **en** Québec on voit arrêt* (university student #I105-06-2) 'in France you see the stop sign but in Quebec you see « *arrêt* » *['stop']*'

*on a été **à le** Nouveau-Brunswick pis en Gaspésie* (Hawkesbury student #36) 'we went to New Brunswick then in the Gaspé'

*Chapeau et tout ça j'ai beaucoup d'amis **dans** Québec* (Pembroke student #29) 'Chapeau and all that I have lots of friends in Quebec'

*c'est sûr que l'Ontario c'est **dans le** Canada là* (Hawkesbury student #47) 'for sure Ontario is in Canada like'

*et on a allés **Ø** Québec une fois quelque chose comme ça* (Pembroke student #30) 'and we went to Quebec one time something like that'

Place names requiring en

Expected use

*quand j'étais plus jeune on est allés **en** Floride* (North Bay student #18) 'when I was younger we went to Florida'

*je suis allée en Angleterre **Ø** Italie et **Ø** Russie* (Hawkesbury student #10) 'I went to England Italy and Russia'

Unexpected use

*quand mes grands-parents habitaient **à** Floride on partait deux semaines* (Cornwall student #49) 'when my grandparents lived in Florida we would leave for two weeks'

*elle a elle voyagé **au** France pour trois mois* (university student #C105–11) 'she traveled in France for three months'

*j'ai toujours voulu aller **à la** France et **à la** Suisse* (North Bay student #13) 'I always wanted to go to France and to Switzerland'

*je pense elle est grandi **dans** Italie alors elle parle français* (immersion student #15) 'I think she grew up in Italy therefore she speaks French'

j'ai plusieurs correspondantes ***dans la*** *France* (university student #C105–9) 'I have several penpals in France'
je suis allée aussi euh ***Ø*** *Allemagne oui j'ai de la famille* (university student #I105–16) 'I also went um to Germany yes I have family there'

Research issues and hypotheses

Inter-group differences for à, au, *and* en

Based on the inter-group hierarchy presented above and in keeping with Alexandre (1995), we expect that the students from Quebec City and Hawkesbury will exhibit close to categorical use of *à*, *au* and *en*. We also anticipate that the students from Cornwall and North Bay will have lower rates of the expected prepositions than the students from Quebec City and Hawkesbury but higher rates than the FL2 university students and considerably higher than the Pembroke and FL2 high school students. Also, since the FL2 university students are advanced in their acquisition of French and are old enough to have actively sought extra-curricular opportunities to use French, we expect their frequency of use of the appropriate prepositions to be higher than that of the Pembroke and FL2 high school students.

In addition, we anticipate overall lower levels of accuracy for *au* and *en* than for *à*, reflecting the fact that the rules governing the use of *au* and *en* with geographic place names in French are more complex than those concerning *à*. *À* is used primarily with localities (the vast majority of which do not have grammatical gender) and is used without an article. In contrast, *au* requires knowledge of a country name's masculine gender, an awareness of the initial segment of the name (i.e., consonant vs vowel), and the application of the contraction rule (i.e., **à le* 'at the' → *au*). As for *en*, it requires knowledge of a country name's feminine gender, an awareness of the initial segment of the name (i.e., vowel vs consonant), and the application of the deletion rule of articles before country names (i.e., **en la France* → *en France*). We also expect that the levels of accuracy for *au* and *en* will be in line with the speakers' position on the FL1–FL2 continuum, namely the closer to the FL2 end of the continuum, the lower the accuracy.

Individual use of French

In line with the FL2 findings of F. Mougeon and Rehner (2015) and R. Mougeon et al. (2010) and in keeping with the FL1 findings of Alexandre (1995), R. Mougeon and Beniak (1991), and R. Mougeon et al. (2005), we expect frequency of use of *à*, *au* and *en* to be associated with the students' level of IUF, whereby the higher the level of IUF, the higher the frequency of expected use of the prepositions. It is important to note, however, that these previous studies did not consider the combined effects of IUF and the context in which the students reside and/or learn French. In

the present study, as pointed out above, IUF is being considered jointly with the context, reflecting the methodological differences in quantifying IUF across the original projects. How this more fine-grained analysis of IUF will be reflected in the results is best kept as an open question given that it is thus far an unexplored issue.

Inter-systemic transfer: '+/– motion' verbs

We expect to find, in keeping with Alexandre (1995), that in *à* contexts students will select *à* more often with '+ motion' verbs and that in *en* contexts they will select *en* more often with '- motion' verbs. These expectations reflect the role of inter-systemic transfer, whereby the use of *to* (*à*) for '+ motion' verbs and *in* (*en*) in English for '– motion' verbs influences the students' preposition choice in French. With respect to the strength of this influence relative to the students' position on the FL1–FL2 continuum, we anticipate greater impact as one moves closer to the FL2 end of the continuum. Given its low frequency in the data, we were not able to examine the inter-systemic influence of '+/– motion' verbs for *au*.

Results

The results of the analysis of preposition use with geographic place names by the students at various points along the FL1–FL2 continuum are addressed below in the following order: (i) inter-group differences for *à*, *au*, and *en*; (ii) the influence of the students' IUF; and (iii) the inter-systemic influence of the '+/– motion' verb distinction.

Inter-group differences for *à*, *au*, and *en*

Our comparison of the different Rbrul runs for the three preposition contexts revealed that the best runs were those in which the individual students were included in the analysis as a random effect. The results of these runs are presented in Tables 3, 4, and 5 and are accompanied by inference trees in Figures 2, 3, and 4. Starting with the *à* contexts, Table 3 and Figure 2 reveal a two-way split across the continuum at the first level of inferencing, with the FL2 high school immersion (I) and Pembroke (P) students clearly lagging behind the other groups who all have percentages of the expected preposition near 90% or above. At the second level of inferencing, there is a further split between, on the one hand, the Quebec City (Q) and Hawkesbury (H) students, who have highly positive factor weights, and, on the other hand, the Cornwall (C), FL2 university (U), and North Bay (N) students, whose factor weights are closer to the neutral value of 0.500.

As for the *au* contexts, Table 4 and Figure 3 reveal a two-way split across the continuum at the first level of inferencing, with, on the one hand, the Hawkesbury, Quebec City, and Cornwall students displaying highly positive factor weights, and with, on the other hand, the remaining groups of students displaying clearly negative ones. At the second level of inferencing, the Hawkesbury and Quebec City students are outperforming the Cornwall students, with percentages above 94% compared to 87.7%.

Table 3. Mixed-effects logistic regression model of *à* use in *à* contexts across the FL1–FL2 continuum

Corpus	*À* contexts					
	N	% *à*	Log-odds (Estimate)	Standard error	Factor weight	*p* value
Intercept		89.0	2.571	0.145		<0.0001
Quebec City	115	98.3	1.861	0.681	0.865	0.006
Hawkesbury	1299	96.8	1.207	0.234	0.770	<0.0001
Cornwall	624	92.9	0.376	0.238	0.593	ns
FL2 university	471	89.8	−0.180		0.455	(reference)
North Bay	624	89.6	−0.170	0.221	0.458	ns
FL2 high school	221	72.9	−1.432	0.241	0.193	<0.0001
Pembroke	509	68.2	−1.662	0.226	0.159	<0.0001

N = 3863; Speaker random effects *n* = 298; *SD* = 0.957; model was improved with speaker random effects added, reducing AIC from 2346 to 2252

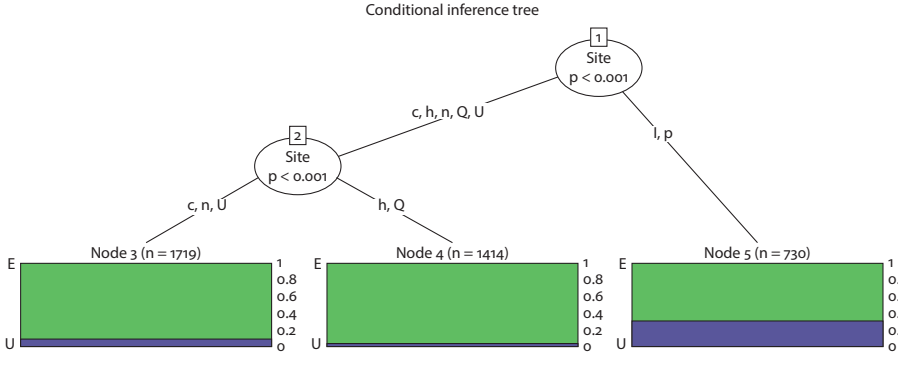

Figure 2. Conditional inference tree for *à* contexts

Concerning the *en* contexts, Table 5 and Figure 4 bring to light a primary split between, on the one hand, the Quebec City, Hawkesbury, North Bay, and Cornwall students with (very) positive factor weights and, on the other hand, the remaining groups with (very) negative factor weights. Within each of these primary clusters, a secondary split is also observable, with the Quebec City and Hawkesbury students displaying very high percentages of *en* use (over 95%) versus the North Bay and Cornwall students having less than 83% and with the FL2 university and Pembroke students' percentages (64.2 and 54.4%, respectively) clearly outpacing that of the FL2 high school immersion students (only 29.4%).

Table 4. Mixed-effects logistic regression model of *au* use in *au* contexts across the FL1–FL2 continuum

Corpus	*Au* contexts					
	N	% *au*	Log-odds (Estimate)	Standard error	Factor weight	p value
Intercept		83.1	2.186	0.249		<0.0001
Hawkesbury	324	95.7	1.651	0.409	0.839	<0.0001
Quebec City	17	94.1	1.206	1.100	0.770	ns
Cornwall	253	87.7	0.497	0.362	0.622	ns
FL2 university	209	75.1	−0.539		0.368	(reference)
North Bay	198	76.8	−0.557	0.354	0.364	ns
FL2 high school	79	68.5	−1.116	0.423	0.247	0.008
Pembroke	104	70.2	−1.142	0.425	0.242	0.007

N = 1184; Speaker random effects *n* = 265, *SD* = 0.831; model was improved with speaker random effects, AIC reduced from 1,000 to 932

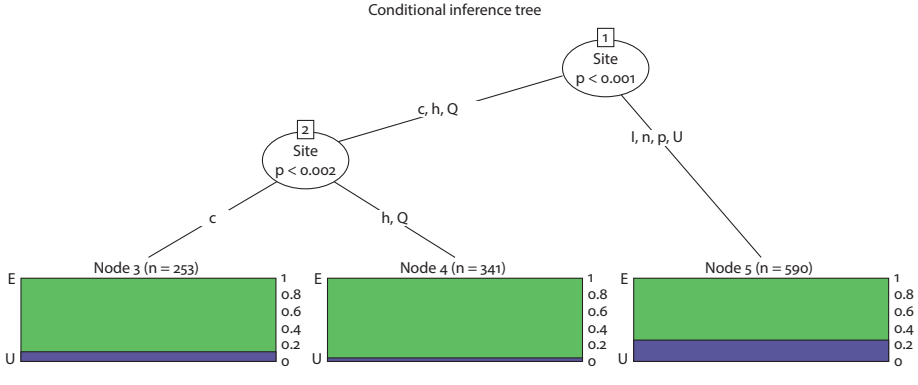

Figure 3. Conditional inference tree for *au* contexts

Table 5. Mixed-effects logistic regression model of *en* use in *en* contexts across the FL1–FL2 continuum

Corpus	*En* contexts					
	N	% *en*	Log-odds (Estimate)	Standard error	Factor weight	p value
Intercept		70.2	1.074	0.111		<0.0001
Quebec City	34	100			K.O.	(excluded)
Hawkesbury	335	95.5	2.314	0.292	0.910	<0.0001
North Bay	229	82.5	0.714	0.234	0.671	0.002
Cornwall	198	78.3	0.497	0.236	0.622	0.035
FL2 university	388	64.2	−0.424		0.396	(reference)
Pembroke	103	54.4	−0.897	0.275	0.290	0.001
FL2 high school	218	29.4	−2.204	0.234	0.099	<0.0001

N = 1471; Speaker random effects *n* = 275, *SD* = 0.702; model improved with speaker random effects, AIC reduced from 1466 to 1419

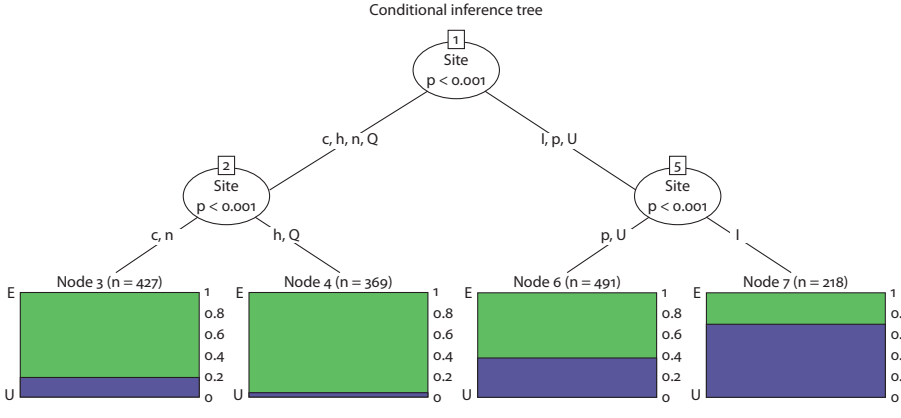

Figure 4. Conditional inference tree for *en* contexts

These results reveal the expected inter-group hierarchy, with the students from Quebec City and Hawkesbury exhibiting close to categorical use of *à*, *au* and *en*, with the students from Cornwall and North Bay using *à*, *au* and *en* less frequently than the students from Quebec City and Hawkesbury and generally more frequently than the FL2 university students, and with the Pembroke and FL2 high school students lagging clearly behind. Further, in looking across the results for the three prepositions, we see, as expected, that *à* is easier for the students than are *au* and *en*. Interestingly, we also see that *en* is more difficult that *au*, suggesting that there is a hierarchy of difficulty associated with these three prepositions: *à* (with an overall percentage across communities of 89% and with extreme values of 98.3% and 68.2%) is somewhat easier than *au* (overall: 83.1%; extreme values: 95.7% and

68.5%), which is markedly easier than *en* (overall: 70.2%; extreme values: 100% and 29.4%). Exploration of the reasons for the unexpected difference in difficulty the students experienced between *au* and *en* would be required, since, as pointed out above, the use of both prepositions presents three similar challenges, namely knowledge of a country name's gender, an awareness of the initial segment of the name, and the application of a contraction or deletion rule.

Further, as anticipated, this hierarchy of preposition difficulty poses more of a challenge for those students closer to the FL2 end of the continuum than for those students closer to the FL1 end. Specifically, the students from Quebec City and Hawkesbury have very high rates of all three expected prepositions and are always in the top group of students even at the second level of inferencing. The Cornwall students are always in the top group of students at the first level of inferencing, but then are separated from the Quebec City and Hawkesbury students at the second level of inferencing, and their percentage rate of use of the expected preposition drops from *à* to *au*, and from *au* to *en*. The North Bay and FL2 university students pattern together in terms of having more trouble with *au* than with *à*, but stand apart for the toughest preposition, *en*, with the North Bay students outperforming the FL2 university students. Lastly, the Pembroke and FL2 high school students have notably lower rates regardless of the preposition and have more trouble with *en* than with *à* or *au* (particularly so for the FL2 high school students).

Influence of individual use of French

The results concerning the influence of the students' IUF on choice of *à* and *en* appear in Tables 6 and 7. Recall that *au* has been excluded from this analysis due to the lower number of tokens of this preposition. Note also that the Quebec City students are not included in this analysis, as they are all exclusive users of French in daily life and that the Pembroke students are also excluded, since all save one are low IUF students.

Starting with *à*, Table 6 shows that IUF does not have a significant effect on the expected use of this preposition across the three FL1 student groups. Irrespective of the IUF level, the percentages all approach or surpass 90%. This suggests that residence in a FL1 community provides sufficient exposure to French to compensate for even low IUF levels in relation to this easy preposition. In contrast, for the FL2 high school students, the mid IUF level is still not enough to make a difference in the face of overall low extra-curricular exposure to French on the students' part. However, as can be seen, IUF does have a significant impact for the FL2 university students, but only above a certain threshold, with the low IUF students significantly underperforming the other two groups and with the difference between the high and mid IUF students approaching significance.

Table 6. Mixed-effects logistic regression model of influence of IUF on *à* use in *à* contexts across the FL1–FL2 continuum

Student groups	IUF	*À* contexts					
		N	% *à*	Log-odds (Estimate)	Standard error	Factor weight	p value
Hawkesbury	Intercept		96.8	3.643	0.287		<0.0001
	High	1009	96.7	0.174	0.285	0.543	ns
	Mid	290	96.9	−0.174		0.457	(reference)
Cornwall	Intercept		92.9	3.165	0.350		<0.0001
	High	86	95.3	0.296	0.481	0.573	ns
	Mid	271	93.4	0.010		0.502	(reference)
	Low	267	91.8	−0.306	0.333	0.424	ns
North Bay	Intercept			2.157	0.267		<0.0001
	High	18	88.9	−0.078	0.509	0.481	ns
	Mid	227	91.2	0.180		0.545	(reference)
	Low	379	88.7	−0.102	0.283	0.475	ns
FL2 university	Intercept		89.8	2.758	0.311		<0.0001
	High	124	96.8	0.829	0.428	0.696	0.053
	Mid	144	92.4	0.081		0.520	(reference)
	Low	203	83.7	−0.910	0.293	0.287	0.002
FL2 high school	Intercept		72.9	1.208	0.259		<0.0001
	Mid	53	79.2	0.228		0.557	(reference)
	Low	168	70.8	−0.228	0.249	0.443	ns

Turning to the results for *en*, Table 7 shows the same lack of effect of IUF for the FL1 student groups and for the FL2 high school students. This lack of effect is not surprising for the latter students since if the highest IUF level for these students is not sufficient to influence their use of the easiest preposition *à*, it would be unlikely to be enough to impact their use of the most difficult preposition, *en*. As for the FL1 students, this lack of effect is a little more surprising given that we saw in Table 5 that the difficult preposition *en* is where we see a bigger contrast in the percentage rates between the FL1 majority and the FL1 minority students. As was the case with *à*, it is only with the FL2 university students that we see a significant influence of IUF. However, we see that IUF has an even more pronounced effect on their use of *en* than it had on their use of *à* in that the rates for all three IUF levels are significantly different from each other. This suggests that extra-curricular use of French is even more important for these FL2 university students when faced with the most challenging preposition.

In sum, these results reveal a relatively modest impact of IUF, perhaps reflecting the fine grained consideration of this factor in light of the students' position on the FL1–FL2 continuum. Specifically, the results have highlighted upper and lower

thresholds of community or school-based exposure beyond which IUF levels have no significant impact on use of the expected prepositions. That said, the importance of this factor (particularly in relation to the difficult preposition *en*) is clear for the students who occupy an intermediate position on the continuum, namely the FL2 university students, who are more advanced in their acquisition of French but who do not reside in a French-speaking locality.

Table 7. Mixed-effects logistic regression model of influence of IUF on *en* use in *en* contexts across the FL1–FL2 continuum

Student groups	IUF	*En* contexts					
		N	% *en*	Log-odds (Estimate)	Standard error	Factor weight	p value
Hawkesbury	Intercept		95.5	3.437	0.582		<0.0001
	High	261	95.8	0.252	0.411	0.563	ns
	Mid	74	94.6	−0.252		0.437	(reference)
Cornwall	Intercept		78.3	1.540	0.276		<0.0001
	High	44	81.8	0.029	0.387	0.507	ns
	Mid	82	86.6	0.554		0.635	(reference)
	Low	72	66.7	−0.583	0.319	0.358	ns
North Bay	Intercept		82.5	2.450	0.556		<0.0001
	High	14	92.9	0.561	0.969	0.637	ns
	Mid	65	92.3	0.495		0.621	(reference)
	Low	150	77.3	−0.057	0.564	0.258	ns
FL2 university	Intercept		64.2	0.778	0.140		<0.0001
	High	103	84.5	0.940	0.220	0.719	<0.0001
	Mid	143	66.4	−0.060		0.485	(reference)
	Low	142	47.2	−0.881	0.176	0.293	<0.0001
FL2 high school	Intercept		29.4	−0.849	0.214		<0.0001
	Mid	57	36.8	0.269	0.204	0.567	ns
	Low	161	26.7	−0.269		0.433	(reference)

Inter-systemic influence of the '+/– motion' verb distinction

Turning, finally, to the inter-systemic influence of the '+/– motion' verb distinction, we begin by examining *à* contexts. Note that our analysis of inter-systemic influence in this context is limited to a comparison across five groups of students on the FL1–FL2 continuum, since *en* and *dans* (both reflecting the influence of English preposition 'in') are entirely absent in this context in the speech of the students from Quebec City and the FL1 majority community of Hawkesbury, even

with '– motion' verbs. Overall, Table 8 shows that, as expected, the students use preposition *à* (correctly or not, for example *à Toronto* or **à la Toronto*) more often with '+ motion' verbs than with '– motion' ones. Further, as anticipated, these differences are more pronounced the closer one moves to the FL2 end of the speaker continuum. Specifically, while the higher rate of use of *à* with '+ motion' verbs compared to '– motion' verbs is not statistically significant for the stronger FL1 minority communities of Cornwall and North Bay, it is for the FL2 university students, and is strikingly so for the Pembroke and FL2 high school students.

As for the influence of the '+/– motion' verb distinction in contexts requiring *en* use, our analysis included six student groups, since the use of *à* in this context was entirely absent in the speech of the students from Quebec City. Table 9 shows that, with the exception of those students from the FL1 majority community of Hawkesbury, the students use *en* and *dans*, as anticipated, more often with '– motion' verbs than with '+ motion' ones. Also, as expected and as was the case with the *à* context, these differences are stronger the closer one gets to the FL2 end of the continuum. These differences are not significant for the students in Cornwall and North Bay, but are for the Pembroke students, and particularly so for both groups of FL2 students.

Table 8. Use of *à* versus *en/dans* in *à* contexts according to '+/– motion' verbs across the FL1–FL2 continuum

Student groups	'+/– motion' verbs	*À contexts*					
		N	*à* %	Log-odds (Estimate)	Standard error	Factor weight	p value
Cornwall	Intercept		95.7	4.30	0.564		<0.0001
	+	176	97.7	0.546	0.297	0.633	ns
	–	407	94.8	–0.546		0.367	(reference)
North Bay	Intercept	–	91.5	2.823	0.284		<0.0001
	+	158	94.3	0.377	0.206	0.593	ns
	–	427	90.4	–0.377		0.407	(reference)
FL2 university	Intercept		93.0	3.708	0.534		<0.0001
	+	135	97.8	0.829	0.329	0.696	0.0119
	–	293	90.8	–0.830		0.304	(reference)
Pembroke	Intercept		74.0	1.973	0.340		<0.0001
	+	151	92.1	1.147	0.188	0.759	<0.0001
	–	303	65.0	–1.147		0.241	(reference)
FL2 high school	Intercept		76.0	1.550	0.295		<0.0001
	+	83	90.4	0.961	0.248	0.723	0.000104
	–	100	64.0	–0.961		0.277	(reference)

Table 9. Use of *en/dans* versus *à* in *en* contexts according to '+/– motion' verbs across the FL1–FL2 continuum

Student groups	'+/– motion' verbs	*En contexts*					
		N	*en/dans* %	Log-odds (Estimate)	Standard error	Factor weight	p value
Hawkesbury	Intercept		99.1	4.691	0.615		<0.0001
	+	121	99.2	0.096	0.615	0.524	ns
	–	200	99.0	0.096		0.476	(reference)
Cornwall	Intercept		87.1	2.513	0.508		<0.0001
	+	65	84.6	–0.201	0.264	0.450	ns
	–	121	88.4	0.201		0.550	(reference)
North Bay	Intercept		89.4	3.353	0.885		0.000152
	+	101	88.1	–0.334	0.281	0.583	ns
	–	115	90.4	0.334		0.417	(reference)
FL2 university	Intercept		74.1	1.235	0.201		<0.0001
	+	155	59.4	–0.829	0.155	0.696	<0.0001
	–	193	86.0	0.829		0.304	(reference)
Pembroke	Intercept		76.3	1.640	0.492		<0.0001
	+	44	63.6	–0.724	0.330	0.673	0.02813
	–	49	87.8	0.724		0.327	(reference)
FL2 high school	Intercept		47.4	0.082	0.259		0.751
	+	110	30.9	–1.115	0.218	0.753	<0.0001
	–	63	76.2	1.115		0.247	(reference)

Discussion

In keeping with the present volume's focus on second language acquisition, we will use the two groups of FL2 students to organize the discussion of our findings for the various student groups across the FL1–FL2 continuum. To start, let us consider the FL2 high school students' rates of expected preposition use and the intergroup differences highlighted in their rates compared to those of the students from the FL1 minority communities (see Table 10). As can be seen, while the mid IUF FL2 high school students display a rate of expected *à* use (79.2%) that is not too distantly removed from that of the low IUF FL1 minority students (North Bay = 88.7%; Cornwall = 91.8%), which is, in turn, not too far removed from that of the mid and high IUF students in their same communities (88.9%–95.3%), the same cannot be said for the FL2 students' use of *en*. The mid IUF FL2 high school students display a markedly lower rate of expected use (36.8%) compared to that of the low IUF FL1 minority students (North Bay = 77.3% and Cornwall = 66.7%), which is

Table 10. Rates of expected *à* and *en* use by FL2 high school students and by FL1 minority students according to IUF

Student groups	IUF	*à* (%) in *à* contexts	*en* (%) in *en* contexts
FL2 high school	Mid	79.2	36.8
	Low	70.8	26.7
North Bay	High	88.9	92.9
	Mid	91.2	92.3
	Low	88.7	77.3
Cornwall	High	95.3	78.3
	Mid	93.4	86.6
	Low	91.8	66.7

NB: Pembroke students are not included because they are all low IUF save one.

in turn markedly lower than that of the mid and high IUF students in their same communities (78.3%–92.9%).

These patterns of intergroup differences are reminiscent of the patterns documented by R. Mougeon et al. (2010) and R. Mougeon and Rehner (2017) in their work comparing FL2 high school students with FL1 students in relation to the use of informal/vernacular versus formal/standard sociolinguistic variants (e.g., variants such as the deletion/retention of schwa, the non-use/use of the negative particle *ne* 'not,' *rester* vs *habiter/demeurer* 'to live', and *mas* vs *je vais* 'I am going'). The authors found that the FL2 high school students' rates of use of informal/vernacular variants were markedly lower than those of the low IUF FL1 students, which were in turn (slightly) lower than those of the mid and high IUF FL1 students. The authors explained this pattern by calling on how such variants are (dis)used within the educational setting, on the students' IUF level, and on the linguistic properties of some of the variants. In the present study, although we are not examining sociolinguistic variants, some of the same explanations apply. As we have pointed out, preposition *en* is more difficult than *à* and, hence, in order to progress in their acquisition of *en*, even the mid IUF FL2 high school students would need to have a higher level of exposure to French and more opportunities to use this language than is currently the case. However, in the case of *à*, the mid IUF FL2 high school students have sufficient exposure to and use of French to reach a level of acquisition of this easier preposition that begins to approach that of the low IUF FL1 minority students.

Further, still with respect to the FL2 high school students, Table 11 shows that their rates of inter-systemic transfer in *à* and *en* contexts are higher than those of the FL1 minority and majority students. Their higher level of inter-systemic transfer likely reflects that they are not yet at a highly-advanced stage of their FL2 learning (see Cook 1992, Flege 1995 and Frenck-Mestre 2002 for a discussion of

the relationship among L2 exposure, proficiency and L1 transfer in the production and reception of target language speech). Moreover, the inter-group differences reflected in Table 11 are much more marked in the *à* context with - motion verbs than in the *en* context with + motion verbs. This difference may reflect that in the – motion context, English uses preposition *in*, which is graphemically close to preposition *en*. In contrast, in the *en* context, with + motion verbs, English uses preposition to, which is graphemically different from preposition *en*. Thus, in such a context speakers will be less prone to rely on intersystemic transfer.

Table 11. Rates of inter-systemic transfer in *en* and *à* contexts in the speech of the FL2 high school students and the FL1 minority and majority students

Corpora	*à* used with '+ motion verbs' in *en* contexts (%)	*en/dans* used with '– motion verbs' in *à* contexts (%)
FL2 high school	9.6	23.8
Pembroke	7.9	12.2
North Bay	5.7	9.6
Cornwall	2.3	11.6
Hawkesbury	0	1.0
Quebec City	0	0

Our results concerning inter-systemic transfer are in line with those of previous sociolinguistic variationist research examining the role of this factor on preposition choice in Ontario French. For instance, R. Mougeon et al. (2005) documented many innovations in the use of prepositions by FL1 students due to transfer from English. In their study, the frequency of the innovations reflected (i) the students' community of residence (majority vs minority) and (ii) the students' level of IUF. Specifically, the students from the minority communities had higher levels of transfer-induced innovations than did the students from the majority community, and the lower the students' IUF, the higher the frequency of the innovations. Our investigation of inter-systemic transfer in the present study confirms these patterns and also expands the scope of research on transfer by considering preposition use across the FL1–FL2 continuum, not just along the FL1 continuum in Ontario. The present study also broadens Alexandre's (1995) investigation of inter-systemic transfer in the *à* context, since in her study she did not separate the majority students from the minority students. By separating FL1 majority versus minority communities and by distinguishing among the individual minority communities, we were able to highlight that transfer from English occurs nearly exclusively in the speech of the minority students and increases as the demographic concentration of FL1 speakers in the community falls, patterns which are in line with those of R. Mougeon et al. (2005).

Turning to a discussion of the findings related to the FL2 university students, Table 12 shows that their rates of expected *à* and *en* use fit two patterns. First, for *à* we see that, regardless of their IUF, the students' rates are in line with or are approaching those of the high IUF FL1 minority and majority students. Second, for *en*, it is only the high IUF FL2 students whose rates are in line with those of the high IUF FL1 students. These patterns are in keeping with F. Mougeon and Rehner (2015) who found that, for certain mildly-marked non-standard sociolinguistic variants (e.g., *ne* non-use, *on* 'we'), the high IUF FL2 university students' rates of use were comparable to those of the high IUF FL1 minority and majority students. However, for highly-marked non-standard sociolinguistic variants (e.g., vernacular *rester* 'to live'), their rates were considerably lower than those of the high IUF FL1 students. The authors suggested that the combined effect of variant socio-stylistic salience and students' IUF likely accounted for the patterns they documented. With respect to the present study, the factors explaining the patterns documented for the FL2 university students likely reflect the combined effect of the students' position on the FL1–FL2 continuum, the students' IUF, and the difficulty of the preposition.

Table 12. Rates of expected *à* and *en* use according to IUF

Student groups	IUF	*à* (%) in *à* contexts	*en* (%) in *en* contexts
FL2 university	High	96.8	84.5
	Mid	92.4	66.4
	Low	83.7	47.2
North Bay	High	88.9	92.9
	Mid	91.2	92.3
	Low	88.7	77.3
Cornwall	High	95.3	81.8
	Mid	93.4	86.6
	Low	91.8	66.7
Hawkesbury	High	96.7	95.8
	Mid	96.9	94.6

In considering the FL2 university students' rates of inter-systemic transfer, Table 13 shows that, irrespective of the difficulty of the preposition, their rates are in line with those found for the stronger FL1 minority communities. The same cannot be said for the FL2 high school students, who clearly evidence a higher rate of inter-systemic transfer with the more difficult preposition. These findings confirm Bartning and Schlyter's (2004) suggestion that certain challenging features of French are only acquired at the most advanced stage of FL2 learning.

Table 13. Rates of inter-systemic transfer in *à* and *en* contexts

Corpora	*à* used with '+ motion verbs' in *à* contexts (%)	*en* used with '– motion verbs' in *en* contexts (%)
FL2 high school	9.6	23.8
Pembroke	7.9	12.2
FL2 university	2.2	14.0
North Bay	5.7	9.6
Cornwall	2.3	11.6
Hawkesbury	0	1.0
Quebec City	0	0

Finally, in terms of the limitations of the present study, with the exception of innovative *à* and *en/dans* use reflecting inter-systemic transfer, it can be pointed out that we did not compare groups of students in relation to the innovative variants they use in place of the expected prepositions. This decision reflected space limitations, the same reason we did not examine the influence of place name frequency on levels of expected preposition use. However, an exploratory analysis suggests that it may be useful to assess both of these issues in future research on the topic of preposition choice with place names along the FL1–FL2 continuum. Recall too that individual differences, reflected in the random error significance, should also be more thoroughly investigated in future work.

In sum, the patterns of intergroup differences and similarities documented in the present study (i) confirm that *en* is generally more difficult for the students to learn than *au*, which is in turn more difficult to learn than *à*, (ii) underscore the beneficial effect of high IUF on the expected use of both *à* and *en* for the FL2 university students, (iii) indicate that choice of preposition with place names is a good candidate for inclusion in the list of aspects of French morpho-syntax that Bartning and Shlyter (2004) have shown to be acquired only by highly-advanced FL2 speakers, and (iv) highlight the usefulness of measuring the impact of these factors in combination with the students' position on the FL1–FL2 continuum. In conclusion, the comparative approach adopted in this paper across an expanded continuum bridging L1 and L2 speakers paves the way for further studies that bring into conversation research on variation in second language, minority/heritage language, and majority language settings – lines of inquiry that have, for the most part, been kept artificially separated. The use of an expanded continuum is also at the heart of studies such as R. Mougeon, F. Mougeon and Rehner's (in press) investigation of third person plural subject-verb agreement in French and Di Salvo and Nagy's examination in the present volume of direct object marking in L1 and heritage language Italian. What these studies all have in common is that they explore the relationship between speakers' position on the continuum and their rates

of acquisition of various aspects of the language under study. While they show that certain aspects of morpho-syntax are relatively easy to learn and are acquired at relatively similar rates across the various groups along the continuum, others are more complex and reveal sizeable inter-group differences. Thus, more studies examining a wide array of features and using continua including a wide spectrum of speaker groups would help to push forward this promising line of research.

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CHAPTER 10

Variation, identity and language attitudes

Polish migrants in France

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This chapter examines migrants' use of French L2, analysing the speech of ten L1 Polish speakers, thirty to sixty years, in a naturalistic setting. Using informal conversations, this study focuses on L1 variation patterns; specifically *ne* deletion, a sensitive and powerful indicator of social issues, using Rbrul. The data permit comparison of use of the same sociolinguistic variable by L2 speakers from two different L1 typological groups: Polish and English. The analysis showed the migrants broadly adopt L1 speech patterns, constraint ordering, and frequently even rates (as had the more formal L1 English learners) with universalistic implications for sociolinguistic variation acquisition. However, two couples are 'outliers.' Qualitative analysis indicates that differences in the speech of these two couples relate to language attitudes and ideology and suggests language ideology plays an important role in L2 acquisition and use. Complementary quantitative and qualitative analyses reveal aspects of L2 acquisition, which, separately, might not have been captured.

Keywords: French, language attitudes, language ideology, identity, migration, 'ne' deletion Polish migrants

Introduction[1]

Language variation, migration and superdiversity

The 21st century has seen a complexification of individuals' lives resulting from what has variously been referred to as 'translocality' (Greiner & Sakdapolrak 2013), 'liquid modernity' (Bauman 2000), 'global complexity' (Urry 2002), and especially 'superdiversity' (Vertovec 2007). Parkin (2016) characterises the term

1. My thanks to Robert Bayley for his welcome application of Rbrul to the data set for this paper (previously run using Varbrul) and for his thoughtful suggestions and careful editing.

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'superdiversity' as descriptive rather than theoretical and argues for its power in addressing the complexity of the migrant experience in the 21st century, which results from geopolitical events on one hand, and, on the other, an explosion in technology and social media. For whatever reasons, we are experiencing, as never before, mass migration. For migrants, the barriers are fewer, and the opportunity costs for mobility less. Any overly simplistic perspective is problematic, or at least insufficient, in accounting for this new global situation. The term 'migrant' is a broad category today. There are, for example, asylum seeking migrants, 'cultural' migrants, economic migrants, 'traditional' migrants who travel from one place to another and settle there, and 'serial' migrants who, if they settle at all, do so only after multiple intermediate sojourns.

Which approach to capture this complexity, which involves history, society and identity? Language is a powerful lens through which to interrogate the experience of migration. Language practices can index the trajectory of those negotiating their constantly changing identities. It would seem that speakers do indeed use language to index and even create identit(ies), including their own history, their aspirations for the future and their children's future, and this process is dynamic and constantly evolving, even from interaction to interaction. Consequently many researchers feel the need to be alert to the emerging meanings from each interaction as it evolves, rather than starting with *a priori* assumptions about the elements of the interaction.

In this context, within variationist sociolinguistics, an ethnographic and emergentist approach has served increasingly to interrogate language use, combining quantitative data with a sensitivity to issues emerging from qualitative data. Although the discourse turn in linguistics is by no means new (Stubbs 1983), the use of qualitative, discoursal data has seen considerable recent growth in L1 studies of the role of attitudes and ideologies in language variation and change (e.g., Niedzielski & Preston 2003) and has emerged in SLA contexts as well (e.g., Kalaja & Barcelos 2003). In this line of research, quantitative analysis provides evidence of tendencies in the speakers' language practices, and qualitative analysis can provide useful indications as to which features are important in the analysis, sometimes by zeroing in on individual speakers (for example, Regan 2013).

Migration and identity construction

People constantly engage in the process of identity construction, finding a place for themselves in the social world by negotiating their positions in intersecting communities in which they participate. Migrants using an L2 or other languages are even more intensely caught in the maelstrom of different communities as they cross borders of various kinds – geographical, psychological and social. By the nature of

the multiple worlds they inhabit and the fluidity of their relationships with these worlds, the process must be managed with subtlety.

An additional element for transnational speakers is that the linguistic 'bricolage' (Eckert 2012) in which L1 speakers engage to construct identities is, in their case, more complex. They may use a 'truncated' language and they may use language forms with functions different from those of L1 speakers. Paying attention to language practices can therefore be a useful tool for charting their choices, providing connections between choice in language elements and identity as well as migrants' aspirations. Language variation is necessarily intimately bound up with such choices, both in what is perceived to be available to the speaker, as well as most powerful in constructing the desired identity of the moment. In addition, depending on speakers' attitudes to language and their connections to how they see their future lives unfolding, they may choose to use the elements of language differently from more traditional speakers of the same language.

This chapter focuses on the speech of Polish born migrants in France. The data described is from ten first language (L1) Polish speakers living in France. These speakers are a subset of a larger group of participants in a wider study of migration involving L1 Polish speakers. Participants in this wider study live in Ireland and France, in urban and non-urban settings. They are also of different generations of migration; some are long-time residents in Ireland and France, some are recent arrivals in both countries (for more detailed descriptions of the larger project, see, for example, Regan, Nestor, & Ni Chasaide 2012; Regan & Debaene 2013; Regan 2016). The multi-site design of the wider study, and the inclusion of multiple generations of migrants, aim to address, in horizontal as well as vertical layers, in chronological as well as spatial perspectives, the complexity of the migration experience today, in relation to one particular diaspora, Polonia.

The participants emigrated to France during three different migration 'waves': post World War Two, Solidarity (1980–1990), and more recent migration. They range in age from approximately thirty to sixty years, and acquired French in a naturalistic setting with little formal classroom learning. This study sought to describe their language practices in France and what these indicate about their migrant experience. In the first instance, the study focuses on their variation patterns, especially their use of a particular sociolinguistic variable, *ne* deletion or retention, a sensitive and powerful indicator of many social issues in French. In a second phase, this study explores the wider/deeper implications of the quantitative results and uses a qualitative approach to more fully account for some aspects of these results.

Variation in L2 speech and individual variation

Individual variation among the participant speakers was shown by quantitative analysis. A closer look at the speech of two couples suggested a focus on their discussion about their own use of the French language. This focus emerged from evidence that they spent a considerable amount of time talking about French, although this was not a topic that the interviewers focused on, or even raised. What they said suggests their attitudes to French, how these relate to their own use of French and ultimately how language attitudes and wider language ideology issues link with notions of identity, self-determination and future plans. It touches also on the issue of individual variation in L2 data.

Individual variation has been a theme in SLA literature almost since its inception, evoked in general overviews of the field (for example Ellis 1994; Myles & Mitchell 1998), and in individual studies (Dewaele & Furnham 2000; Regan 1995). Individual variation is taken as a given, but quantitative studies of L2 speakers, often dealing in aggregates of large numbers of speakers and large amounts of data, are sometimes said to 'swallow up' the detail of individual behaviour. These issues have been addressed, for example, by Bayley and Langman (2004) and Regan (2004), who show, using variationist data, that individual variation patterns frequently follow group patterns. Sometimes, however, qualitative investigation of the data relating to individual speakers who do not follow group patterns and may seem anomalous can be revealing and enriching to the overall final analysis of the data. Analysis of *ne* deletion by Polish speakers in Regan (2013) reveals general group patterns, but intriguing individual differences suggested the need for further probing. Of interest, also, is to see if the patterns of the Polish L2 speakers are similar to those of English speakers already studied in relation to the same linguistic variable, *ne* deletion, especially given the considerable typological differences between Polish and English.

The study: Poles in France

Emigration has been a staple feature of Polish societal landscape for at least two hundred years. Poles have emigrated to France in great numbers for centuries and the French *Polonia* is estimated to be close to a million. Only the United States has received greater numbers of Polish immigrants than France. Migration to France is often divided into two main periods. The first is post-World War Two migration, when Poles came in significant numbers to the mining regions in Alsace and northern France. The motivation was economic, and employment was in mining and agriculture. This study deals with the second, post-1980 migration, which itself consists of two phases: before 1989 and afterwards. Migration from 1980 to 1989 is

often called 'Solidarity migration.' Many people left Poland during and after martial law (1981–1983), when the Communist Party then in government, enabled one-way cross-border movement. Migrants who came to France before 1989 usually intended to settle there permanently. After the collapse of the Iron Curtain in 1989, migrants to France intended to stay for a few years only, save enough money to invest in Poland, and then return. Such intentions were not always fulfilled, as is the case of the couples who are the focus of this chapter. Each couple is from one of two French research sites (Paris and a northern provincial city). The second French town chosen is in one of the northern mining regions where many Poles had settled in the 19th century in a 'chain migration' pattern. The participants in the wider study emigrated to France between 1960 and 1995. Their length of residence varies from fifteen to forty years at the time of interview. Their ages ranged from forty to seventy and they worked in a range of different occupations.

The broader project investigated language as an indicator of integration. It is understood that integration is not always an aim of migrants, but it is frequently seen as a goal by government agencies and the education system of many host countries. The sociology literature, for instance, frequently cites language as one of the most important indicators of integration. The acquisition and use of the L2 can certainly be used as an instrument for gauging degrees of integration and/or inclusion, the stances of the speakers in relation to integration and, ultimately, a fuller picture of migrants' lives. There is, however, no simple relationship between language use and practices and integration. This relationship is complex and shifting and needs to be approached in a way which is sensitive to each situation. There can be significant variation in the way the migrants, and also the receiving countries and institutions, perceive 'integration'.

Methodology

The participant speakers were interviewed in their own home, place of work or in public spaces, cafés and restaurants which they frequented habitually. The interviews were semi-structured conversations. The participants were told that the researchers were interested in migration and their experience of it, and so they frequently recounted their personal stories of migration, present or past. Several told of their life in Poland; some of the older people told stories of the Second World War. Many talked about leaving Poland and their families and friends, migrating to France, and others of parents or relatives who had come to France in previous generations.

Each interaction lasted at least two hours, and involved two interviewers, one Irish (the author) and one Polish (a colleague working on the project). In addition, meetings had been held earlier by the Polish interviewer; this elicited biographical

data and additional reflections, in Polish, on integration and the experience of migration. Both sets of interviews were analysed and the data integrated in the final analysis. The interviews were transcribed, coded and analysed using Rbrul (Johnson 2009), a specialized application of logistic regression.[2]

The Variable: *ne* deletion

Deletion and retention of *ne* is a stable variable in spoken French. French negates using two particles, one before the verb and the other after. French speakers have variably deleted the first particle *ne* since the Middle Ages (for example, see Martineau & Mougeon 2003). Today, deletion rates are very high and also stable in spoken French; *ne* deletion is a feature the L2 speaker would hear frequently. *Ne* is not traditionally deleted in written French and this is emphasised in educational settings in France (although *ne* deletion has become more common in informal written French used in SMS messaging and online media conversations).

Deletion or retention of *ne*, as mentioned previously, is a significant indicator of formality, power and solidarity, style, register, and variationist research shows that it has a network of relationships with sociolinguistic factors such as age, gender and social class (Armstrong & Smith 2002; Armstrong 2002). It often co-occurs with other such stable sociolinguistically sensitive variables in French, as *tu*/*vous* alternation or *on* as opposed to *vous* and *nous*. It is certainly a feature of which French speakers (L1 and others) would be aware, and probably invest with considerable significance. Given the very high level of omission of *ne* and the very low retention rates (it is sometimes described as 'insertion'), the retention of *ne* is the more marked variant. It could be surmised that the L2 speakers would notice this feature and perhaps make a choice of insertion, where they felt appropriate, for stylistic or emphatic purposes.

Based on previous research on first language (L1) and L2 speakers (Ashby 1981, 2001; Dewaele & Regan 2002; Regan 1996; Sankoff & Vincent 1980), the factor groups hypothesised to constrain the variability in the deletion of *ne* in the data were: lexicalisation, following phonological segment, preceding phonological segment, subject of sentence, subject of verb, verb type, and presence/absence of clitic (Table 1). For this study, specific speaker factors relevant for migration processes were also included, such as length of residence, and language proficiency.[3] In addition, individual speakers were modelled as a random effect.

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2. My thanks to Isabelle Lemée for her help with the transcription and coding.

3. Occurrences such as "*ils ne parlaient que polonais*," and all infinitival propositions ("*de ne pas sortir*") were excluded, as were consecutive repetitions of the negative particle, geminates such as "*on entend pas*," "*on en veut pas, personne n'en veut*." Where such cases were retained, they were counted as presence of *ne*.

Table 1. Factor groups with examples from the corpus (alternative, without '*ne*' deletion, in brackets; English translation underneath)

Factor group	Factor	Example
Gender	Male	
	Female	
Age	>50[a]	
	<50	
Following segment	Vowel	*Maintenant il [n']est pas bien avec Atena* 'Now he's not good friends with Atena'
	Consonant	*Je [ne] savais pas quoi* 'I didn't know like'
Preceding segment	Vowel	*Tu [ne] fais pas la tête pour ça* 'You're not going to sulk just for that'
	Consonant	*Elle [n']a pas dit pauvre* She didn't say poor thing
Structure of verb	Main	*Je [ne] souviens plus le prix* 'I can't remember the price any more'
	Copula	*À 5 heures c'[e n']est pas possible* 'At 5 o clock it's not possible'
	Modal/Auxiliary	*Je [ne] peux pas dire quelle note* 'I can't say what mark'
Clause type	Main	*Je[ne] voulais pas repasser et parler* 'I didn't want to go back and talk'
	Subordinate	*Parce que au début c'[e n']était pas possible* 'Because at the beginning it wasn't possible'
Subject	Pronoun	*J'[n']ai pas encore fini l'école pour aujourd'hui* 'I haven't finished school for today'
	Noun	*L'armée de résistance ne voulait pas le reconnaître* 'The resistance army wouldn't accept him'
	Zero	*Ne fermez surtout pas cette institution!* 'Above all don't close this institution !'
Object clitic	Zero	*Les agences polonaises [ne] sont pas tout à fait honnêtes* 'The Polish agencies are not altogether honest'
	Present	*Le Polonais il[ne] se tient pas ensemble* 'The Poles don't hang together'
Lexicalization	Non-*lexicalized* phrase	*Ils [ne] téléphonent pas chez nous pour la chercher* 'They don't telephone us to come and get her'
	Lexicalized phrase	*C'[n']est pas toujours ça ; il [ne] faut pas faire ça ; il [n'] y a pas ; je[ne] sais pas.* 'its not always that '; 'you mustn't do that'; 'There is'; 'I don't know'
Length of residence	Post WW2 (1945–) (1981–1983) Recent (1989–) Fall of communism	

a. Based on the existing literature, it was likely that age would be a significant factor in the acquisition of *ne* deletion. (For example, Singleton & Ryan 2004; Labov 2001) Current age was divided into two groups; younger than 50 and older than 50; this dividing line was indicated as potentially influential during initial interviews. Age related influences were also captured by coding for age of arrival, duration of residence in France.

Results

Tables 2 and 3 present the results of the quantitative analysis. Table 2 shows the results for all fixed effects that reached significance. Factor groups that failed to reach statistical significance (gender, age, length of residence) are not included. Table 2 includes both log odds and Rbrul factor weights. It also includes the number of tokens and percentage of deletion for each factor, as well as the overall number of tokens, percentage of deletion, and the Rbrul input value, or corrected mean. The log odds in a factor group sum to zero, with positive values indicating that the factor favours use of the application value, in this case *ne* deletion, and a negative value indicating that the factor group disfavours the application value. Rbrul weights provide similar information. Weights between .5 and 1.0, like positive log odds, indicate that the factor favours the application value and weights between 0 and .5 indicated that the factor disfavours use of the factor. Both measures, however, need to be interpreted in relation to the overall use of the application value by the speakers in the model. For example, the speakers whose data is examined here omitted *ne* at a rate of 81.4% (Rbrul input = .787). Thus, even though speakers omitted *ne* in the majority of instances where *ne* could be used in a subordinate clause, subordinate clauses are still said to disfavour deletion because speakers deleted *ne* at a rate of 71.9% (log odds = −0.425, weight = .395), compared to a 83.5% deletion rate for main clauses (log odds = 0.425, weight = .695). Table 3 shows the results for individual speakers and includes intercepts and weights as well as the number of tokens and percentage of deletion by each speaker.

The Polish speakers of French L2 have an 81.4% deletion rate, which is similar to French L1 rates noted earlier (Coveney 1998; Armstrong & Smith 2002). On the whole, the constraint ordering is similar to L1 constraint order. Only in one factor was there a difference (in the case of lexicalisation, the Polish speaker order is the reverse of L1 speaker order). However, on the one hand, while constraint hierarchies were similar to native speaker patterns, on the other hand, the rates are variable according to individual speakers. Inter-individual variation is to be expected in L2 speakers, as noted.

Specifically in relation to the factors proposed to constrain the variation, the following effects were observed. Results for 'following sound segment' were in the expected direction: the Polish speakers follow the constraint pattern of native speakers in relation to this factor and omit *ne* more often when the following segment begins with a consonant. As Ashby (1976) points out, the fact that a following vowel disfavours deletion is in accord with universal CV structure. Syntactic structure of the verb showed that the Polish speakers omitted *ne* significantly more when using a copula than modals or auxiliaries. Clause type was significant and similar to L1 and L2 usage in French in previous studies: Ashby, for L1 speakers, found

Table 2. Ne deletion by Polish L2 speakers of French

Factor group	Factor	Logodds	N	%	Weight	*P*
Subject	Pronoun	1.059	966	85.1	.743	2.1e–22
	Zero	0.862	39	84.6	.703	
	Noun	–1.922	72	30.6	.128	
Lexicalization	Non-*le*xicalized phrase	0.735	876	82.3	.676	2.65e–08
	Lexicalized phrase	–0.735	201	77.6	.324	
Object clitic	Zero	0.764	155	91.6	.682	6.84e–06
	Present	–0.764	922	79.7	.318	
Following phonological segment	Consonant	0.410	571	83.5	.601	3.61e–05
	Vowel	–0.410	506	79.1	.399	
Clause	Main	0.425	881	83.5	.695	0.000144
	Subordinate	–0.425	196	71.9	.395	
Total	Input		1077	81.4	.787	

Notes: Log likelihood = –408.043, df 8, intercept = 1.31.

Table 3. Speakers, social characteristics, and individual results

ID	Age	Gender	Arrival	Intercept	N	% Deletion	Weight
K	45	M	1982	1.193	73	98.6	.810
I	16	F	Born in France	1.000	30	100.0	.805
H	55	M	1980	0.912	33	93.9	.725
C	40	F	1990	0.961	154	96.1	.706
F	38	F	1992	0.460	6	100.0	.627
J	60	F	1982	–0.092	125	88.0	.492
B	40–45	M	Arrived age 8	–0.868	62	75.8	.308
A	60	M	1983	–0.933	212	75.5	.294
E	41	F	1992	–1.085	151	76.2	.264
D	42	M	1989	–1.251	48	70.8	.233
G	50	F	1983	–1.355	183	67.8	.215
Std dev				1.193	1077	81.4	

main clause deleted .70 and subordinate .40, and Regan (1996), for L2 speakers who spent a year abroad in France, found main clause deleted .64 and subordinate clause .32. The Polish speakers in the present study show the same constraint order: main .69, subordinate .39. In relation to Subject type, where the subject is a pronoun, the rate is .74, but where it is a noun phrase, .12. Below is a comparison of the Polish speakers *ne* deletion in relation to noun phrase, with other L2 speakers (Regan 1996) and L1 speakers (Ashby 1976).

Table 4. Comparison of Polish speaker variable use of subject type with L1 French and anglophone L2 speakers

	L1 (French) speakers	L2 speakers (Anglophone)	L2 speakers (Polish)
Noun Phrase	.28	.02	.06
Pronoun	.64	.53	.55
No subject (imperatives)	N/A	N/A	.44

The presence of an object clitic favoured retention of *ne*. Ashby (1976) for L1 speakers found the same pattern although it did not reach significance. For L2 speakers it was significant. The rates for L2 speakers in relation to clitics relate perhaps to processing issues. These Polish speakers behave similarly to the Irish English speakers in relation to object clitics. The L2 speakers may be monitoring the complexity of clitics in French and their position in the utterance, and so tend to produce more *ne* while in 'monitoring' mode. Only the results for deletion of *ne* in lexicalised phrases are different from the other factors and run counter to what has been previously found, in relation not only to L1 speakers (Ashby 1981), but also for L2 speakers (Regan 1996). As for previous studies, the factor group itself was significant in the Polish L2 data. Unlike the speakers in the previous studies, the Polish speakers retained *ne* in the lexicalised phrases.

In relation to the factors found to be significant in the Rbul analysis, comparisons can be made in relation to the same variable, *ne* deletion, and three different speaker groups: Polish speakers in France, Irish English Year Abroad speakers and L1 speakers of French (Ashby 1981).

In addition, we now thus have evidence of the use of the same variable in French L2 from speakers of two typologically different L1's (Polish and English) with their potentially consequent L1 influences.

It seems as if the same linguistic factors as well as social factors constrain the variation in both cases, whether at the level of phonological constraints, as in following segment, or syntactic/morphological constraints, as in verb type or subject type or preceding clitics, or indeed even social factors such as gender and age, which suggest the expected patterns, despite non-significance here.

Thus, we can conclude from the quantitative analysis that the variation pattern in relation to this particular variable, *ne* deletion, is, by and large, similar to that used by L1 speakers of French, in terms of constraint ordering and even of rates. And we now know that this is true for L1 languages as typologically distant as Polish and English with potentially universalistic implications.

However, in relation to this particular group of Polish people in France, on a closer examination of individual usage, some results appear surprising, particularly in relation to two couples in this particular sample.

Table 5. Comparison of *ne* deletion by Polish L2, English L2, and French L1 speakers

	Polish	Irish English	L1 French (reported as retention)
Subject			
Pronoun	.743	.54	.43 [non-clitic pronouns] .36 [clitic pronouns]
Zero	.703	N/A	
Noun	.128	.07	.72
Lexicalization			
Non lexicalised	.676	.38	.74
Lexicalised	.324	.71	.44 *je ne sais pas* .27 *ce n'est pas* .36 *il ne faut pas*
Object clitic			
Zero	.682	.52	.518
Present	.318	.27	.482
Following phonological segment			
Consonant	.601	.62	
Vowel	.399	.36	N/A
Clause			
Main	.695	.52	.30 [retention]
Subordinate	.395.	.32	.60 [subordinate]

A tale of two couples

It happened that there were two couples within the group of speakers. The first couple were Gaby and Henri.[4] They lived in Paris; Gaby was 50 years old and Henri five years older. The second couple were Elena and Daniel, who lived in the northern city, the second research site. Both couples were of similar age, had arrived in France roughly at the same period and had spent similar amounts of time in France. Both couples had one child (a daughter, in both cases), and both daughters were integrated into the education system in France. Both couples intended to stay in France; they had good jobs and incomes by now, and a better life economically than they would have had in Poland.

One couple deleted at a rate similar to each other: Elena's factor weight was .264 (deletion rate 76.2 percent) and Daniel's factor weight was .233 (deletion rate 70.8 percent). But the other couple deleted at a strikingly contrasting rate: while Gaby's factor weight was .215 (deletion rate 67.8 percent), Henri's was .725 (deletion rate 93.9 percent). This fact, on its own, was not necessarily surprising.

4. These, and all other names, in the study are anonymised.

However, the demographic and ethnographic characteristics of husband and wife in the two couples were very similar, so it seemed puzzling that there should be such divergence within one couple (.215 versus .725) and not in the other (.264 and .233). As noted earlier, recent research trends have indicated that qualitative analysis can provide a complementary perspective which can illuminate issues which quantitative analysis has identified. Was there anything in their personal biographies that could explain these puzzling figures?

The first Polish couple

The case of the couple with differing deletion rates is particularly intriguing. Gaby and Henri had had very similar life trajectories to each other and similar experiences. They met in France and were introduced by a mutual Polish friend in order that they should get together to organise trips back together to Poland, as both were in the habit of visiting their families. They discovered that they came from the same town in Poland, had attended the same secondary school, and just missed meeting and knowing each other there. They were not actually in the same class, only because there was a five year age difference between them. They also had very similar experiences in France. Both came to France for economic reasons; neither came during what they called the 'state of war' in Poland, where people were granted special refugee status in France, and given special conditions. Gaby and Henri both specified they were 'normal' migrants who came to France for a better life. Their linguistic experience also was similar. Neither had learnt French in Poland, and neither had had any early aspirations to visit or live in France (in fact, Henri had been hoping to go to Canada and only decided to stay in France when Canada didn't work out for him). Gaby says she learnt Russian and English in Poland at school, the norm at the time. Both subsequently realised they were unlikely to get good jobs in France without proficiency in French. Gaby worked at a number of what she considered uninteresting jobs and found this frustrating. Both attended French classes in the same institution (*Institut Catholique Polonais*). Both found the French classes transformative as regards life opportunities and both got interesting and rewarding jobs, which they both attributed to the language classes. Henri noted that recently they had less contact with institutions such as the *Centre Polonais*, the *Institut Polonais* and the *Bibliothèque Polonaise*:

> *au début oui mais depuis un certain temps non pas tellement quant est-c que la dernière fois à l'institut polonais on est allé oh ça fait quelques années de ça*
>
> 'At the beginning yes, but for some time now not really – when it's – the last time it was in the Polish Institute – we went a – that's some years now..'.

He continues:

> *oui oui mais bon ces derniers temps nous on n'a pas tellement – je veux dire on s'est un peu éloigné de ce milieu*
>
> 'yes yes but these days we don't – we have pulled away from this milieu'.

When asked who were his friends, French or Polish people, he says

> *oh y a les deux oui/y a // y a des Polonais y a des Français oui*
> 'oh there are both, yes – there are Polish people and there are French people, yes.'

Then, with such a similar trajectory and shared notions about their present and future lives, as well as their feelings about France and Poland, why were their deletion rates so dramatically different? An analysis of the speech content of the couple provides a possible explanation for the observed divergence in deletion rates. The wife, Gaby, talked a bit more than her husband. However, relative contributions varied depending on the topic being discussed; the two of them differed significantly in terms of amount of time given to topics. A significant amount of the conversation was devoted to discussions of education and language, which ranged widely and included issues of language proficiency and also language and culture (even though, as noted earlier, these were not topics introduced by the interviewers). Gaby (a very low deleter) talked at length about her daughter's education: the French education system, the stage her daughter was at in the *lycée,* her choice of subjects in school, possible career options, and consequent possibilities for 'paths' in the *Baccalauréat*. She spoke also at length about her daughter's high proficiency in French: "*ma fille me corrige…elle est très bonne en français*" ('My daughter corrects me – she is very good in French').

Her husband who, by contrast, deleted at a very high rate, rarely made a comment during these discussions. But once the topic turned away from the local French educational arena to a wider one with a more global focus, where he talked about the visit of friends from Australia, his contributions were significantly more frequent and he was relatively voluble. When the conversation turned again to education and language, his contributions reverted to almost none.

Perhaps the answer to divergent deletion rates lies in their differing attitudes towards the French language. Not only do they have different attitudes to French, but different attitudes towards what it represents for themselves and their daughter. In the interviews, Gaby is very focused on her daughter's education and on her learning French. She doesn't prevent her learning Polish, rather encourages it; her daughter cannot then later she says reproach her for preventing her from learning Polish. She can do what she likes with Polish "*c'était pas un handicap pour elle*"

('it wasn't a handicap for her') but Gaby sees Polish as an additional extra, once her daughter's more important studies of French and in French are seen to. As noted above, her husband hardly comments on discussions of language and education, but does on holidays or visits from Australia.

Of course, it might be suggested these differences are due to gender, as opposed to differing attitudes to language and education, as indicated by topic. Gender is frequently an important causal factor in linguistic variation, both in L1 (Labov 2001) and L2 (Adamson & Regan 1991). Stereotyped speech behaviour might suggest that the wife might be focused more on education and language than her husband. However, if the issue of gendered attitudes were to explain the divergent deletion rates, then this should also be evident in the speech of the second couple.

The second couple

As noted earlier, the second couple was of similar age to the first, had arrived in France roughly at the same period and had spent similar amounts of time in France. Like the first couple, this couple also have an only daughter and she is in the education system in France. And, like the first couple, they now had a good life in French and intended to stay.

Initially, the second couple were going to try and earn enough money in France to buy an apartment in Poland and did not intend to settle in France permanently. They were separated for a year at the beginning, she, with their daughter in France and he, still remaining in Poland. Elena says "*c'était pas planifié*" ('It wasn't planned'). Their move to France was due to the economic situation in Poland, and the difficulty of predicting life there. In France, "*on a trouvé une stabilité – l'emploi était plus ou moins sur pour mon mari… on savait combien on gagnait par mois*" ('we found stability- my husband's work was more or less secure we knew how much we would earn each month').

The second couple talked about the same amounts of time. In the first couple, the wife spoke 75% of the time, and, in the case of the second couple, the wife spoke for 70% of the time.[5] However, when topic is considered, the similarity between the two couples ends. On language and education, the husband in the second couple spoke just as much as his wife.

This is clear for example, from their recounting of their personal biography, their journey to France from Poland. The conversation moves very quickly on to the education of their daughter in France and especially to the issue of language. Daniel says

5. If the daughter's speech is excluded, the wife spoke four times as much as the husband.

> *à ce moment là on a dû prendre la décision parce que notre fille commençait > on était obligés d'envoyer à l'école donc on savait pas si nous encore on pouvait jouer comme ça un an ou deux mais il fallait prendre la décision définitive*
>
> 'at that moment, we had to make a decision because our daughter was beginning we had to send her to school and therefore we didn't know if we could still have a year or two to play around with but it was becoming urgent to make a definite decision.'

and then Elena says *"on voit elle aimait bien être en France"* ('we saw she really liked being in France'). And so they tell the story of their decision to come to France permanently. They tell it together, almost as one speaker, in a jointly constructed narrative which seemed to have been years in the making during their life as a migrant couple in France. They repeat each other's sentences/phrases:

Elena: "*Maintenant maintenant c'est pas pareil*"('now – now it's not the same')
Daniel: "*maintenant c'est pas pareil*" ('now it's not the same')

The husband spoke enthusiastically and knowledgably about the detail of the French education system, the programmes in which his daughter was participating, the choices she had available to her and that she was making in her education:

Daniel: *euh elle fait des études en ce moment c'est les langues étrangères appliquéesf elle étudie anglais et polonais à l'université de d'ici de [….location deleted..] mais seulement c'est que pour sa troisième année de des études elle va partir en Pologne*
'euh eh she studying right now, it's applied foreign languages – she is studying English and Polish at the university here […location deleted…], but only it's – for her third year she is going to go to Poland'.
Interviewer: *où ca?*
'where exactly?'
Daniel: *à Cracovie*
'in Cracow' (Cracow is the preferred English spelling.)
Interviewer: *ah Cracovie*
'Ah Cracow'
Daniel: *oui oui c'est l'échange Erasmus*
'yes yes it's the Erasmus exchange'

Throughout the conversation, one frequently took up where the other left off:

Elena: *parce que c'est le français sa langue natale maintenant c'est pas le polonais*
'Because French is now her native language now – it's not Polish'
Interviewer: *ah bon*
'ah yes'

Elena: *oui oui elle est plus à l'aise et correcte en français en français elle parle très bien elle fait pas de fautes d'orthographe*
'yes yes she is more at ease and correct in French – in French she speaks very well- she doesn't make spelling mistakes'
Daniel: *sans accent*
'with no accent'
Elena: *elle fait pas de fautes*
'she doesn't make mistakes'
Daniel: *elle parle pas comme si elle était née en Pologne elle parle parfaitement*
'she doesn't speak as if she was born in Poland she speaks perfectly'

They had shared ambitions for their daughter and placed her, her education, and her future at the forefront of their reflections on life in France and Poland.

Interestingly, both spoke a lot about 'correct' French, as well as what they perceived as its importance for integration and the fact that they themselves chose actively to learn as much as possible to 'fit in.' They were critical of some other Polish people (and indeed of other immigrant groups) who chose to stay within their own communities and did not make efforts, in their view, to learn French:

Elena: *mais en fait c'est très personnel ce que nous avons fait nous- parce que on connaît des familles qui vivent en France plus longtemps que nous et qui ont du mal à s'exprimer en français parce que ils ne voulaient pas apprendre – sortir s'adapter // euh ils voulaient pas euh justement s'adapter comme nous on a choisi justement cette adaptation- on s'est dit dès le début si on vit en France il faut qu'on vit comme les Français avec les Français il faut que notre fille apprenne le français.*
'But in fact it is very personal what we did, because we know families who have been living in French longer than us and have difficulty expressing themselves in French because they didn't want to learn – go out – adapt – they didn't want to – just adapt like us- we chose precisely this adaptation – we said to ourselves from the beginning if we live in France, we must live like the French – with the French – our daughter must learn French.'

The mother describes how she used to leave her daughter deliberately at school in the canteen so that she would be with French children all day, even though, at that time, she herself was not working and could have taken her home:

Elena: *et même à l'époque je ne travaillais pas et Edyta, elle est partie à l'école les premières années je l'ai laissée à la cantine exprès pour qu'elle reste avec les Français plus longtemps donc toute la journée les premières années après elle s'est habituée j'ai trouvé du travail donc la cantine c'était toutes*

ses années d'école elle a elle a dû apprendre et aimer mais c'était tout notre choix pour / pour ne pas être différents- pour ne pas rester à l'écart et c'est avec Edyta qu'on a -qu'on apprenait (le)français et même à l'époque je faisais vraiment beaucoup d'efforts pour apprendre le français en écoutant la télé en répétant les mots et en faisant les exercices de prononciation à la maison justement pour apprendre
'and even at the time I wasn't working and Edyta went off to school – the first years I would leave her in the canteen on purpose so she would remain with French people longer so all day long the first years afterwards she got used to it, I found work- therefore the canteen – it was throughout her school years – she had to learn- and to love – but that was our choice for/so as not to be different- not to remain apart and it was through Edyta that we – that we learnt French and even at the time I made really a lot of efforts to learn French by listening to the TV, repeating words and doing pronunciation exercises at home precisely to learn.'

Their relatively low rates of deletion of *ne* (as we have seen, this is the prestige variant which normally suggests a more formal French), may well reflect their desire as a well-educated professional middle-class couple to be part of the native French 'community' and especially of the community (of practice) of the education system of which their daughter is a participating member. They seem to see this participation as her passage to 'becoming French,' which they see as a possibility for her, as the child of migrants, and one which is not open to them as adult migrants to France. They say that they themselves will never be totally French. They say the first generation of migrants who don't speak French will have to accept jobs which are less interesting and or prestigious.

Elena: *dans l'émigration c'est plutôt la deuxième génération qui réussit vraiment faire dans la vie qu'ils ont envie parce que la première euh première vague doit accepter ce qu'ils trouventr ce qu'on leur propose le travail qu'on leur propose voilà travailler dans un restaurant travailler dans une usine voilà on l'accepte parce que c'est le seul moyen…*
'In emigration it's rather the second generation who succeed in doing what they wish in life – because the first – the first wave are forced to accept what they can find- whatever people offer them – there – to work in a restaurant, work in a factory, there – we accept because it's the only way….'

Daniel: …. *On a pas de diplômes*
'… We don't have degrees'

Interviewer: *oui*
'yes'

Elena: *On connait pas encore très bien la langue donc on accepte ce qu'on a et on travaille pour les enfants malheureusement c'est comme ça et c'est ce qu'on a observé en France c'est les enfants qui réussissent à faire leurs métiers leurs carrières ils sont médecins ils sont dentistes ils sont avocats eu journalistes mais c'est tout le temps les enfants.*
'We don't know the language well, yet- therefore we accept what we get and we work for the children unfortunately that's the way it is and that's what we observed in France it's the children who succeed in making their careers – they are doctors they are dentists they are lawyers and journalists but all the time it's the children.'

Daniel: *j'en suis sûr – qu'ils réussissent nettement mieux que – en parlant français parce que les parents sont toujours là pour pousser.*
'I'm sure they succeed much better – by speaking French because the parents are constantly there pushing them.'

As the Rbrul results showed, both are relatively low deletors of *ne*, users of the prestige variant. During their reflections on language, this couple is evidently conscious of prestigious linguistic forms. This awareness extends to their first/heritage language, Polish, as well as to their other main language, French. They talk about other Polish emigrants in France who remain within Polish culture (particularly regional), continue to speak Polish rather than French, and, they point out, especially, do not speak a 'correct' Polish but a heavily accented one, as they come from the country in Poland and not the city. As Elena says:

> *'ils continuent à écouter la musique polonaise ils ont ils ont leur accent qui est très fort parce que c'est souvent les gens des villages qui venaient donc*
>
> 'They continue to listen to Polish music – they have – they have a very strong accent because it's often the people from the villages who came (to France) so'.

Also,

> *c'était pas le Polonais le plus correct, c'est l'accent disons parfois villageois ça dépend, on entend un fort fort accent selon les régions*
>
> 'It wasn't the most correct Polish, it's the accent let's say from the village – it depends – you hear a strong accent according to the region'.

Elena and Daniel seem to feel that they themselves made an effort to have contact with people other than their compatriots from Poland. They also perhaps perceive themselves to be people from the city in Poland and so already more orientated towards prestige language norms.

Despite their considerable efforts, becoming integrated in France is not necessarily easy, especially for the first generation of arrivals. Elena points out that a

colleague at work once 'reminded her of her origins' and comments that, for migrants, it is the second generation who really integrate.

The husband (a low deleter) is familiar with the detail of the educational programmes, talks about how his daughter hesitated between London and Poland as part of her studies, and hopes she's made the right choice. Both parents consider a career in translation might be appropriate for her. Elena says "*parce que c'est le français sa langue natale maintenant c'est pas le polonais*" ('Because French is now her native language – not Polish'). Daniel says she feels "*plus Francaise que Polonaise*" ('More French than Polish'), and Elena "*peut être moitié moitié–je ne sais pas*" ('Maybe half and half I don't know') and Daniel "*c'est la question qu'on a*" ('That's the question we have'). This is a question they are in the habit of debating between themselves. They discuss with great admiration their daughter's attitude to the two cultures, and her ability to adapt, Daniel filling in word gaps for his wife and completing her sentences. As well as the joint emigration enterprise journey apparent in the dialogues described earlier, they have a joint project to assure the integration of their daughter to the point of seeing her actually 'become' French, and this is equally reflected in their joint narrative about the process.

They have, themselves, invested hugely in the French 'project.' The husband noted with a certain pride that, after a month in his new workplace, he was filling in cheques for people, because even the French didn't know how to do this. It is as if they have adopted wholesale a discourse on 'correct' language which they perceive is used by French people in France. It is a popular discourse of linguistic prescriptiveness supported by the French education system. The Polish speakers have adopted this discourse and remade it a vehicle for integration for their daughter; she will succeed with her new identity as a native French speaker: "*pas de fautes d'orthographe.*" ('no spelling mistakes'), *"sans accent"* ('no accent'), *"elle parle parfaitement"* ('she speaks perfectly'), and her mother talks about her own learning process, "*apprendre le français en écoutant la télé, en répétant les mots et en faisant les exercises de pronunciation" (*'learning French by watching TV by repeating words and doing pronunciation exercises').

The adoption of this discourse of prescriptive language in French was bolstered by similar notions of norms for their L1 Polish. Daniel wanted to speak 'correctly': "*j'ai fait maximum d'efforts pour parler correctement*" ('I made the maximum possible efforts to speak correctly'), but says that, though he tried to learn also how to write as well as speak French, he does not write well. He says it is too late for him, but not for his daughter. They are invested in their daughter's not only speaking French but writing good French as part of the cultural capital which will contribute to her success, material and cultural; it will help her to take her place in France, or at least a notional France which exists in the literature, history and culture she has

studied within the French educational system. Here the French used is a formal French which maintains prescriptive standards defined by linguistic and cultural institutions, where *ne* is not often deleted, (in principle and according to prescription), and where care is taken to use prestige variants.

Conclusion

Quantitative and qualitative analyses have revealed some interesting aspects of the acquisition of sociolinguistic variation patterns by L2 speakers. The initial Rbrul analysis of these Polish migrant speakers in France showed constraint ordering patterns in relation to *ne* deletion which were strikingly similar to those of a group of speakers who were different in many respects; Irish English Year Abroad students in France, and both groups had similar patterns to those of L1 French speakers.

Despite the fact that the Poles were naturalistic learners with little previous formal secondary school classroom learning & that the English learners were primarily formal, apparently with different contexts of acquisition, they show very similar variation patterns. Equally, despite the fact that the two L1's in question are significantly different, L1 influence does not seem to have played a major role in the variation. In addition, both groups seem to be similar to L1 speaker patterns, the Year Abroad after the stay in France (and even a year later) and the naturalistic Polish speakers after living and working in France for several years.

It seems as if, with sufficient contact with native speakers, all learners can acquire L1 variation patterns and are able to approximate native speaker constraint ordering, and even rates, despite differences in context of acquisition, or L1 influence. However rates do vary with L2 speakers, as one would expect. In this group, the rates were a cause for pause and an attention to the more qualitative aspects of the data.

Language ideology and language attitudes can be a driving motor for people's lives. How people think about language often plays a central role in their life decisions, their interactions with other people, their investment in the future and even broader identity construction. As Dick and Arnold point out, "the study of language beliefs and practices is an especially useful tool for tracking how people create links between their present lives and broader, more enduring processes" (2017, 402). In this case, the notion of 'French' is a propelling one, given its historic importance, the role it plays in education and in work life in France, the importance of its acquisition in all its guises, especially its various registers (particularly the formal ones).

In comparing the two couples, it is clear that both husband and wife in the second couple (Elena and Daniel) exhibit similar perspectives, shared social contacts, and identical aims for their future and that of their daughter. In contrast, while

the wife in the first couple (Gaby), seems to share many of these same aims and perspectives with the first two speakers, her husband seems much less focused on the internal French educational and cultural norms and more focused outwards on the world beyond France and even beyond Europe. He also differs from the other three speakers (his wife, and Elena, and Daniel) in using a significantly less formal French, at least in terms of *ne* deletion. His wife seems to adopt the prescriptive codes used by the other couple (who are also invested in French cultural and educational norms), and all three use a more formal French, as indicated by their *ne* deletion rates.

Since the deletion rates for the second couple (Elena and Daniel) are similar, gender does not necessarily seem a satisfactory explanation for the divergent deletion rates between husband and wife in the first couple (Gaby and Henri). Perhaps, then (as indicated by the relatively large amount of time they talk about language), the issue is differing attitudes towards language and education attitudes. What might have been interpreted as a gender difference seems, when we tune into the voices of these speakers, to be a question of language ideology and attitudes. These voices tell us about their relationship with the French language, with prescriptive norms, with their conviction of its important role in the education and success of their daughter(s) and in the process of their becoming integrated, becoming French citizens in a notional French nation state.

This link between language ideology and linguistic practice is, of course, a dynamic one. Usage of *ne* is a part of a wider semiotic system used by these L2/multilingual speakers as they dip into their knowledge of French and its resources to index something relating to their lives, futures, and their children's future. The things indexed for these multilingual parents in their experience of migration are not necessarily the things they might have indexed for parents in France in earlier times. They have 'borrowed,' possibly temporarily, significations, and may abandon them, or at least focus less on them, when they are no longer necessary or centre stage (and not necessarily in the way that L1 tends to 'wax and wane' in relation to the linguistic market at different lifetime stages).

In light of such issues of language norms, attitudes, and ideologies, it may interesting to compare these Polish speakers in France with Poles in other parts of the Polish diaspora. In relation to Polish people in Ireland (Venanzio & Regan 2015; Regan 2016; Regan & Nestor 2010; Regan, Nestor, & Ni Chasaide 2012), it appears that those who wanted their children to have the opportunity of a future life trajectory outside of Ireland were more likely to use the global variety of English, as opposed to the local Irish variety (as represented by the use of discourse 'like'). Irish English (even though an 'inner circle' English) is nevertheless a recognizable 'variety' in relation to so-called 'standard English.' The Polish speakers in Ireland who wanted their children to 'fit in' to Irish society and wished to continue living

in Ireland used the less formal variants, contrasting with the French Polish couples who wanted their children to 'fit into' France and settle there and used the more formal variants. The two contexts (Ireland and France) and their linguistic situations present an interesting contrast for the different stances adopted by the Polish immigrants in each country and for their relative appropriation of variation patterns.

The centrality of the nation state (France, Ireland, and so on) as the primary political and economic unit is now frequently seen as problematic. But although this old 19th century conception of the nation state has been eroded, the notion is still strong in the minds of many and, in this instance, these four Polish migrants. As a symbolic entity or identity, they have appropriated notions of 'good' French and linked 'good' French with achievement and future advancement, especially through the education system. They refer at times also to Polish, the Polish education system, and related prescriptive language, 'good Polish,' The Polish speakers seem to realise they can use elements of the language to suggest alignment with an education system which still strongly promotes prescriptive linguistic norms. The nation state may not, in fact, be a real point of reference (whether in Poland or in France) but what is 'real' for these immigrant speakers, is the way this is incorporated in their ideology, as evidenced by the narratives of the participants.

Furthermore, to judge by their language practices, this ideology manifests itself in their speech. It has been pointed out in much recent research that, for migrants, the present is impacted by other places and spaces, and that people are affected by multiple discourses, whatever physical context they find themselves in. For these participants, this present, in France, seems to be impacted by Poland and the Polish language norms and attitudes with which the speakers grew up. Thus the adoption of prestige norms by the French Polish speakers may be different from the practice of the Irish Polish speakers who adopt the local less prestigious norms, because both groups have understood the differences in context. Both groups want to 'fit in' and thrive in their new contexts, but the different contexts affect the modes of doing this.

The status of English and French, although both are prominent powerful world languages, is very different in complexion. English, as perhaps a more global language with a particularly wide range of regional variation, may perceive 'correctness' differently from French with its strong history of codification. Those Polish people living in France have understood French linguistic norms as a cultural capital issue, whereas those living in Ireland have equally understood that Irish English vernacular patterns are generally favourably perceived by the L1 speakers with whom they are interacting. It may be that these Polish couples are aligning their Polish 'identity' in relation to language attitudes and ideology with their French one, so that the issue of belonging is de-dramatized. They are positioning themselves as aligning with and not differing on these issues, as they see it, from the receiving

'French' society. They know the importance of 'Good Polish' as of 'Good French'. Their language attitudes, ideologies and practices even help create social spaces around them which underline boundaries between those who are 'acceptable' and those who are not. The second couple pointed out the physical space between themselves and those other Poles 'from the villages,' who refused to make an effort to learn French and stayed within Polish groups of speakers only. They made a spatial distinction between themselves consequently, and those other Poles, based on their differing attitudes to French.

Variationist analysis has demonstrated that these migrants are broadly adopting L1 speech patterns, while it draws attention to two couples who are outliers. Complementary qualitative analysis has shown that the differences in the speech of these two outlying couples relate to differences in their language attitudes and ideology, and suggests that differences in language attitudes and ideology are manifest in these different speech patterns. Language ideology plays an important role in second language acquisition, and it has been the complementary quantitative and qualitative analyses which has revealed these broad aspects of second language acquisition, migration and superdiversity. Such analysis helps capture some of the 'geological' complexity of the intricate vertical and horizontal layers of the migration experience.

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CHAPTER 11

Sociostylistic variation in L2 French

What schwa deletion patterns reveal about language acquisition during study abroad

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Using a mixed-effects model and sociolinguistic interviews, this study provides empirical evidence for the emergence of targetlike patterns of phonological variation in L2 French learners during study abroad. Specifically, this study examines the acquisition of a phonological variable demonstrating sociostylistic variation in L1 speech: variable schwa deletion in clitics (/ə/ realized as [œ] or null, as in *tu me dis* [ty mœ di] ~ [tym di] 'you tell me'). Results demonstrate that variation patterns of L2 French learners are conditioned by the phonological context of the clitic and that acquisition of variation follows a predictable order based on clitic type. Results also demonstrate that time spent abroad and social networks with native speakers are significant predictors of L2 variation patterns.

Keywords: L2 French, language variation & change, sociostylistic variation, second language acquisition, sociolinguistics, study abroad, social networks, L2 phonology, schwa deletion, mixed-effects model

Introduction

This study contributes to a growing body of research on the L2 acquisition of variable structures, or sociostylistic variation, during a period of immersion in the target-language (TL) community. Participation in such variation by L2 learners, commonly called Type 2 variation (Rehner 2002), refers to the learner's ability to alternate between two forms whose referential meaning is the same (e.g. *going* and *goin'* in English), but whose use by L1 speakers is conditioned by linguistic and extralinguistic factors (Adamson & Regan 1991; Bayley 1996; Bayley & Regan 2004; Rehner, Mougeon & Nadasdi 2003). In the current study, the emergence of Type 2 variation by English-speaking L2 French learners provides evidence for the development of sociolinguistic competence during study abroad (SA). The acquisition of

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sociolinguistic, or communicative, competence refers not only to the L2 speaker's ability to learn what is grammatically possible in a language, but also to discern what is culturally and socially appropriate in that language. Communicative competence thus incorporates both the learning of linguistic structure and the "internalization of attitudes towards a language and its uses" through social experience (Hymes 1972, 278).

Recent studies on Type 2 variation in both L2 Spanish and French demonstrate that learners, when exposed to community speech norms through SA or homestay programs, are sensitive to native speaker (NS) variation patterns and are capable of participating in sociostylistic variation, albeit at a much different rate from that of the NS population (Geeslin, Fafulus & Kanwit 2013; Kennedy Terry 2017; Knouse 2013; Li et al. this volume; Mougeon, Nadasdi & Rehner 2010; Pozzi this volume; Regan, Howard & Lemée 2009). While some studies demonstrate that the length of time spent in the TL community is the strongest predictor of the acquisition of sociolinguistic competence (Regan 1995, 1996; Regan et al. 2009; Sax 2003), others indicate that even short stays in the TL community can have a positive effect on L2 participation in local speech norms (Geeslin et al. 2013; Knouse 2013). Additionally, studies on the acquisition of L2 French during SA in France (Kennedy Terry 2017) and among immersion classroom learners in Canada (Mougeon, Rehner & Nadasdi 2004; Mougeon et al. 2010; Nagy, Blondeau & Auger 2003) have demonstrated that the acquisition of sociolinguistic competence is positively correlated with the amount of time spent interacting with NSs outside of the classroom. Moreover, studies on the acquisition of sociostylistic variation in both L2 Spanish and L2 French indicate that learners who are exposed to classroom language interactions only do not acquire targetlike patterns of such variation (Mougeon et al. 2010; Knouse 2013).

The current study contributes to the growing understanding of when and how L2 learners acquire sociostylistic variation during a stay in the TL community by examining both the impact of time in the TL community and the role of interactions with NSs. This study uses a mixed-effects model (Rbrul, Johnson 2009) and naturalistic speech data gathered during sociolinguistic interviews (Labov 1966) to compare the acquisition of sociostylistic variation patterns by both semester and year-long SA participants. Results demonstrate that L2 phonological variation patterns are constrained by both linguistic and extralinguistic factors, similar to those governing L1 speech. Moreover, results demonstrate that both the length of time spent in the TL community, as well as the social networks with NSs that learners are able to create during SA, are statistically significant predictors of variation.

The acquisition of sociolinguistic competence in L2 French

In a survey article on the acquisition of sociolinguistic competence by French immersion students in Ontario, Canada, Mougeon, Nadasdi & Rehner (2002) draw the following conclusions: French immersion students (1) use 'mildly marked variants' much less frequently than L1 French speakers; (2) display partial mastery of the linguistic constraints on variation; (3) employ only a small degree of style-shifting; (4) show gender and status disparity – female and middle-class students use standard variants more than male and upper-working class students, and; (5) use mildly marked variants at higher levels than students who do not interact with L1 French speakers outside of the classroom.

Further evidence for these conclusions is provided in Mougeon et al. (2004). In this study of Canadian immersion students, the researchers focused on 13 grammatical, lexical, and phonetic variables including 'vernacular,' 'mildly marked,' and 'formal' variants. The variables were classified as follows: vernacular variants are not part of Standard Modern French (SMF),[1] are not appropriate in formal settings, and are associated with lower social strata; mildly marked variants are not part of SMF, are characteristic of informal settings (but may also be used in formal settings), and are not highly stratified by gender or social class; formal variants conform to the rules of SMF. Results demonstrated that the immersion students do not use vernacular variants at all. While the immersion students did use mildly marked variants (*on* 'one' in place of *nous* 'we'; schwa deletion, /ə/ realized as [œ] or null, as in *tu me dis* [ty mœ di] ~ [tym di] 'you tell me'; /l/ deletion, /l/ realized as [l] or null, as in *il vient* [il vjɛ̃] ~ [i vjɛ̃] 'he is coming'), the frequency levels were well below those of NSs. For example, the NS control group in the study used *on* 95% of the time, but the immersion students only 55% of the time. In general, the immersion students overused formal variants compared to L1 speakers and had only partially mastered the linguistic constraints for some of the variables, but not at all for others. The researchers hypothesized that the formality of the language used by instructors and the absence of non-standard varieties in language arts materials led learners to conclude that the formal variants represent the prestige forms and to seek to incorporate these forms into their grammars.

One study, Rehner, Mougeon & Nadasdi (2003), however, found that immersion students used a higher than anticipated level of a 'mildly marked variant,' *on* in place of *nous*, based on previous studies of other mildly marked variants such as

1. SMF refers to varieties (both European and Canadian) that do not display regional characteristics, such as those used by the national and international media, and that are typically the object of second language acquisition (Russell Webb 2009).

ne ('not,' negative particle) deletion and /l/ deletion. Interestingly, the researchers were able to link this higher level of *on* usage to a preference by immersion teachers for this variant (83%) over the more formal *nous*. Moreover, the researchers were able to correlate the level of contact with native Francophones with the level of *on* usage, either through informal contact or a homestay program.

Other studies have shown that stays in the TL community have a positive effect on the acquisition of sociolinguistic competence. Regan, Howard & Lemée (2009) reported that Irish learners significantly increased *ne* deletion after spending a year in France (up to 64% in lexicalized phrases), and Regan (2004) demonstrated that students maintained higher levels of *ne* deletion up to one year following SA. Regan et al. (2009) also showed that length of time abroad was the single most important factor in the acquisition of four sociolinguistic variables in L2 French: the deletion of *ne*, the use of *on* in place of *nous*, the use of the periphrastic future in place of the synthetic future, and the deletion of /l/ in subject pronouns. Similarly, Sax (2001, 2003) examined the use of *on* vs. *nous* in L2 French learners and demonstrated that learners who had spent at least a year in France used *on* in place of *nous* at rates ranging between 91%–94% (depending on the formality of the speech context), showing that these learners approached the near categorical rates of NSs of Metropolitan, Swiss, and Canadian French (see Regan et al. 2009). Finally, a study by Chamot, Racine, Regan & Detey (2021) revealed a hierarchy of acquisition for three variables (*ne* deletion, schwa deletion, and /l/ deletion) among nine Irish undergraduate L2 French learners who spent 6–10 months in a Francophone country. In this study, qualitative data from participant interviews were used to categorize students into two groups based on their level of socialization and integration with NSs during SA (+/− integrated). Results demonstrated that while *ne* deletion was used at high rates by both groups of participants (62.38% for +integrated and 59.26% for −integrated), the results for the phonological variables were highly dependent on socialization with NSs: participants in the +integrated group used schwa deletion 25% and /l/ deletion 26.81% of the time after SA, but the −integrated group used schwa deletion only 2.7% of the time and did not use /l/ deletion at all following a period of SA.

Other evidence from students who have opportunities to interact with Francophone speakers and/or live with Francophone families (homestays) also indicates that increased contact with TL speakers leads to increased sociolinguistic competence. Rehner et al. (2003) reported that contact with the L1 community via homestays increased use of informal variants. Uritescu, Mougeon & Handouleh (2002) found that students who stayed with Francophone families displayed significantly higher rates of schwa deletion than students who did not. Moreover, Uritescu et al. (2004) found that exposure to French media and time spent living with a Francophone family were both significant factors in L2 schwa deletion

rates. Similarly, Mougeon et al. (2010) found that exposure to French outside of the immersion classroom, either through spoken French media, stays with Francophone families, or stays in a Francophone environment, led to increased use of mildly marked variants by L2 French immersion students. Finally, in a study of subject-doubling in L2 French (e.g. *ma copine,* ***elle*** *est grande* 'my friend, she is tall'), the results of Nagy, Blondeau & Auger (2003) demonstrated the significance of two social factors: the language used at work and the level of adult integration into the Francophone community, where the level of integration was measured by participation in French-language activities and interaction with French-speaking friends and family. From these results, they were able to conclude that "…subject doubling is only really acquired by people who actually speak French with Francophones" (2003, 92).

Similarly, Kinginger and Farrell (2004) examined the acquisition of the socio-pragmatic constraints on the use of second-person pronouns *tu* and *vous* in L2 French. They argued that SA learners, through their interactions with NSs, go through a process of socialization similar to that experienced in first language acquisition that leads to the acquisition of the socio-pragmatic constraints on the *tu/vous* distinction. The researchers also proposed that the participants' direct or indirect access to interactions with age-group peers during SA, something not available in the language classroom, served to reinforce the significance of the *tu/vous* distinction while exposing them to the "socio-cultural concepts underlying the indexicality of address form choice" (2004, 36).

Social networks and language variation

Social network theory examines the personal and professional relationships between a speaker and others and has been used to explain and predict language variation patterns. J. Milroy and L. Milroy (1978) was one of the first studies to use social network theory to explain sociolinguistic variation, in this case the maintenance of non-standard phonological variants in working-class Belfast speech. Since that time, a number of other researchers have used social network theory to examine language use in a variety of contexts and for both L1 and L2 speakers (Bortoni-Ricardo 1985; Edwards 1992; Lippi-Green 1989; Lybeck 2002).

In their study, Milroy and Milroy (1978) developed a (social) Network Strength Scale (SNSS)[2] in order to measure the impact of the social network on the individual speaker and to allow for comparisons across speakers within the same speech

2. Abbreviated here as SNSS (*social* network strength scale) to differentiate it from the common abbreviation for non-native speaker (NNS).

community. L. Milroy (2002: 556) explains that the network approach has many advantages in the study of variation: it provides a means of studying small groups of speakers within a social class or across classes; it allows the participant's relationships to define the locally salient dynamics rather than imposing a predetermined theoretical viewpoint; and it allows for the analysis of differences between individual speakers. In studies of the acquisition of L2 variation, the SNSS is a useful tool for furthering our understanding of how the creation and maintenance of social networks affects the language acquisition process in a SA context. For this reason, the current study uses a SNSS, adapted for L2 learners participating in SA, in order to measure the quantity and quality of TL interactions with NSs and to correlate these interactions with the acquisition (or absence) of sociostylistic variation by L2 learners.

Schwa deletion in French

The current study examines the deletion of schwa in monosyllabic clitics (/ə/ realized as [œ] or null, as in *tu me dis* [ty mœ di] ~ [tym di] 'you tell me'), a phonological variable showing sociostylistic variation by NSs. Schwa deletion is characteristic of the informal variety of SMF because this phonological variable is neither stigmatized, nor associated with any particular social class or level of education (Hansen 2000; Valdman 1982). Schwa deletion, as well as other variables demonstrating similar patterns of sociotylistic variation in French, has been referred to in a number of previous studies as a 'mildly marked variant' (Mougeon et al. 2004, 2010).

The deletion of schwa in non-final position, including clitics, has been studied in NS speech in European French (Hansen 1994, 2000; Malécot 1976; Péretz-Juillard 1977) and Canadian French (Mougeon et al. 2002; Uritescu et al. 2002). These studies demonstrate that deletion is highly constrained by phonetic context and that both speaker age and speech style impact deletion rates. Average NS rates for schwa deletion in non-final position are approximately 72% in European French (Hansen 1994, 2000) and 76% in Canadian French (Mougeon et al. 2002; Uritescu et al. 2002), for the same set of phonetic contexts. Additional phonetic contexts are considered in Uritescu et al. (2004, 357) where schwa deletion by L1 speakers ranges from 25% to 88%, with an average deletion rate of 68%.

Previous research on schwa deletion by L2 French learners provides a number of important findings that contribute to our general understanding of how L2 learners begin to acquire targetlike patterns of phonological variation. For example, a study by Uritescu, Mougeon, and Handouleh (2002) shows that while the deletion rates of L2 French learners in Ontario, Canada are much lower than those of L1 speakers, the learners follow a hierarchy of phonetic constraints similar to

that of L1 speakers. Moreover, the learners in this study showed higher rates of schwa deletion in guided interviews than in reading passages, demonstrating the incipient acquisition of style-shifting. Finally, the research of Uritescu, et al., (2002) highlights the important role of interaction with TL speakers in L2 acquisition: the results show that students who participated in a homestay with a Francophone family demonstrated significantly higher rates of schwa deletion than students who did not. In a follow-up study on the same immersion student corpus, Uritescu et al. (2004), found that the average deletion rate by L2 students (for all phonetic contexts studied) was 21% as compared to 68% by the L1 control speakers. While the overall deletion rate was much lower for the L2 learners, these learners showed partial mastery of the phonetic constraints: three of the four contexts most favorable to deletion by L1 speakers were also the most favorable to deletion by L2 learners, although the specific ranking of contexts was different.

Two additional studies on the L2 acquisition of schwa deletion demonstrate the important role of phonetic context and speech style among L2 French learners. Thomas (2002) examined the acquisition of a number of sociostylistic variables, including schwa deletion, in L2 French learners during an eight-month period of SA in France and compared these results to those of a group of at-home learners during the same time period. In this study, pre and post-tests demonstrated that the increase in deletion in monosyllables by SA participants was "barely significant" (2002, 113) as learners deleted schwa at a rate of 19.6% before SA and increased this to 24.6% after SA, while at home learners deleted schwa 22.7% of the time but reduced their deletion rate to 21.5% at the end of the same time period. While this result was considered "barely significant," it is important to note that Thomas used a reading passage as a data collection tool for the schwa deletion variable and, as other studies have shown, schwa is less likely to be deleted in reading style by both L1 (Hansen 1994) and L2 (Uritescu et al. 2002) speakers. The results of a more recent study (Isely et al. 2018) on L1 Swiss German learners of French before and after a period of SA in France support the findings of both Uritescu et al. (2004) and Thomas (2002). Isely et al. shows that 'time on task' alone, as measured by the amount of time spent in a Francophone environment, was not a significant predictor of deletion; however, when the impact of time in the TL environment was measured against task type (reading passage vs. conversation) and phonetic context (monosyllable vs. polysyllable), time in the TL environment was shown to be a significant predictor of variation among learners. That is, when the results were narrowed to examine schwa deletion in monosyllables only, or schwa deletion during the conversation-based task only, the increase in schwa deletion rates following a one or two semester program of SA in a Francophone environment was statistically significant.

Prior research on deletion by L2 French learners (Isely et al. 2018; Thomas 2002; Uritescu et al. 2002, 2004) demonstrates that phonetic context, speech style, time in the TL environment, and interaction with TL speakers may all play a role in the acquisition of the linguistic constraints on schwa deletion by L2 learners. Moreover, these studies reveal that the measurement of such acquisition requires not only a fine-grained analysis of the phonetic contexts in which schwa varies, but also of the speech styles in which schwa may be preferentially deleted or retained by L1 speakers, as well as of the external factors that influence the acquisition of targetlike variation patterns. The present study seeks to provide such a fine-grained analysis by considering schwa deletion in monosyllables only as they occur in naturalistic speech data recorded in sociolinguistic interviews. Moreover, the present study uses a mixed-effects model (Rbrul, Johnson 2009) to examine the influence of time in the TL environment and the role of social networks with NSs as distinct extralinguistic factors contributing to L2 acquisition.

Methods

Participants

This study presents the results of 17 American students participating in a university SA program in France of one semester (n = 7) or one year (n = 10). All participants were between the ages of 19 and 27 at the time of the study and all are L1 English speakers, although six participants also reported speaking another language at home (see Appendix A for participant details). The gender distribution of participants was similar to other studies of language acquisition during SA (Geeslin et al. 2013, Knouse 2013) with three males and 14 females participating.

Data collection

The data for this study come from a series of sociolinguistic interviews (Labov 1966, Chapter 5) conducted over the course of the SA period. Participants spending one semester in France (n = 7) were interviewed at the beginning of the SA period and again at the end of the semester. Year-long participants (n = 10) were interviewed at the beginning and at the end of the SA period, as well as at the mid-year point in January.[3] All interviews were recorded on an Olympus WS-210S digital voice

3. The final interviews for the year-long and spring semester students were completed in April due to the Easter break and the French university calendar.

recorder, and the majority of the interviews were conducted at the study centers in France (Paris, Lyon and Bordeaux). Each interview lasted approximately 1.5 hours and included 20–30 minutes of informal conversation, a narrative retell task, a reading passage, and a word list, but the data presented in this study are drawn from the informal conversation portion only. The initial interview also included a written biographical questionnaire and the mid-year and/or year-end interview included the completion of an SNSS for SA designed for this study.

Social network strength scale for study abroad

In this study, interaction with TL speakers outside of the classroom was measured using a Social Network Strength Scale (SNSS, J. Milroy & L. Milroy 1978) created by the researcher for the SA learning context (Kennedy 2012; Kennedy Terry 2017) (see Appendix B). The scale includes two *density* measures and two *multiplexity* measures where *dense* ties are those that link many of the same people to each other and *multiplex* ties refer to the different types of relationships that an individual has with another individual – neighbor, coworker, kin (L. Milroy 2002). Within the scale, Density Measures 1 and 2 attempted to gauge the overall level of interaction that the learner had with native French speakers. Density Measure 1 asked the learner to list all of the native French speakers with whom he/she spoke French for at least 30 minutes each week. This criterion was applied in order to ensure that participants included only those NSs with whom they had an ongoing relationship. For Density Measure 1, the participant received one point for each person listed and one point for each hour per week spent speaking French with this person (hours spent with more than one NS at a time were counted only once). For Density Measure 2, the participant used the list from Density Measure 1 to draw his/her social network and received one point for each line connecting the participant directly to each speaker and one point for each line connecting the NSs to each other.

Multiplexity Measures 1 and 2 attempted to gauge the 'richness' of the participant's TL interactions by investigating *what* activities the participant engaged in with the NSs in his/her network (e.g. share a meal, go shopping, play sports, see a movie) and *what* he/she talked about with these NSs (e.g. politics, music, movies). To this end, Multiplexity Measure 1 asked the participant to classify the activities done with each of the NSs listed in Density Measure 1 and participants received one point for each different weekly activity shared with a NS. Participants also received 1.5 points per hour spent with multiple NSs at the same time in order to account for the potentially beneficial exposure to unmodified TL interactions between NSs during these activities (Long 1983). This measure also accounted for monthly activities with NSs (e.g. a weekend trip or special occasion) that would have been

excluded from the weekly calculations in Density Measures 1 and 2. Finally, in Multiplexity Measure 2, participants indicated the various subjects that they discussed regularly with NSs in order to account for the level of complexity and the potential for new vocabulary acquisition during their TL interactions. Participants received one point for each different topic discussed regularly with NSs.

Data coding: Dependent variable

The dependent phonological variable in the present study is the deletion of schwa in monosyllabic clitics. Those considered in this study, in which schwa provides a potential site for variable deletion (/ə/ realized as [œ] or null), include the subject and object clitic pronouns (*je* 'I', *me* 'me, to me, myself', *te* 'you, to you, yourself', *se* 'to him/her/them, himself/herself/themselves/each other,' and *le* 'it'), as well as *ce* 'this', *de* 'of', and *ne* 'not' (negative particle). Examples of these clitics in context are provided below:

1. *je mets* [ʒœ me] ~ [ʒme] 'I put'
2. *tu me dis* [ty mœ di] ~ [tym di] 'you tell me'
3. *on te donnera* [ɔ̃ tœ do nœ ʁa] ~ [ɔ̃t do nœ ʁa] 'we'll give you'
4. *on se rend compte* [ɔ̃ sœ ʁɑ̃ kɔ̃t] ~ [ɔ̃s ʁɑ̃ kɔ̃t] 'one realizes'
5. *tu le fais* [ty lœ fɛ] ~ [tyl fɛ] 'you do it'
6. *dis-moi ce que tu veux* [di mwa sœ kœ ty vø] ~ [di mwa skœ ty vø] 'tell me what you want'
7. *pas de problème* [pa dœ pʁo blɛm] ~ [pad pʁo blɛm] 'no problem'
8. *je ne veux pas* [ʒœ nœ vø pa] ~ [ʒœn vø pa] 'I don't want to'

As explained in Uritescu et al. (2004), the most commonly cited explanation for the retention of schwa in SMF is the rule of 'three consonants' (Walter 1990), according to which a schwa may not be deleted if its deletion will result in a cluster of two consonants in a syllable coda + a consonant in the following syllable onset (*VCC.CV), as in *vendredi* [vɑ̃ dʁœ di] *[vɑ̃dʁ di] 'friday'. This differs from permitted clusters of three consonants in the form of (VC.CCV) as in *je te crois* [ʒœ tœ kʁwa] ~ [ʒœt kʁwa] 'I believe you'.

The present study does not consider word-medial schwa (e.g. *semaine* [sœ mɛn] ~ [smɛn] 'week' and focuses solely on schwa deletion in the context of clitics that, as explained by Walker (2001, 31), "exhibit phonological behavior intermediate between that of affixes and independent words" and "are attached phonologically to their host words." The concept of a clitic or clitic group is especially important in French, where the phonological status of the (morphological) word is superseded by the importance of the phonological word and the phonological phrase resulting

from liaison and *enchaînement*. It is beyond the scope of this study to fully review the principles of liaison and *enchaînement* in SMF (see Tranel 1987, 168–190); however, it is important to understand their role in the formation of the phonological word and phonological phrase in SMF and that these phonological units are essential to any description of spoken French (Walker 2001, 31). Moreover, in any analysis of sociostylistic variation in SMF involving segment deletion, the phonological word and phrase constitute the phonological context in which variation occurs. Thus, for the purposes of this study, the preceding phonological context of the vowel in the clitic *te* 'you, to you, yourself,' in an utterance such as *je te crois* [ʒœ tœ kʁwa] ~ [ʒœt kʁwa] 'I believe you,' is not the [t] of *te* but the oral vowel (schwa) of [ʒœ].

Data coding: Independent variables

Data for this study (e.g. tokens of clitics containing schwa) were coded for the following linguistic factor groups: following phonological context, preceding phonological context, clitic type.

The following extralinguistic factor groups were also coded: period of SA/interview # (interviews #1–3 for year-long students; interviews #1 & 2 for semester students), language/s spoken at home, previous experience with French outside of the classroom, prior coursework in French, study center in France, and the SNSS score (both mid-year and final on a scale of 0–99 points). Gender was not considered in this analysis because only three of the 17 participants were male.

Data transcription protocol

Data presented in this study were drawn from the informal conversation portion only of the sociolinguistic interviews and included 5,521 clitics containing the targeted schwa variable, as well as the preceding and following phonological segments. The first four minutes of conversation from each sociolinguistic interview were excluded from the transcription in order to allow the participants to become comfortable with the interview process and to allow the interviewer to guide the conversation toward topics that would elicit personal narratives and the most natural speech styles (Labov 1984). The following 20-minute segment of each interview was transcribed by the researcher and coded for the linguistic and extralinguistic factor groups listed in the previous section.

The dependent phonological variable in this study, schwa deletion (/ə/ realized as [œ] or null) in clitics, was coded as a binary factor group with two possible variants: *overt* (0 – fully realized as in the most formal speech style) or *null* (1 – fully

deleted as in the most informal speech style). Each token of the dependent variable was coded for its realization by the researcher using auditory impressionistic analysis; a random sample representing 8.5% of the total tokens was verified by a French NS trained in the methods of analysis used in this study. Inter-rater reliability was 87% which is consistent with previous studies using auditory impressionistic analysis for the presence or absence of specific segments, including schwa in French (Bürki et al. 2011, 282).

Quantitative analysis

The quantitative analysis in this study was conducted using Rbrul (Johnson 2009), a mixed-effects model specifically designed for the analysis of sociolinguistic variation. Rbrul allows for the inclusion of continuous variables (such as time) and for the incorporation of random-effects, such as individual speaker variation. This is especially important for studies of L2 learners who exhibit high levels of individual variation and who do not typically meet the requirements of a speech community. Moreover, using a mixed-effects model provides a more accurate analysis of the potential interactions between social factors operating on linguistic performance than does a fixed-effects model (Bayley 2013, 96). Given that two social factors, time in the TL environment and social networks with NSs, are central to the present study, Rbrul was selected as the most suitable tool for the quantitative analysis.

Results

Linguistic factors

Table 1 displays the results of the Rbrul analysis for the linguistic factor groups: clitic type, following phonological context, and preceding phonological context. As shown in Table 1, all three linguistic factor groups included in the analysis were identified as significant at $p < .05$. Table 1 also displays: log-odds by factor, where the log-odds for a factor group sum to zero and log-odds above zero favor, and below zero disfavor, the use of the variant; and Rbrul factor weights, ranging between 0 and 1.00, where a factor weight above .50 favors the use of the variant relative to other factors within the group, and a weight below .50 disfavors the use of the variant.

Clitic type

Within the factor group of clitic type, there is a high level of variation across the individual factors, indicating that the clitic itself exerts a strong influence over the process of schwa deletion (Table 1). One clitic type, the negative particle *ne*, is shown to be extremely favorable to schwa deletion (weight .92, log-odds 2.478, deletion rate 38.3%). This is followed by the 1sg. subject pronoun *je* 'I' with a factor weight of .66 (log-odds .669, deletion rate 14.2%), also favorable to deletion. In contrast, the clitics *ce* 'this' and *me* 'me, to me, myself' are not favorable to schwa deletion with a factor weight of .40 (log-odds -.394, deletion rate 7.6%). Additionally, the preposition *de* 'of' and the masculine singular object pronoun *le* 'it' are very unfavorable to deletion with factor weights of .25 (log-odds −1.102, deletion rate 2.4%) and .16 (log-odds −1.651, deletion rate 1.3%), respectively. Table 1 also shows that the range for the factor group of clitic type is .76, the difference between the highest factor weight (*ne* = .92) and the lowest factor weight (*le* = .16). The size of the range supports the existence of a hierarchy of clitic types that may be used to describe and predict deletion rates by the learners in this study.

Table 1. Rates of schwa deletion by linguistic factor group

Linguistic factor groups[a]	**N**	**Log-odds**	**Deletion %**	**Weight**	***p***
Clitic type					
ne (negative particle) 'not'	311	2.478	38.3	.92	7.05e-115
je 'I'	2331	0.669	14.2	.66	
ce 'this', *me* 'me, to me'[b]	290	−0.394	7.6	.40	
de 'of'	1312	−1.102	2.4	.25	
le (masc. sing.) 'it'	1277	−1.651	1.3	.16	
Following phonological context					3.52e-18
Following fricative	2016	0.928	14.8	.72	
Following stop	2081	0.662	9.1	.66	
Following liquid	480	−0.341	2.7	.42	
Following vowel/nasal vowel	140	−0.386	1.4	.41	
Following nasal consonant	804	−0.875	2.1	.30	
Preceding phonological context					0.000821
Preceding pause	279	0.514	16.8	.63	
Preceding consonant	4054	−0.159	9.8	.46	
Preceding vowel/glide	1188	−0.355	6.3	.41	
Total/Input	5521		9.4	.02	

Notes: Log likelihood = −1298.358; df 18; intercept = −3.696.

a. All factor groups significant at $p < .05$.

b. Includes 25 tokens of *se* ''to him/her/them, himself/herself/themselves/each other' and 4 tokens of *te* 'you, to you, yourself'.

Following phonological context

Following phonological context was also shown to be a significant predictor of schwa deletion, although the range in the factor weights for this factor group (range = .42) indicates that the strength of this linguistic constraint is below that of clitic type (range = .76). Within the factor group of following phonological context, a following fricative is shown to be favorable to schwa deletion with a factor weight of .72 (log-odds .928, deletion rate 14.8%). Similarly, the factor group of a following stop is also favorable to schwa deletion with a factor weight of .66 (log-odds .662), although the deletion rate is much lower (9.1%) illustrating the higher sensitivity of logistic regression analysis compared to percentages. The remaining three following phonological contexts were all shown to be unfavorable to deletion. A following liquid had a factor weight of .42 (log-odds -.341, deletion rate 2.7%) and a following vowel (including nasal vowels) had a factor weight of .41 (log-odds -.386, deletion rate 1.4%). Finally, a following nasal consonant had the lowest factor weight of all following contexts at .30 (log-odds -.875, deletion rate 2.1%), demonstrating that this context is very unfavorable to schwa deletion. Here, a slight interaction between clitic type and following phonological context was identified. Although the factor weight for a following nasal consonant is the lowest in the factor group at .30, the deletion rate is slightly higher (2.1%) than that of a following vowel/nasal vowel (1.4%). An examination of the data reveals that of the 804 tokens with a following nasal consonant, 353 are from one clitic type: *je* 'I,' which is shown to be favorable to deletion with a factor weight of .66. Moreover, 84% of the 353 tokens of *je* 'I' which are followed by a nasal consonant are followed by another clitic, the negative particle *ne*, which is also extremely favorable to deletion with a factor weight of .92. The influence of specific collocations on deletion in clitics is described in more detail in the Discussion section.

Preceding phonological context

Finally, preceding phonological context was shown to be a significant predictor of schwa deletion, although the range in the factor weights (range = .22) indicates that preceding phonological context has much less influence over schwa deletion that do token type and following phonological context. A preceding pause is shown to be slightly favorable to schwa deletion with a factor weight of .63 (log-odds .514, deletion rate 16.8%), but both a preceding vowel/glide and a preceding consonant are slightly unfavorable to schwa deletion with factor weights of .46 (log-odds -.159, deletion rate 9.8%) and .41 (log-odds -.355, deletion rate 6.3%), respectively.

Extralinguistic factors

Table 2 presents the results of Rbrul analysis of the extralinguistic factor groups. Only the factor groups of period of SA/interview # and SNSS score were found to be significant at $p < .05$. The remaining factor groups (languages spoken at home, previous experience with French, prior coursework in French, and study center) were not identified as significant predictors of deletion. The distribution of these factor groups and factors by participant can be found in the Participant Biographical Information provided in Appendix A.

Table 2. Rates of schwa deletion by extralinguistic factor group

Extralinguistic factor groups[a]	*N*	Log-odds	Deletion %	Weight	*p*
SNSS score[b]					5.33e-12
5–9 (50–99 points)	1731	0.634	14.0	.65	
1–4 (10–49 points)	3291	0.280	8.1	.57	
0 (0–9 points)[c]	499	−0.914	2.0	.29	
Period of SA / interview #					0.00112
Interview #3 (year-long)	1365	0.474	14.1	.62	
Interview #2 (year-long)	1324	0.309	10.0	.58	
Interview #1 (year-long)	1095	−0.275	7.0	.43	
Interview #2 (semester)	870	−0.131	6.9	.47	
Interview #1 (semester)	867	−0.376	6.8	.41	
Total/Input (corrected mean)	5521		9.4	.02	

Notes: Log likelihood = −1298.358; df 18; intercept = −3.696.

a. All factor groups significant at $p < .05$. Factor groups not selected as significant not shown in table. These include: languages spoken at home; previous experience with French; prior coursework in French; study center.

b. SNSS results include both mid-year scores (year-long students only) and final scores (year-long and semester students).

c. SNSS scores of "0" include interview #1 results for learners who did not demonstrate any instance of schwa deletion at the first interview and results for one semester learner who had no regular contact with NSs at the final interview (Jade). Tokens from the initial interviews were assigned SNSS scores based on the group averages for interviews #2 and #3. For example, if a learner was already deleting schwa at 1–9% during interview #1, these tokens were assigned a SNSS score of 2. If a learner was deleting at 10–19% during interview #1, these tokens were assigned a SNSS score of 4, and 20–25%, a score of 5.

Period of SA/interview #

The results for the factor group period of SA/interview # for the year-long participants in this study demonstrate a steady progression toward a higher rate of schwa deletion based on the amount of time in the TL environment. The factor weights for these time periods/interviews also provide evidence for the influence of time on task for the acquisition of the constraints on schwa deletion. As shown

in Table 2, the deletion rate for the year-long students at the first interview (upon arrival in France) was 7% with a corresponding unfavorable factor weight of .43 (log-odds -275). The deletion rate at the second interview (after five months in the TL environment) for the same group of students increased to 10% and the factor weight was slightly favorable to deletion at .58 (log-odds .309). At the third interview, after the students had been living in the TL community for nearly nine months, the schwa deletion rate had increased to 14.1% and the factor weight was favorable at .62 (log-odds .474).

The results in Table 2 also demonstrate that the semester students do not increase their rate of schwa deletion in the same way that the year-long students do. Although the deletion rate for the semester students at the first interview is very close to that of the year-long students (6.8% for semester vs. 7% for year-long), and the time period between the first and second interviews is the same (e.g. one semester in the TL), the deletion rate for the semester students remains nearly static over the SA period ending at 6.9%. Similarly, the factor weight for both the first and second interviews for semester students remains unfavorable to schwa deletion over time, although it does increase slightly from .41 (log-odds -.376) to .47 (log-odds -.131). The implications of the difference between the acquisition rates of the year-long and semester students are considered in the Conclusions section.

Social network strength scale (SNSS) score

As described in the Methods section, this study uses a SNSS designed for SA to measure the strength of each participant's social network with NSs of French. Higher scores on the scale should be associated with higher levels of participation in sociostylistic variation by the learners in this study – higher rates of schwa deletion and more favorable factor weights in the Rbrul analysis. The results presented in Table 2 conform to this prediction: lower scores on the SNSS are associated with lower schwa deletion rates and lower factor weights, and higher scores are associated with higher schwa deletion rates and more favorable factor weights. For example, a score of 5–9 (50–99 points) on the SNSS was associated with the highest deletion rate of 14% and the most favorable factor weight of .66 (log-odds .634). A lower score of 1–4 on the SNSS was associated with a deletion rate of 8.1% and a slightly favorable factor weight of .57 (log-odds .280). Finally, a score of 0 on the SNSS (either at the initial interview or during subsequent interviews if no NSs were identified in the participant's social network) was associated with the lowest deletion rate of 2% and the most unfavorable weight of .29 (log-odds -.914). This anomaly is considered further in the Discussion section.

Discussion

Linguistic constraints on schwa deletion: Clitic type and collocations

The results presented in Table 1 for schwa deletion in L2 French demonstrate the important role of linguistic constraints in L2 acquisition patterns. Specifically, these results demonstrate that learner variation patterns are strongly influenced by the type of clitic in which schwa appears, as well as by the phonological context surrounding the clitic. Given the broad range in the factor weights for clitic type (range = .76), it is useful to examine more closely the specific clitic types that are more or less likely to show schwa deletion by the learners in this study, as well as the collocations in which these clitic types occur.

With respect to clitic type and frequency in the data, it is important to note that although the negative particle *ne* has the highest deletion rate (38.3%) of all clitic types and the highest corresponding factor weight (.92, log-odds 2.478), *ne* represents a very small portion of the total number of clitics containing schwa (311 of 5521 tokens). At the same time, the subject pronoun *je* 'I' occurs more frequently than any other clitic type in this study (2331 of 5521 tokens) and has the second highest deletion rate (14.2%). Moreover, according to the Rbrul analysis, *je* 'I' is the only other clitic type that is favorable to deletion with a factor weight of .66 (log-odds .669). Conversely, while both *de* and *le* are relatively frequent in the data (at 1312 and 1277 tokens each), the deletion rates for these two clitic types are extremely low (2.4% and 1.3%, respectively) and their factor weights are unfavorable to deletion, .25 (log-odds −1.102) and .16 (log-odds −1.651), respectively. That is, token frequency alone does not explain why deletion occurs more often in one clitic type than in another; however, an analysis of the specific collocations in which the clitics are used by learners, and in which learners demonstrate schwa deletion, provides a clearer picture of where and how learners begin to participate in targetlike patterns of variation.

As shown in Table 1, the negative particle *ne* accounts for a total of 311 tokens in the data set, of which 119 tokens (or 38.3%) show schwa deletion by the learners in this study. Of these 119 tokens, one expression, *je* ***ne*** *sais pas* 'I don't know,' accounts for 66% (79 tokens) of the deletion within the clitic type of *ne*. Moreover, of the 17 participants in this study, 16 used the expression *je* ***ne*** *sais (pas)* at least once during the 20-minute interview (with most using it multiple times), and of these 16 participants, 15 demonstrated schwa deletion within this specific collocation.

Unlike the data for the negative particle *ne*, the data for the subject pronoun *je* 'I' do not reveal one single collocation that is responsible for the majority of learner variation; however, three frequent collocations using *je* 'I' and demonstrating deletion, merit discussion. Within the clitic type of *je* 'I,' 331 tokens of 2331 (14.2%)

showed deletion by the learners in this study. Of these 331 tokens, 77 instances of deletion (23%) occurred in the collocation ***je*** *sais* (*pas*) 'I know, I don't know,' 74 instances of deletion (22%) occurred in the collocation ***je*** *pense* (pas) 'I think, I don't think', and 70 instances of deletion (21%) occurred in the collocation ***je*** *suis* (*pas*) 'I am, I am not.'

The data for schwa deletion presented in this study clearly demonstrate the effect of clitic type on learner variation, but also the influence of collocation on learner variation patterns. For the clitic type of *ne*, where deletion occurs most frequently, the data reveal that 66% of deletion is restricted to a single collocation, *je* ***ne*** *sais (pas)* 'I don't know.' For the clitic type of *je* 'I,' the most frequent in the data set, 66% of deletion is restricted to three collocations: ***je*** *sais* (*pas*) 'I know, I don't know,' ***je*** *pense* (pas) 'I think, I don't think,' and ***je*** *suis* (*pas*) 'I am, I am not.' These results indicate that learners acquire the constraints on schwa deletion through their repeated exposure to, and use of, a limited set of collocations containing clitic types that are favorable to deletion by NSs.

Another way to view the influence of token type on the L2 acquisition of schwa deletion is through an implicational scale that provides a clear picture of the developmental pattern of deletion at the group level, while at the same time highlighting the individual differences in acquisition and use. Table 3 displays the schwa deletion patterns by participant and by clitic type in the form of an implicational scale. In this scale, a '+' indicates that a learner demonstrated at least one instance of schwa deletion for the token type indicated at the top of the column and a '-' indicates that the learner did not. That is, because the overall rates of deletion are very low for the learners in this study, this implicational scale is based on a binary constraint (deletion /retention). As shown in Table 3, the results for deletion by learner and clitic type form an implicational pattern demonstrating that phonological variation among learners occurs first in the negative particle *ne* and then spreads to other clitic types (*je* 'I' >> *ce* 'this', *me* 'me, to me, myself' >> *le* 'it' >> *de* 'of'). The implicational scale achieves significance at $p < .05$ with an Index of Reproducibility (IR, Guttmann 1944) of 95.3%.[4]

With respect to the hierarchy of factors and factor weights established in the Rbrul analysis in Table 1, the results of the implicational scale in Table 3 confirm the three most favorable clitic types: *ne* (negative particle), *je* 'I,' and *ce* 'this'/*me* 'to me, myself.' For example, if participants demonstrated schwa deletion in only one clitic type, they demonstrated deletion in the *ne* particle only (e.g. Adam). If participants demonstrated deletion in two clitic types, they did so in the negative

4. Index of Reproducibility (IR, Guttman 1944) is calculated by dividing the number of non-deviant (e.g. error-free cells) cells by the total number of cells (e.g. opportunities for errors). An IR rate of 93% is required to approximate significance at $p < .05$ (Rickford 2002, 157).

Table 3. Implicational scale showing schwa deletion by speaker/clitic type

Speaker	Tokens	Deletion % final interview	Clitic type[a]				
			ne	*je*	*ce, me, se, te*	*le*	*de*
Jennifer	533	32.4	+	+	+	+	+
Katherine	308	21.4	+	+	+	+	+
Claire	175	17.1	+	+	+	+	+
Marissa	425	14.7	+	+	+	+	+
Cassie	452	12.3	+	+	+	(-)	+
Tyler	374	5.7	+	+	(-)	+	+
Julie	238	11.5	+	+	+	+	-
Tiffany	338	15.6	+	+	+	+	-
Miranda	471	14.2	+	+	+	+	-
Jade	327	6.5	+	+	(-)	+	-
Eric	270	10.6	+	+	+	-	-
Audrey	356	1.4	(-)	+	+	-	-
Sasha	257	5.3	+	+	-	-	-
Ericka	365	6.2	+	+	-	-	-
Brittany	372	5.2	+	+	-	-	-
Adam	112	1.6	+	-	-	-	-
Melissa	148	0.0	-	-	-	-	-

a. Index of Reproducibility (IR, Guttman 1944) = 95.3%, $p < .05$.

particle *ne* and in the 1sg. subject pronoun *je* 'I' (e.g. Brittany, Ericka, Sasha). This pattern is also repeated by Eric who demonstrated deletion in three clitic types and followed the hierarchy established in Table 1.

At the bottom of the factor hierarchy, the implicational scale in Table 3 reveals a reverse pattern of acquisition as compared to Table 1, with nine learners demonstrating deletion in the clitic type *le* 'it' (masc. sing.), but only six demonstrating deletion in *de* 'of.' At the same time, the individual and group results in Table 3 provide further evidence for the significance of clitic type, and a hierarchy of favorability to deletion within clitic type, identified in the Rbrul analysis: all 10 of the learners who demonstrate deletion in either *le* or *de*, the clitic types least favorable to deletion, also demonstrate deletion in both of the clitic types most favorable to deletion, *ne* and *je* (e.g. Jennifer, Katherine, Claire, Marissa, Cassie, Tyler, Julie, Tiffany, Miranda, Jade).

The implicational scale in Table 3 also reveals that as learners participate in schwa deletion at higher rates overall, they do so in more varied clitic types. For example, the three participants with the highest deletion rates at the final interview (Jennifer, Katherine, Claire) with rates of 32.4%, 21.4%, and 17.1%, respectively, also demonstrated deletion in all five clitic types. These results contrast slightly

with those of Kennedy Terry (2017) that examined /l/ deletion in subject pronouns by these same learners. In the study on /l/ deletion, the learner with the highest overall deletion rate (Claire, 68.2%) and the third highest rate (Julie, 48.3%), demonstrated /l/ deletion in only two of the four possible pronoun types (*il* 3sg. impersonal 'it' and *ils* 3p. masculine pronoun 'they'). That is, despite having /l/ deletion rates far above the group average of 15.6%, Claire and Julie participated in variation in a very limited way (Kennedy Terry 2017, 567). In contrast, the learners with the highest overall schwa deletion rates in the present study (Jennifer, Katherine, Claire), also demonstrated variation in the full range of clitic types. Moreover, in the present study, eight of the nine learners with schwa deletion rates above the group average of 9.4%, demonstrated variation in at least four of the five possible clitic types.

Extralinguistic constraints on schwa deletion: Time abroad and social networks

One of the primary goals of this study, in addition to examining the linguistic constraints, was to provide empirical evidence for the role of extralinguistic factors in the acquisition of variation during SA: to identify and analyze those aspects of the SA experience that have a significant influence on the acquisition of targetlike patterns of phonological variation. The Rbrul analysis presented in Table 2 identifies two extralinguistic factors that are significant predictors of L2 variation ($p < .05$): time abroad, represented as period of SA/interview #, and social networks with NSs, calculated using the SNSS for SA (Kennedy 2012).

In order to better understand the role of time abroad and social network strength on the individual learners in this study, Table 4 displays the results by learner for schwa deletion, showing the intercept, weight, deletion rate at the final interview, and the final SNSS score. Before considering the results by learner presented in Table 4, it is useful to understand not only how the SNSS assigns a score to a learner (see Methods), but also what that score means in terms of interaction with NSs. For example, a sample of four learners scoring a 5 on their SNSS at the final interview shows that these learners included 3–5 NSs on their social network list and diagram (Density Measures 1 and 2). These are NSs with whom the learners interacted in French for at least 30 minutes (consecutively) per week and from these contacts, learners were able to create, on average, a social network density of 6–10 ties. From these network ties, the learners scoring a 5 on the SNSS were able to speak, on average, 10–20 hours of French with NSs each week.

The analysis in Table 2 (Results) shows that that higher scores on the SNSS are, in general, associated with higher schwa deletion rates and higher factor weights. Although the SNSS rates by participant in Table 4 do not align perfectly (lowest to highest) with the deletion rates and associated Rbrul factor weights, the coefficient

Table 4. Rbrul intercept, factor weight, deletion rate, final SNSS score by speaker

Speaker	Year/ Semester	Intercept	Weight	Deletion % at final interview	Final SNSS[a]
Jennifer	Year	1.252	.78	32.4	5
Claire	Semester	0.887	.71	17.1	9
Katherine	Year	0.837	.70	21.4	5
Julie	Semester	0.390	.59	11.5	5
Tiffany	Year	0.306	.57	15.6	5
Cassie	Year	0.305	.57	12.3	5
Jade	Semester	0.159	.54	6.5	0
Eric	Year	−0.032	.49	10.6	3
Adam	Semester	−0.051	.48	1.6	3
Ericka	Semester	−0.065	.48	6.2	5
Brittany	Semester	−0.093	.47	5.2	4
Marissa	Year	−0.136	.46	14.7	4
Tyler	Year	−0.144	.46	5.7	3
Miranda	Year	−0.295	.42	14.2	8
Sasha	Year	−0.597	.35	5.3	6
Melissa	Semester	−1.078	.25	0.0	2
Audrey	Year	−1.367	.20	1.4	3

a. In most cases, the score on the final SNSS was different from that of the mid-year SNSS. In all but one case, the score increased from the mid-year to the final interview as learners expanded their social networks over time; however, in one case (Audrey), the final SNSS score was lower than the mid-year score.

of determination (R^2) measuring the amount of variance in the dependent variable (schwa deletion) explained by the SNSS is .2227 and is significant at $p < .056$. That is, while other linguistic and extralinguistic factors are also significant predictors of schwa deletion rates in L2 learners, the score on the SNSS provides a partial explanation for the acquisition of targetlike patterns of phonological variation. Anomalies in the results by participant shown in Table 4 can be attributed to the high level of individual speaker variation among L2 learners during SA (see Regan et al. 2009). At the same time, a number of important trends related to the role of time abroad and social network strength can be seen in Table 4.

For example, seven participants have favorable schwa deletion factor weights (above .50) and six of these also have SNSS scores of 5 points or above (Jennifer, Claire, Katherine, Julie, Cassie, Tiffany). Moreover, these same six learners have deletion rates above 10% at the final interview and also demonstrate deletion in four of the five possible clitic types in Table 3. Similarly, of the eight learners with final SNSS scores below 5, seven have unfavorable factor weights and five have deletion rates below 6%, well below the group average of 9.4%. Moreover, four of these five learners with unfavorable factor rates, low deletion rates, and SNSS scores below 5 also showed deletion in only two (or fewer) of the five possible clitic

types in Table 3. Despite a high level of individual variation, the results presented in Tables 2–4 demonstrate that a higher score on the SNSS is a significant predictor of higher levels of participation in targetlike patterns of variation.

The results presented in Tables 2–4 also demonstrate the important role that time in the TL community may play in the L2 acquisition of certain phonological variables, such as schwa deletion in French. For example, the implicational scale in Table 3 highlights the connection between the length of time that learners have spent in the TL community and the range of contexts (clitic types) in which they demonstrate deletion. Of the nine learners demonstrating deletion in four of the five clitic types, seven of these spent a full year in the TL community. At the same time, of the five learners demonstrating no deletion, or deletion in only one or two of the five possible clitic types, four of these learners stayed for a single semester in the TL community. It is also interesting to consider that only two semester participants (Claire and Julie) demonstrated deletion in four or more clitic types, or had an deletion rate above 10% at the final interview, and both of these semester participants had high scores on their final SNSS (9 and 5, respectively; see Table 4). From these results, it is possible to argue that a strong social network may compensate for lack of time in the TL environment. Moreover, the results in Table 4 demonstrate that the reverse may also be true: more time in the TL environment may compensate for a weaker social network. As shown in Table 4, nine participants had schwa deletion rates above 10% at the final interview, and of these, seven of these were year-long participants. While five of these seven year-long participants had SNSS scores above 5, two of them did not (Eric and Marissa); however, it is likely that their extended time in the TL environment allowed them to compensate for a weaker social network and to demonstrate higher rates of schwa deletion than the majority of the semester students. To summarize, of 17 participants in this study, nine demonstrated a schwa deletion rate above 10% at the final interview and all nine of these either stayed in the TL environment for a full year, scored above 5 on the final SNSS, or did both.

Conclusions

This study on the acquisition of schwa deletion in L2 French provides a number of findings which contribute to our overall understanding of the language acquisition process, specifically as it relates to the acquisition of sociostylistic variation. Moreover, because this study focuses on L2 learners in a SA context, this study incorporates the influence of extralinguistic factors, such as time in the TL environment and social networks with NSs, that are usually excluded from studies focused on classroom language learners only. For example, the Rbrul analysis in the present

study identified both time in the TL environment and social network strength as significant predictors of deletion – the more time that the learners spent in the TL environment, the higher their rates of deletion. These results align with those of Escalante and Wright (Chapter 6), who demonstrated that L2 Spanish immersion participants used more targetlike rhotic taps after 12 months in the TL environment and that the largest gains in targetlike articulation occurred in the second half of the year. Moreover, the results of the Rbrul analysis in Table 2 and the results by individual learner in Table 4 demonstrate that higher scores on the SNSS were, in general, associated with higher rates of deletion – the more time that learners spent interacting with TL speakers during SA, the higher their rates of deletion. These results echo those of Starr (Chapter 3) and Tse (Chapter 5) who also demonstrated increased sensitivity to phonological variation patterns among participants who have higher levels of contact with the TL variety, either through the local school system (Starr) or because of their advanced competence in the TL and/or stronger ethnic orientation toward the TL culture (Tse). Thus, the present study, along with others in this volume, contributes to the growing body of research that continues to expand the field of language variation in SLA by refining the measures that we use to study such variation.

At the same time, the present study provides another example of how language acquisition cannot be adequately described with general statements about the amount of time in the TL that is required for acquisition, or the amount of interaction that learners must engage in during SA, or even the specific linguistic elements that will be more easily or rapidly acquired by learners. For example, a comparison of the results of the present study with those of Kennedy Terry (2017) on /l/ deletion in subject pronouns demonstrates that even the same group of learners may acquire different phonological variables at distinctly different rates. While the semester learners in Kennedy Terry (2017) increased their rate of /l/ deletion by nearly fivefold between interviews #1 and #2 (from 2.7% to 14.9%), in the present study, these same semester learners demonstrated almost no change in schwa deletion for the same time period (from 6.8% to 6.9%). The comparison of results from these two studies indicates that the acquisition of the linguistic constraints on schwa deletion may simply take more time than the acquisition of the constraints operating on /l/ deletion. That is, a single semester in the TL environment may not provide sufficient exposure to NS patterns of variation for learners to construct a grammar from their linguistic environment (Ellis 2003) that includes the variable rules on schwa deletion due to its high frequency, but low saliency, in NS speech. These results support those of Pozzi (Chapter 8) who demonstrated the critical role of perceptual saliency in the acquisition of phonological variables in L2 Spanish. Additionally, the results of the present study align with those of Rehner, R. Mougeon, and F. Mougeon (Chapter 9), who demonstrated that the use of the L2 outside the classroom may not have the

same impact on all elements of the L2. That is, the acquisition of certain elements of the L2 will benefit from contact with TL speakers, while other elements will remain resistant to acquisition despite such contact.

Yet, while the semester learners in the present study demonstrated virtually no change in their deletion rates from interview #1 to #2, the year-long learners increased their rate from 7% to 10% during the same time period. That is, for the same variable (schwa deletion), during the same time period (one semester), the change in the deletion rate for the year-long learners exceeded that of the semester learners. A number of factors associated with individual learner variation may account for this trend: *motivation*, year-long participants may simply be more motivated to acquire the L2 than their semester counterparts; *living situation*, year-long participants may be able to secure more stable housing arrangements with local NSs; *commitment*, year-long participants, and the NSs they encounter in the TL environment, may be more committed to forming ongoing relationships (see also Regan, Chapter 10, on the role of language attitudes and ideology in the acquisition of variation in L2 French). Although it is beyond the scope of the present study to fully investigate these potential influences, it is clear from the results of the present study, and those of Kennedy Terry (2017), that the extralinguistic factors identified as significant predictors of L2 acquisition (time in the TL environment and social networks with NSs) are competing with linguistic constraints outside of the learner's control, and high levels of individual variation, within the SA learning context.

Regarding the linguistic constraints on schwa deletion, the present study supports the results of previous studies identifying the phonological context containing schwa as a significant predictor of variation (Isely et al. 2018; Thomas 2002; Uritescu et al. 2002). Moreover, the present study corroborates the findings of prior studies that have identified informal conversation as the speech style in which the acquisition of L2 variation is most likely to be demonstrated and in which the influence of time in the TL environment is most likely to be reflected in learner performance (Isely et. al. 2018; Uritescu et al. 2002). The current study adds to this body of research by limiting the scope of variation to monosyllabic clitics, thereby allowing for the identification of an order of acquisition that predicts where variation will first occur and the path that variation will follow during a period of time in the TL environment. Moreover, the data used in this analysis reveal the specific collocations in which learners take their first steps toward participation in targetlike patterns of phonological variation. By refining and narrowing the scope of the investigation, and by incorporating both time in the TL environment and the influence of social networks with TL speakers as distinct extralinguistic factors, the present study expands our current understanding of how L2 learners acquire variation, where and when variation first emerges, and how variation patterns develop over time.

Limitations and future directions

The limitations of the present study include the reliance on self-reporting, which is prone to inaccuracies despite our best efforts to create tools like the SNSS to eliminate these inaccuracies, and the lack of information about the NSs in the participants' social networks. Future research on the acquisition of variation can improve upon the present study by considering more than just the level of interaction between L2 learners and TL speakers; future research should also consider the TL speakers themselves and how their participation, or non-participation, in the variation patterns of the wider speech community impacts the learners with whom they interact (see Davidson, Chapter 13, on the avoidance of sociolinguistic stereotypes by L1 and L2 Catalan speakers). While the results of the present study demonstrate that the creation of a strong social network with NSs is critical to the acquisition of variation, the composition of this social network (specifically the age, gender, and socioeconomic status of the NSs with whom the learner spends the most time) will provide us with a more accurate picture of how L2 learners make use of their linguistic environment to acquire targetlike patterns of sociostylistic variation. Moreover, the results of the current study and those of Kennedy Terry (2017) demonstrate that the acquisition of schwa deletion and /l/ deletion by L2 learners is a relatively slow process: even after a full year in the TL environment, learners with the strongest social networks are still well behind NSs in their participation in variation. Therefore, future research should include studies of L2 learners who have been living in the TL environment for more than one year (e.g. 3–5 years) in order to better understand the rate at which learners approach NS norms and the factors contributing to such long-term acquisition.

Social network analysis will continue to contribute to our evolving understanding of L2 acquisition, specifically the acquisition of variation, through the increasingly complex data that can and will be gathered on learner social networks (see Kennedy Terry 2022 for a review). This data will, in turn, facilitate a close examination of learner interactions in the TL in terms of the specific language forms used, the varied speech contexts, the density and intensity of the relationships within the learner's network, and the individual characteristics of the network members. The availability of such a rich, potentially limitless dataset that chronicles longitudinal L2 use through the lens of social network analysis, in conjunction with continually evolving tools for the quantitative analysis of language variation, has the potential to elucidate previously unidentified patterns in L2 development and to fundamentally impact both SLA theory and practice.

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Appendix A. Participant biographical information

Participant	Age	Gender	Language/s spoken at home	Year/ Sem.	Study Center	Prior coursework in French (*U* = upper division; *L* = lower division)	Previous exp. with NSs
Cassie	20	F	English	Y	Lyon	U (1 yr.)	No contact
Eric	25	M	English	Y	Lyon	L	No contact
Jennifer	27	F	English	Y	Lyon	L	No contact
Katherine	20	F	English	Y	Paris	U (1 yr.)	Some contact
Marissa	20	F	English	Y	Bordeaux	L	No contact
Miranda	20	F	English	Y	Lyon	U (1+ yrs.)	Some contact
Sasha	20	F	English	Y	Paris/ Bordeaux	L	No contact
Tyler	22	M	English + Vietnamese	Y	Toulon	U (1 yr.)	No contact
Tiffany	21	F	English + Mandarin	Y	Lyon	U (1 yr.)	No contact
Audrey	20	F	English + Spanish	Y	Bordeaux	L	Some contact
Adam	21	M	English + Cantonese	S	Paris	L	No contact
Brittany	20	F	English	S	Bordeaux	U (1 yr.)	No contact
Claire	22	F	English + Filipino	S	Bordeaux	L	No contact
Ericka	20	F	English	S	Bordeaux	U (1 yr.)	Some contact
Jade	20	F	English	S	Paris	U (1 yr.)	No contact
Julie	21	F	English	S	Paris	U (1 yr.)	Some contact
Melissa	19	F	English + Cantonese	S	Lyon	L	No contact

Appendix B. Social network strength scale (SNSS) for study abroad

Name: _____

Question #1 (Density Measure #1)

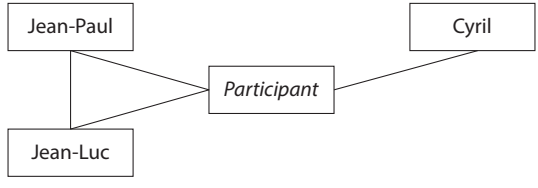
Name each French (or native French-speaking) person with whom you have *at least 30 minutes of consecutive conversation in French* each week. List the number of hours spent speaking French with each person and what their relationship is to you (friend, host family member, roommate, etc…).

Note: Do not double count hours spent with two+ people at the same time. In this case, place the total number of hours next to one name only, place a "G" in the Hours column for the others, and draw an arrow to the name of the person on whose line you listed the hours.

Name (+ age)	**Hours per week**	**Relationship**
1) _____	_____	_____
2) _____	_____	_____
3) _____	_____	_____
4) _____	_____	_____
5) _____	_____	_____
6) _____	_____	_____
7) _____	_____	_____
8) _____	_____	_____
9) _____	_____	_____
10) _____	_____	_____

Question #2 (Density Measure #2)

Now use the names listed above to draw a social network grid. Place your name in the first box, the name of each person in a separate box, and connect the boxes with a line to show who knows whom. An example is provided for you:



Create your drawing here:

Question #3 (Multiplexity Measure #1)

Using the number associated with each name above (from Question #1), indicate the activities you do with each person. List the number of *hours per week* (or *per month* for monthly activities) that you spend doing each activity with each person.

As in Question 1, do not double count hours spent with two+ people at the same time. In this case, place the total number of hours in one column only, place a "G" in the Hours column for the others, and draw an arrow to the person in whose column you placed the hours.

Weekly activities	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Share a meal	__	__	__	__	__	__	__	__	__	__
Have coffee/drink	__	__	__	__	__	__	__	__	__	__
Exercise or play a sport	__	__	__	__	__	__	__	__	__	__
Play board games or cards	__	__	__	__	__	__	__	__	__	__
Go shopping	__	__	__	__	__	__	__	__	__	__
Go out (bars/clubs/events)	__	__	__	__	__	__	__	__	__	__
Other _____	__	__	__	__	__	__	__	__	__	__
Monthly activities	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**
Celebrate special occasions	__	__	__	__	__	__	__	__	__	__
Go on day or weekend trips	__	__	__	__	__	__	__	__	__	__

Miscellaneous activities

In addition to the time spent with the people listed above, indicate the number of hours *per week* spent doing the following:

Speaking to native French speakers in bars/clubs/cafés/restaurants

(excluding ordering/making purchases) _____ hours

Participating in a sports team /other club with native French speakers
(other than those listed in Question #1)

Type of team/club_____ _____ hours

Question #4 (Multiplexity Measure #2)

In the last week (or in a typical week if last week was atypical), I spent _____ hours discussing one or more of the topics listed below with at least one native French speaker.

Indicate which topics you have discussed in the last (or in a typical) week:

Discussion Topics:	**Yes**
French vs. American culture	☐
French politics	☐
American politics	☐
Clothing	☐
Sports	☐
Vacations	☐
Love interests	☐
Television & movies	☐
Trivia	☐
Problems I am having (e.g. being homesick)	☐
Future plans (jobs, trips, advanced degrees)	☐
Technology	☐
Schoolwork/classes	☐

CHAPTER 12

Differential object marking in heritage and homeland Italian

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We examine variable patterns of use of differential object marking (DOM) in conversational Italian recorded in Toronto, Canada, and Calabria, Italy. An exhaustive sample of 366 direct objects, produced by Homeland and three generations of Heritage speakers, shows retention of the DOM system. Successive generations have lower rates of DOM, but this is because they don't produce enough tokens of certain syntactic and semantic types (e.g., left-dislocated or indefinite pronouns). Thus, they have less opportunity to use DOM: token distributions account for their lower rates. In contexts with sufficient tokens, significant contrasts emerge, indicating that all generations retain the conditioning of relevant factors (Definiteness, Referent of Object, Verb Type, Dislocation). No effects of social network or linguistic practices emerged.

Keywords: Differential Object Marking, heritage language, Italian, comparative variationist sociolinguistics, syntactic variation, Toronto, Calabria, attrition, object pronouns, prepositions, ethnic orientation

Introduction

This paper examines differential object marking (DOM) in a corpus of spoken Italian gathered in Toronto and in Calabria, Italy for the Heritage Languages Variation and Change (HLVC) project (Nagy 2009, 2011, 2015). DOM is used in many languages around the world (cf. Bossong 1991). Among these are many European languages where, per Sornicola (1998: 66), DOM is discontinuous in space and, in some language varieties, still incipient (Nocentini 1985: 303). The following examples from Mardale (2009) show DOM in Romanian, Spanish, and Sardinian. In these languages the object noun phrase (NP), despite sharing semantic-pragmatic properties, is introduced by different prepositions, *pe* in Romanian but *a* in Spanish and Sardinian:

https://doi.org/10.1075/silv.28.12dis

(1) *l-am întâlnit (pe) Ion* (Romanian)
him had-met DOM John
'I met John.'

(2) *vi (a) Juan* (Spanish)
saw DOM John
'I-saw John.'

(3) *an furatu (a) Ercole* (Sardinian)
have stolen DOM Hercules
'They have stolen Hercules'

Marking of object NPs that are characterized by animacy, definiteness, and particular syntactic structures (see § 2) is documented in Ibero-Romance languages; in Rhaeto-Romanic languages; in Spanish; in the Bern, Fribourg, Brussels, Carcassonne and Narbonne dialects of French; in some varieties of Corsican, and in Italian. Relevant to this study, DOM is found in Calabrian varieties and in the regional Italian spoken in Calabria. Examples (4)–(6) are from the HLVC corpus of regional Calabrese Italian:[1]

(4) *Ø aiutavano* ***a*** *noi* (I1F73A, 13:03)
they help.IPFV.3PL. **DOM** us
'They used to help us.'

(5) *facevamo, vedi se lo puoi convincere tu* ***a*** *Nicola."*
make.IPFV.1 see.2SG if Pro. can convince.INF you **DOM** Nicola
'We were like, "See if you can convince Nicola." (I1F61A, 36:50)

(6) *e penso che aiuta* ***a*** *i bambini* (I2F44, 09:57)
and think.1SG that help.3SG **DOM** the children
'And I think that he helps children.'

We must consider the possibility that DOM-marking works differently in Calabrese Italian vs. the Calabrese dialect, and that speakers could differ in how and if they combine these distinct varieties during the recordings we analyze. However, we are aware of no previous studies that distinguish DOM patterns in these varieties. The native-speaking author of this paper has the impression, from listening to the HLVC recordings, that DOM is the same in both varieties, although it differs from Standard Italian, where DOM is prescriptively absent. Guardiano (2010: 102) reaches a similar conclusion in her study of Regional Sicilian Italian vs. Sicilian dialects.

DOM has been the topic of synchronic and diachronic studies in Italian, but not previously subjected to variationist analysis. To formalize slightly, DO-marking

1. Except where otherwise noted, all remaining examples are from the HLVC Corpus (Nagy, 2009). Speaker codes identify the language, generation, sex and age of the speaker.

is expected when the direct object is specific and human, whether or not it is definite. No DO-marking preposition is expected if the direct object is non-specific or inanimate (Irizarri van Suchtelen 2016: 99, for Spanish). Thus, there are some unclear areas, such as animals (animate but not human), as well as certain verbs which reject DOM (Irizarri van Suchtelen 2016: 100).

Prescriptively, the prepositional object is mandatory with definite nominals such as 1st person pronouns, as in (4) (Loporcaro 2009: 131) or proper nouns as in (5), while optional with +human common nouns as in (6) (Guardiano 2010).

We hypothesized that the above-mentioned parameters (animacy, definiteness of objects and syntactic structure of the sentence) will therefore affect DOM usage in the Calabrian Italian spoken as a heritage language in Toronto. We also hypothesized that DOM could vary according to external factors, such as the speaker's generation, sex and ethnic orientation. These factors help us understand how variation and change operate in heritage language situations, where it has been proposed that what is sometimes described as attrition may in fact be faithful replication by later generations of the input they receive from earlier generations (cf. Aalberse, Backus & Muysken 2019). This is investigated by comparing two groups of speakers who were born and raised in Calabria, but one of which emigrated to Canada, and two successive generations born in Canada.

The status of DOM in Romance languages

The Italian ecology is characterized by multilingualism consisting of Italian and multiple dialects (D'Agostino 2012, De Blasi 2014, Palermo 2015). It has been described in terms of *dilalia,* meaning that Italian and its dialects are used in the same communicative domains. It is important to note that here the term 'dialect' refers to the many varieties of Italian which come from spoken Latin, and not to diatopic varieties of Standard Italian.

In the continuum between Standard Italian and dialects, DOM emerges variably across Italy: there are sporadic traces of DOM in the Genoese dialect, in the dialect spoken in Trieste, and in the varieties spoken on the island of Elba and in Sardinian (Pittau 1972, Iemmolo 2009, Boeddu 2017). Relevant to this study, its use is more frequent in all the varieties spoken in Central and Southern Italy (Rohlfs 1966, Loporcaro 2009, Fiorentino 2003a, 2003b, Maiden & Parry 1997) than in the north. Traces of DOM are also found in colloquial Italian spoken in northern regions though it is subject to diaphasic variation: there it appears only in oral, colloquial varieties and informal written Italian (Berretta 1989: 224). For spoken Italian see also Cortelazzo (1972), Berretta (1989), Telmon (1993) and Berruto (2006).

The use of DOM is therefore non-standard, appearing only in colloquial and informal Italian and Southern dialects. There are no studies showing whether DOM

is perceived as non-standard or popular. However, it seems to be stigmatized as it is used to mark the discourse of a fool in the song *Mio cugino* 'My Cousin' by Elio e Le Storie Tese.

In spoken Italian and Italian dialects and in the other languages which differentially mark direct objects, the presence or absence of the prepositional marker is related to three parameters:

a. the semantic, syntactic and pragmatic characteristics of the object NP
b. the characteristics of the verb
c. the order of the constituents

With regards to the characteristics of the object NP, earlier studies of several languages claimed that animacy, definiteness, and topicality influence DOM. From these studies, it emerged that grammaticality is determined by the interaction of the [+definite] and [+human] features which trigger DOM and by factors related to the intrinsic semantic content of the nominal element since [-animate], [+mass], and [+abstract] features proscribe the possibility of using this marker.

Aissen (2003) and Laca (2006) built an implicational model that takes into account the syntactic and semantic-pragmatic categories of the Object (O), quoted in (7). In this model, DOM is compulsory in the categories at the top of the scale, and progressively less obligatory further down the scale. At the bottom, DOM is not possible.

(7) *Implicational scale of the contexts favouring DOM (Mardale 2008: 451–452)*
human pronouns > human proper nouns / animate pronouns
human definite NPs / animate proper nouns / inanimate pronouns
human indefinite specific NPs > animate definite NPs > inanimate proper nouns
human non-specific NPs > animate indefinite specific NPs > inanimate definite NPs
animate non-specific NPs > inanimate indefinite specific NPs > inanimate non-specific NPs.

For the Italo-Romance varieties, the scale was further refined in studies carried out by Guardiano (2000, 2010), starting with Sicilian varieties. Guardiano (2010: 12) developed a scale of ten types of nominal arguments distributed according to the likelihood of object marking (with a preposition) on items in each category, which we reproduce in Table 1. This closely follows animacy hierarchies proposed in Comrie (1989) and Silverstein (1976) and has been used to describe Italian varieties similar to what we investigate.

Table 1. Hierarchy of types of objects proposed in Guardiano (2010)

1.	first and second person personal pronouns
2.	third person singular pronouns with human referent
3.	proper nouns (person or animal)
4.	kinship nouns preceded by an expression of possession
5.	third person pronouns with non-human animate referent
6.	common nouns of people
7.	common nouns of animals
8.	common nouns of objects
9.	mass nouns
10.	abstract nouns

Based on other Romance languages such as Romanian, Spanish (Mardale 2008), and Sardinian (Boeddu 2017), DOM is grammatical and compulsory in categories 1 to 4; it is grammatical but optional in categories 5 to 7; and it is ungrammatical in categories 8 to 10. Diachronically, it has spread farther down the hierarchy in some Spanish varieties than others (Aissen 2003: 463). Descriptions of Italo-Romance varieties indicate that a preposition is compulsory with 1st, 2nd, and 3rd person singular personal pronouns (Loporcaro 2009: 131).

However, recent studies on the accessibility of categories 8 to 10 to preposition marking highlighted a rather unstable scenario. For example, with regards to Spanish, Tippets (2010: 205) writes:

> inanimate [direct objects] that had the other features associated with highly individuated objects, especially definiteness and specificity, were marked far more frequently and constituted more than half of all marked inanimates.

In the Calabrian varieties, a case of DOM with not only an inanimate but also indefinite object is reported by Marchese (2016: x) who nonetheless attributes the presence of the prepositional marker to the preceding context:

> an isolated case of prepositional accusative with inanimate was recorded in a Calabrian native speaker who had been living in Rome for many years. This could be influenced by the presence of an inanimate antecedent: *'ntruzzava quandu unu 'ntruzzava na cosa* […] *na machina, na cosa che si ntruzzava* […] *ntruzzài a cchiḍa perzuna*, *pe' ddire*, ***a nna machina.***[2]

Similar counterexamples with highly specific, definite and topical objects are also found in South American Spanish (Lopez 2012). With non-human Os, therefore, it is definiteness which determines the presence of the preposition. In all the studies

2. Translation: 'ntruzzava' is when one hit something […] a car, something that collided […] I bumped into that person, for example, a car.

mentioned here, this type of marking is extremely rare: one single occurrence in Marchese's corpus, and five occurrences out of 699 possible ones in the Spanish spoken in Buenos Aires and Madrid (Balasch 2011: 119).

These rare outcomes show how, alongside animacy, the parameters of definiteness and topicality play a role. So, while in some nominal categories (personal pronouns) DOM can be easily seen as compulsory, in others there is alternation which does not categorically relate to general parameters. Balasch (2011) pointed this out and employed statistical analysis to illustrate the multiple factors at play.

NP-features are not the only crucial factors; a role is also played by the type of verb, something which has not been incorporated in many studies of Spanish DOM of a quantitative nature (but cf. von Heusinger's 2008 corpus study and Irizarri van Suchtelen's 2016 dissertation, which show that verbs which more frequently take human direct objects are more frequently DO-marked than other verbs, even when they don't have an animate object). Diachronic studies conducted on multiple languages have demonstrated the importance of the diachrony of the verb (henceforth V) since DOM appears most often with those verbs that showed oscillation between the dative and the accusative construction as far back as Late Latin (for Italian see Sornicola 1997, 1998 and Fiorentino 2003b; for Romanian see Hill 2015). Regarding Italian, Berretta (1989) also noted the occurrence of DOM with psychological verbs and constructs with the causative *fare* ('do'/'make'). Starting with Pottier (1968), many studies showed that the presence of the preposition is due to the properties of action and aspect of the verb. Specifically, DOM is triggered by less prototypical objects in transitive structures (mainly telic verbs, cf. Iemmolo 2009) as per Hopper and Thompson's (1980) hierarchy of transitivity.

Finally, the order of the constituents is also crucial. According to Renzi (1988) DOM is favoured under three conditions (which do not make it compulsory) (Berretta 1989):

a. when the object consists of a deictic pronoun as in: *chiamo **a** lui ogni sera ('I call **to** him every evening')*
b. when it is left-dislocated and, therefore, separated from the rest of the verb phrase as in: **a** lui ho incontrato ieri ('**to** him I met yesterday')
c. when it is referred to by an unstressed pronoun in the body of the phrase as in ***a** me mi ha chiamato mamma* ('**to** me my mum called').

Based on qualitative observations, Leonetti (2008) claims that DOM preferably occurs in structures with a marked order of the constituents, and in particular with left dislocation.

Regional variation has been studied mainly in polycentric languages such as Spanish, where we find conflicting reports. There are those who do not report any variation, such as, for example, Balasch (2011), who after comparing the *Corpus*

de Mérida/Venezuela and the *Corpus del habla culta de Madrid/Spain* concluded that "contextual conditioning is identical in Mérida and Madrid; though the overall overt *a* rate is much higher in the latter," while Tippets (2010) proposes dialect variation as the way forward in future research.

Some studies examine Spanish in contact situations in countries of immigration whose language does not use DOM (usually English). These could contribute to an understanding of the ways in which heritage speakers recognize, lose or acquire syntactic, semantic, and pragmatic categories. The few *heritage language* studies carried out on this subject showed that age of acquisition is crucial. Both Rodrìguez-Mondoñedo (2008) and Ticio and Avram (2015) showed that children learn the rules which regulate DOM very early and that the critical age for this structure is three years. However, experimental studies comparing children living in homeland vs. heritage language contexts show important differences in rates of DOM production, with an average of 30% wrongful omissions of the prepositional marker found in the heritage group (Montrul & Sanchez-Walker 2013; several others cited in Irizarri van Suchtelen 2016: 102). Divergence between homeland and heritage varieties have been attributed to incomplete acquisition (cf. Montrul & Bowles 2009: 381); as properties of a bilingual variety (Di Venanzio et al. 2012); or as due to contact with English, which lacks DOM (cf. Montrul & Bowles 2009: 368; Montrul & Sánchez-Walker 2013).

Earlier studies of first-generation adult immigrants highlighted a considerable tendency to omit the prepositional marker (up to 50% of the possible contexts) by Spanish speakers living in the US, leading to the conclusion that "even advanced heritage speakers are very inaccurate with DOM" (Montrul et al. 2015: 576). In contrast, most studies report high accuracy for HL speakers in the zero-marking contexts (Irizarri van Suchtelen 2016: 103).

Comparative studies on multiple languages within the same immigration context are also rare, with the exception of Montrul et al. (2015), who adopted an experimental approach. These authors report acceptability judgments to analyze the structure in Spanish, Hindi, and Romanian as spoken in the homelands and in the US by 1st and 2nd generation speakers of different ages, level of bilingualism, and gender, and found that in Spanish the erosion of the structure is more advanced than in Romanian and Hindi, despite the greater visibility of the Spanish language in American public life. They propose that the structural properties of the DO-markers together with the syntax of definiteness and specificity in each language account for the degree of DOM erosion in each language (more than the external factors). Because DOM is affected in the judgments of adult Mexican Spanish immigrants, whereas Hindi and Romanian immigrants are not affected, the degree of erosion of DOM observed in the Spanish heritage speakers is more extensive (in terms of number of individual speakers) than the extent observed in

Hindi and Romanian. Therefore, for SOME linguistic structures and for SOME populations, incomplete acquisition in heritage speakers is also related to qualitatively different input provided by the parental generation (Montrul et al. 2015: 604).

Italian has been investigated much less with respect to DOM. From the very few studies carried out on Italian spoken abroad, we observe a completely different scenario: Di Salvo (2017) compared 50 native speakers of Italo-Romance Southern dialects who immigrated to Bedford, England in their adulthood and a control group of speakers who remained in Italy. The objective was to verify if, and up to what point, the limited exposure to Italian in England could influence DOM erosion. The study showed that, in this immigrant variety, DOM is quantitatively and qualitatively present in the same way as in Italy. Subsequent studies of the Italian spoken in England confirmed this tendency, showing the extension of the prepositional marker to contexts where, according to descriptions of spoken homeland Italian, the preposition was not expected according to the features of the object (Di Salvo 2019). DOM examples from "Transnational migrations: the case of the Italian communities in the UK" Corpus have been found even when O is:

(8) animate and indefinite:
*Nonna qua ha portato **a** na ragazza* (BED1M_AnB)
grandma here have.AUX.3SG take.PTCP **DOM** a girl
'Grandmother took a girl here'

(9) inanimate and indefinite:
*sul ie nun avesse truat **a** niente* (CAM1F_Sta)
only I not have.COND find.PTCP **DOM** nothing.
'Only I wouldn't have found anything'

(10) inanimate but definite:
*Ø faccio **a** o apple crumble* (MON1F_F)
(I) do.1sin **DOM** the apple crumble
'I do the apple crumble'

(8) and (9) were produced by first generation immigrants living in Bedford and (10) by a speaker who returned to Italy after a long time living in Bedford. They suggest that emigration and exposure to a language where DOM is not present, such as English, may lead to erosion of the structure but also to an extension to less canonical cases such as (8) or even to cases that are ungrammatical in Italian like (9) and (10). The current study allows us to understand how widespread this trend is and whether it is caused by a loss of awareness of the features of definiteness and animacy, which influence the use of DOM. This hypothesis is contradicted by canonical use in the remaining contexts, as highlighted in Di Salvo (2017). The trend could also indicate contact between grammars and the innovation which such contact can produce.

Methods

Our analysis is situated in the comparative variationist framework. We compare patterns of variation (use of DOM vs. its omission, or, more explicitly *a* + O vs. O) in samples of spontaneous utterances from four groups of speakers: Homeland, Gen1 Heritage, Gen2 Heritage, and Gen3 Heritage. The Homeland speakers have always lived in Calabria, Italy, and were recorded in conversation with other Calabrese speakers in 2013.[3] The Gen1 speakers were also born and raised in Calabria until at least age 18 but subsequently have lived for at least 20 years in Toronto. The Gen2 speakers were born in Toronto (or arrived before age 6), and their parents qualify as Gen1. The Gen3 speakers were all born in Toronto and their parents qualify as Gen2. These three generations of heritage speakers were recorded between 2009 and 2016 in Toronto. Each of the four groups has eight speakers.

All data was collected and analyzed following the standard Labovian sociolinguistic interview protocol (cf. Labov 1984, 32–42). All interactions were initiated and recorded in Calabrese Italian. Further methodological details for the HLVC Project are available in Nagy (2009, 2011, 2015).

From the conversational speech transcribed in ELAN (Wittenburg et al. 2006, which allows time-alignment to the recordings), all utterances with verbs that require a direct object, and whose object was animate, were selected.[4] Each was coded for the binary dependent variable: whether the direct object was preceded by the preposition *a* or not. In subsequent tiers in ELAN (see Nagy & Meyerhoff 2015), each independent linguistic variable was coded, as in Table 2. This allows us to operationalize as probabilistic constraints the theoretical claims that certain contexts require/prefer/proscribe DOM more than others.

3. We are grateful to the fieldworkers who worked hard to recruit speakers, interview them and transcribe their speech. They are listed at http://ngn.artsci.utoronto.ca/HLVC/3_2_active_ra.php and http://ngn.artsci.utoronto.ca/HLVC/3_3_former_ra.php. We thank SSHRC and the University of Toronto's Faculty of Arts and Science for funding to the second author (Standard Research Grant 410–2009–2330, Insight Grant 435–2016–1430).

4. As in many studies of minority and lesser-studied languages, constraints on resources make it difficult to collect and analyze token sets as large as those often encountered in studies of majority languages. We exhaustively extracted all relevant tokens from available recorded interviews that are, on average, one hour long.

Table 2. Coding of variables with illustrative examples from the HLVC corpus

Dependent Variable: Differential object marker		
Present:	*come la conosca* ***a*** *Padre Amedeo?* how him know **DOM** Father Amedeo? 'How do you know Father Amedeo?'	(I1F71A, 24:04)
Absent:	*Ø abbiamo dovuto chiamare* ***Ø*** *prete il* prete (we) have needed to-call **DOM** Father the priest "We had to call the Father'	(I1M62A, 31:36)
Independent linguistic variables		
Definiteness		
Definite:	***Ø*** *abbiamo incontrato* ***a*** *queste due amiche* (we) have.1pl met **DOM** these two friends 'we met these two my friends'	(IXF14A, 09:9)
Indefinite:	*lei aiuta* ***a*** *parecchie persone* she help.3sing **DOM** many people 'she helps many people'	(I1M61A, 09:59)
Type of Object		
1st and 2nd person personal pronouns:	*Ø aiutavano* ***a*** *noi* (they) help.IPFV **DOM** us '(they) used to help us'	(I1F73A, 07:8)
3rd person personal pronouns with human referent:	*Ø so chiamato* ***a*** *loro* (I) be.AUX.1SG. call.PTCP **DOM** them 'I called them'	(I1F71A, 31:80)
person personal Proper nouns:	*come la canosca* ***a*** *Padre Amedeo?* how Pronoun (Object) know **DOM** Father Amedeo? 'How do you know Father Amedeo?'	(I1F71A, 24:04)
Other pronouns:	*Ø non ho conosciuto a nessuno* (I) not have.1sing recognize.Past DOM nobody 'I did not recognize anybody'	(I1F73A, 25:27)
Kinship preceded term + by a possessor:	*mille occhi che guardano* ***al*** *tuo figlio* thousand eyes that take care **DOM**+the your son '1,000 eyes that take care of your son'	(IXM35A, 06:43)
Common human nouns:	*interrogare* ***allo*** *studente* Ask.INF **DOM** + the student' 'to ask the student'	(I1M60A, 37:09)

Table 2. (*continued*)

Type of Verb		
Psych:	Ø *non ho conosciuto* ***a*** *nessuno* (I) not have.AUX.1sing recognize.PTCP **DOM** nobody 'I did not recognize anybody'	(I1F73A, 25:27)
Accusative/ Dative Alternating:	Ø *aiuta* ***ai*** *bambini* (he) help.Pres.3sing **DOM** + the children 'he helps children'	(I2F44A, 59:7)
Telic:	Ø *hanno ammazzato* ***a*** *essa* (they) have.AUX.3pl kill.PTCP **DOM** her 'they killed her'	(I1F71A, 26: 13)
Other:	Ø lasciava **a** Sonia con lei (I) left.IPFV.1sin **DOM** Sonia with her 'I left Sonia with her'	(1F61A, 08: 02)
Position of Object		
Left Dislocated:	***a*** *sto F[…]* Ø *non ho mai sentito* **DOM** this *name* I non have.1st never heard 'This *name*, I have never heard him'	(IXM63A, 21:11)
SVO:	*non ho conosciuto* ***a*** *nessuno* not have.AUX.1sg recognize.PTCP **DOM** nobody 'I did not recognize anybody'	(I1F73A, 25:27)

Additionally, each token was coded for its speaker's Generation and Sex. This allows us to determine which contexts favour or disfavour the use of DOM and, in turn, whether each speaker group operates in the same manner. This comparison of the strength and direction of conditioning effects, rather than just comparison of overall rates, provides a more nuanced understanding of the patterns of variation and can show more clearly whether heritage and homeland speakers share a grammar. These comparisons are made via Mixed Effect Models that indicate which factors have a significant effect (and how strong that effect is as well as its direction) when all linguistic and social factors are considered simultaneously. First a MEM is fit to all the data combined to see the general picture: which of the factors hypothesized to condition DOM variation actually do, and whether the direction of the effect is as expected. Then models are constructed for each of the four speaker groups separately. Once the best-fitting model is selected via comparison of Akaike Information Criteria (AICc) scores and iterative testing of different combinations of factors, the factor weights (or log odds) assigned to each factor in the model of each speaker group are compared to determine the degree of similarity between groups.

We excluded tokens from categories 6–10 of Guardiano's hierarchy as, in one case (7. Animal referents), there were only four tokens and, in the others, there were very large numbers of Os, but only 1–4 tokens, per category, marked with DOM. Thus, they would cloud the results while only illustrating vanishingly low rates of DO-marking, as illustrated in Balasch (2011).

After the conversational interview, interviewers asked the Heritage speakers a series of questions constituting the Ethnic Orientation Questionnaire (EOQ). We excluded three who didn't respond to the EO and two who produced no DOM tokens, leaving 19. Each question enquires about preferences between Italian or Canadian language and culture. Each response is scored: 0 for English; 1 for both/mixed; 2 for Italian. We looked at four sets of responses that we thought might meaningfully correlate to the rate of use of DOM. Scores are averaged over related questions. The sets of questions are summarized in Table 3.

Table 3. Ethnic orientation questionnaire sections analyzed

Ethnic Orientation (A1): Whether the speaker reports themselves as more Canadian or more Italian
School (B2): Whether the speaker reports learning it at school or acquiring Italian at home
Network (A2 to A5): Whether the speaker reports many Italians in their social network (friends, neighborhood, at work and in their childhood social network)
Language Preferences (B3, C1 to C5): Whether the speaker reports a preference for speaking English or Italian (with family, with friends, when talking about emotional issues, with (grand)parents and with (grand)children.

We calculated Spearman's rho, a correlation measure based on rank values, between each of the four EOQ scores and the individuals' factor weights from the MEM model in which all speakers were examined together (Table 4). (Using the FW instead of the raw percentage accounts for any effects that might be due to a skewed distribution of tokens.) For the speakers with 0% DOM, we replaced the FW with 0. Positive correlations would reveal that speakers who prefer to speak Italian, engage in Italian-dominant social networks, etc., use DOM more often.

Results

We first look at the use of DOM in the contexts where the syntactic and semantic literature leads us to expect it. We then turn to contexts where DOM is proscribed, noting that it enjoys occasional use, by both Homeland and Heritage speakers there. Finally, we consider the effects of Ethnic Orientation.

Modeling DOM where it is expected

Table 4 presents the best-fitting model for the dataset as a whole. The overall rate of DOM is 17% for these 309 tokens. All tokens for Gen3 females were excluded because that group categorically omitted DOM. Speaker was included in this model as a random effect, but is not reported since the same factor weight (0.5) was reported for all speakers, indicating that none are particularly outliers. Levels of the factors have been reduced from those shown in Table 4 to produce the best-fitting model. Significance levels for each factor are given in parentheses.

Table 4. Model of DOM for all speakers combined

Factor	logodds	n	% DOM	Weight
TYPE OF OBJECT (1.68e-10)				
personal pronouns and proper nouns	1.65	51	*59%*	0.84
other pronouns	0.42	51	*22%*	0.60
kinship terms	−0.67	25	*12%*	0.34
human nouns	−1.40	182	*5%*	0.20
TYPE OF VERB (0.003)				
dative/accusative	1.42	38	37%	0.81
Telic	−0.18	162	17%	0.46
Psych	−0.17	29	14%	0.46
Other	−1.07	80	10%	0.26
DISLOCATION (0.005)				
dislocated	0.99	17	53%	0.73
SVO	−0.99	292	15%	0.27
DEFINITENESS (0.015)[a]				
definite	0.85	265	19%	0.70
indefinite	−0.85	44	5%	0.30
GENERATION *(not significant)*				
homeland	[0.30]	58	24%	[0.58]
gen2	[0.10]	64	13%	[0.52]
gen1	[−0.01]	149	17%	[0.50]
gen3	[−0.39]	38	13%	[0.40]

(*continued*)

Table 4. (*continued*)

Factor	logodds	n	% DOM	Weight
SEX *(not significant)*				
Male	[0.21]	136	21%	[0.55]
Female	[−0.21]	173	15%	[0.45]

Notes: $N = 309$, centered input probability 0.22 n is the token count for that level, %DOM is the rate of DO-marking for that level, FW is the corresponding centered factor weight.

a. Neither Definiteness nor Type of Object alone fully account for the distribution of DOM. Definiteness can trigger different DOM rates within one type of object, and types of object differ in rates even when all are definite. It is true, of course, that some object types (e.g., personal pronouns and kinship terms) appear only in definite NPs. However, a model that included an Interaction factor for the two factors fit the data worse than the model provided (according to the AICc criteria). This model, with the interaction factor shown here, illustrated that being Indefinite decreases the likelihood of DOM within the Type of Object categories where both definite and indefinite tokens were produced, confirming that both factors are needed:

Factor	n	% DOM	FW
definite pers. pronouns and proper names	49	61%	0.91
definite impers. pronouns	33	30%	0.75
definite kinship term	25	12%	0.49
definite human nouns	158	5%	0.30
indefinite impers. pronouns	18	6%	0.26
indefinite human nouns	24	4%	0.20

A similar comparison of models was conducted to see if fit could be improved by including the interaction Verb Type * Definiteness, but it improves neither explanatory power nor goodness of fit. It does reveal that Telic ($n = 21$) and Psych verbs ($n = 8$) with Indefinite objects are categorically unmarked for DOM, and that all verb types have both Definite and Indefinite objects (except the "Other" category).

Each linguistic factor tested has a significant effect in the direction predicted by previous literature. However, none come close to exhibiting the categorical effects suggested in the syntactic literature.

Several models we tested suggest some interaction, likely related to generation, as indicated by a different ranking for the levels by percentage of DO-marked tokens vs. by factor weights and log-odds. For example, in the model presented in Table 4, DO-marked percentages for the generation groups are in the predicted order (most for Homeland to least for Gen3), but not quite in that order by factor weight. However, neither Generation nor Sex has a significant effect here: we lack strong evidence for generational change. This leads us to further analysis in which we consider the generational groups separately.

Table 5 presents the best-fitting models for each of the four speaker groups. A regression model cannot be presented for Gen3 for two reasons. First, the females in that group behave categorically, never producing DOM (and they are excluded from this analysis). Second, the Gen3 males have categorical behaviour (0% or 100% DOM) for some levels of every factor. Thus, there are strong effects in Gen3, which we discuss below.

Table 5. Comparison of models for four speaker groups (headings labeled as in Table 2)

	Homeland (n = 58, 24% DOM)			Gen1 (n = 149, 17% DOM)			Gen2 (n = 64, 12% DOM)			Gen3 Males (n = 85, 6% DOM)	
	n	% DOM	FW	n	% DOM	FW	n	% DOM	FW	n	% DOM
TYPE OF OBJECT											
other pronouns	10	40	.72	25	20	.99	9	22	.36	7	0
kinship terms	6	33	.63	28	61	1.00	5	60	.88	4	100
personal pronouns and proper nouns	14	43	.60	9	0	[0]	5	20	.73	5	0
human nouns	28	7	.14	87	5	.95	45	4	.08	11	9
DISLOCATION											
dislocated	5	60	.75	8	50	.83	3	33		1	100
SVO	53	21	.25	141	16	.17	61	12		37	11
TYPE OF VERB											
dative/accusative	6	33		13	46	.88	5	60	.91	9	33
Telic	33	30		84	18	.48	36	6	.18	9	0
Psych	0			14	14	.43	6	33	.61	9	0
Other	19	11		38	8	.16	17	6	.22	6	33
DEFINITENESS											
Definite	53	25		130	19		53	15		29	17
indefinite	5	20		19	5		11	0		9	0
SEX											
Male	45	22	.49	68	12	.47	22	9	.34	38	13
Female	13	31	.51	81	22	.53	42	14	.66	47	0

We see again that the rate of DOM decreases from one group to the next (from Homeland at 24% to Gen3 at 6% for males, and 0% for Gen3 Females, as noted above). We will show that this apparent change is accounted for by different distributions of tokens in the speaker groups, and is *not* evidence of a change in progress.

We next discuss the consistency of effects across groups. In Table 5 the factors are listed from strongest to weakest effect, overall (based on consideration of both ranges, canonically calculated by subtracting the smallest FW from the largest, and p-values). Within each factor, the levels are listed from most to least favouring, according to Homeland (centered) factor weights. Using a cut-off of $p < 0.1$ because of small token counts, factor weights are shown for significant factors only.

Type of Object has a significant effect in each group: Impersonal pronoun objects favour DOM the most for Homeland and Gen1 speakers. Gen 2 and 3 speakers use very few impersonal pronouns. While they show lower rates of DOM for impersonal pronouns, those rates may not be representative with so few tokens produced. Kinship terms also strongly favour DOM in all speaker groups, including

a categorical effect in Gen3 males. In all cases, nouns referring to humans have very low rates of DOM. Thus, this important factor plays a consistent role from generation to generation.

Dislocation has a strong effect in Homeland and Gen1, with dislocated tokens much more likely to have DOM than SVO tokens. This trend carries across to Gen2 and to Gen3 (males), but doesn't reach significance because there are so few dislocated tokens (3 and 1, respectively).

Type of verb also has a consistent effect, which emerges as significant when there are enough tokens produced in the Dative/Accusative category (the most favouring context) and the Other category (the most disfavouring context). That is, Dative/Accusative always most strongly favours DOM, but the factor is not significant in Homeland ($n = 6$) and Gen3 ($n = 9$). "Other" types of verbs disfavour DOM the most. Some differences in the order of levels is observed between groups but can be attributed to a dearth of tokens.

Definiteness also plays a consistent role: Definite noun objects are more likely to have DOM than indefinite. However, in these four models of smaller datasets, Definiteness never emerges as significant because of the interaction with Type of Object mentioned in the footnote to Table 4. This factor, recall, did emerge as significant in the model with all tokens, where we have more tokens to represent each level of each factor.

Finally, we tested the effect of the Sex of the speaker because of the categorical pattern in Gen3: no Gen3 female produces any DOM. However, this is not part of any obvious trend: females produce *more* DOM than males, though never significantly more, in the other three groups.

Speaker was included as a random effect in each model. We report a standard deviation of 1.48 for Homeland and 0.23 for Gen2, but 0 for Gen1 (and not applicable for Gen3). Rates for individuals are listed in the Appendix.

To sum up, rather than successive generations losing the effect of particular factors conditioning the rates of DOM, they simply do not produce enough tokens of certain syntactic and semantic types to produce a significant effect for those factors. Because later generations of speakers have fewer tokens of "Other" pronouns, Dislocated subjects, and Indefinite subjects, they have less opportunity to use DOM, and this accounts for their lower rates. However, in each context where there are sufficient tokens for a contrast to emerge, it does so in a similar way across groups. These differences in distribution also account for the apparent differences in rates in the analysis with all speakers together. Thus, Table 4 shows that Generation is not a significant predictor of DOM rate, while Table 5 shows why this is the case.

The one exception is the Gen3 females. We are at a loss to account for why they never use DOM, when females in other generations use it more than males, and Gen3 males continue to use it.

Non-canonical use of DOM

We now turn to the cases where our speakers produced DOM in contexts where the theoretical literature does not predict it, that is, the types of objects that appear in the lower part of Guardiano's (2010) hierarchy. Recall that in most published studies of DOM in Spanish, heritage and homeland speakers performed similarly in these contexts (Irizarri van Suchtelen 2016: 102). Our HLVC speakers produced only eight such tokens, across some 30 hours of conversations, distributed as in Table 4. Two of these eight were from a Homeland speaker. Due to the rate of DO-marking for these frequent types of objects being so low, we did not extract non-DO-marked tokens in these categories.

There are two further findings of interest: as we saw above, speakers produced a robust number of tokens (197) from one category in the lower half of the hierarchy that is, 6. Common nouns referring to people, and marked these with DOM only 5% of the time. Speakers produced a total of four tokens that were nouns with reference to an animal: two with DOM (in Table 6) and two without.

Table 6. Distribution of objects with DOM from the bottom of the Guardiano hierarchy

Type of object	Guardiano category	n	(Source)
Pronoun with a non-human referent	5	1	(Gen 3)
Noun with reference to an animal	7	2	(Homeland, Gen 1)
Noun with reference to a thing	8	4	(Homeland, Gen 1, Gen 3)
Abstract noun	10	1	(Gen 1)

These scarce tokens may suggest the beginning of innovative practices in DOM, and not simplification, in this heritage variety. Alternatively, the low rates of DO-marking in categories 5–10 are simply the probabilistic realization of the hierarchy. (11–15) are examples of these unusually DOM-marked Os.

(11) *sì, **allu** sud l' abbiamo sempre girato*
yes, **DOM+the** South CLIT. (Object) have.AUX1pl always visit.PTCP
'Yes, the South we always visited' (I1F71A, 18:43)

(12) *guardo **alla** televisione* (I1M61A, 22:40)
watch.PRES.1sing **DOM+the** TV
'I watch TV'

(13) *abbiamo svuotato **a** mezzo congelatore **alla** roba*
have.AUX.1sing empy.PTCP. **DOM** half freezer **DOM+the** the thing
'We emptied half the freezer from the thing' (I1F71A, 30:19)

These three non-canonical uses are from 1st generation speakers and show that the use of the preposition can be influenced by other syntactic parameters: in the first example, we see that dislocation triggers the use of the preposition, even in absence of the expected semantics. According to the literature on DOM in spoken Italian and our results (see Table 4, Table 5), word order (with respect to left-dislocation) is a crucial parameter influencing DOM. In (12) and (14), the verb *guardare* is of interest since it is one of those verbs which in Late Latin could be used both with the dative and the accusative, another parameter which is reported to favour DOM (and the most-favouring type of verb in our analysis, see Table 4). In (11–14), the Os are not human but they are definite: this is symptomatic of the importance of definiteness in DOM.

(14) Ø *guardano* ***al*** *libro* (I2M28A, 22:02)
they Watch.Pres.3pl. **DOM + Article** book
'(they) watch the book'

(15) Ø *leggevo* ***a*** *qualcosa* (I3F33A, 29:44)
I Read.IPFV.1sing **DOM** something
'I used to read something'

In (15), there are no other syntactic settings that should trigger DOM and it is possible to presume this to be an idiosyncratic usage. This token is particularly interesting in light of the fact that, otherwise, Gen3 females do not exhibit the use of DOM in our sample. This solitary example suggests that at least one member of that group is aware of the DOM construction.

(Non)-effects of ethnic orientation

We considered several measures of language use, preference and ethnic orientation. In no case was there any effect that came close to significance: there is no relationship between use of DOM and whether a Heritage Italian speaker thinks of themselves as more Canadian or more Italian (*rho* = −0.26, $p = 0.29$); whether they report learning Italian at school vs. acquiring it at home (*rho* = −0.08 $p = 0.75$); whether they report a larger or smaller number of Italians among their friends, in their neighborhood, at their place of work, nor in their childhood social network (*rho* = −0.1, $p = 0.69$); nor whether they report speaking more English or more Italian in a range of contexts (*rho* = 0.27, $p = 0.26$). Additionally, the slight slope of the correlation goes in an unexpected direction in three of the four cases: higher EO scores correspond to (slightly) lower factor weights for DOM in all cases except Language Preferences.

Summary of findings

Our analyses suggest that the Type of Object is the factor which most strongly predicts the presence or absence of DOM. The rates of DOM for the different Types of Object descend according to Guardiano's hierarchy: the highest rate of DOM is found for her levels 1–3, then 4, then 6. (Level 5 is excluded due to low token count.) Virtually nil rates are found for levels 7–10. DOM is used more when the object is human and known or present.

The Type of Verb is the second most important predictor. To the best of our knowledge, this is the first quantitative analysis of DOM, in any language, to quantify the effect of contrasting verb types and to rank its effect in relation to other factors. Montrul (2004) examined lexical aspect but found no effect; Montrul and Sánchez-Walker (2013) report more DOM with verbs that *can* take animate objects while verbs that *must* take an animate object exhibit less DOM, according to Irizarri van Suchtelen (2016: 104). That author considered the effect of animacy of the typical object of each verb, but not in concert with other factors. We show that verbs that were Dative/Accusative-alternating in Latin, Psych Verbs and Telic verbs (to a lesser degree), favour DOM independently of the type of object they co-occur with, as both these factors emerged as significant.

DOM is more frequent with dislocated objects than *in situ* objects.

Finally, Definiteness plays a lesser role (at least in our token set which included only objects with +human reference). This replicates Tippets' (2010, reported in Schwenter 2014: 242) analysis of three varieties of Spanish, where the animacy of the object has the strongest effect, followed by Definiteness. However, to some extent the explanatory power of definiteness is decreased in our models because of the categorically-definite nature of a few noun types, as noted in the footnote to Table 4.

There is no significant effect of the external factors examined: generation, gender and ethnic orientation (except for the categorical lack of DOM for Gen3 females). The lack of correspondence between rates of DOM use and speakers' reported ethnic orientation, social networks, schooling and language practices counts against the possibility that speakers are doing identity work with this variable. Although this is a variable that exhibits variation among homeland speakers (and thus the variation cannot be chalked up to incomplete acquisition, simplification, attrition, etc.), it does not appear to be used to indicate any affinity to Italianness or Canadianness. With only 19 speakers to compare, we must also recognize that this may be a problem of low numbers.

Due to the lack of effect of any of the Ethnic orientation and language preference factors, we remain at a loss to account for the distinctive behaviour of the Gen3 females, that is, the categorical absence of DOM in their speech. Recall that, prescriptively, DOM is not part of standard Italian. However, none of the speakers

spoke standard Italian during these recordings. We consider it possible that their speech shows influence of standard Italian. However, no Gen3 females report acquiring Italian entirely at school. With this exception, we can conclude, as did Leonetti (2008: 60, quoted in Balasch 2011: 116), "DOM in Romance is sensitive to a series of dimensions that make up a multi-dimensional bundle of factors." This is true for all four generations we compared.

Discussion

The analyses, as summarized just above, show that heritage speakers maintain the relevant semantic (i.e., animacy, definiteness, telicity), syntactic (position of subject) and morphological (pronoun vs. noun vs. proper noun) distinctions that homeland speakers have, and apply them to the distribution of DOM in a very similar fashion. Furthermore, the presence and direction of these effects all support the suggestions from grammatical descriptions about where DOM is used or expected, vs. where it is proscribed. However, none come close to exhibiting the categorical effects suggested in the syntactic literature. As has been frequently shown, stochastic trends in performance align with categorical claims about competence.

The majority of quantitative, analytic studies of DOM, with which we can compare our findings, have examined Spanish (though see Dufter & Stark 2008 on DOM with indirect objects in Italian). Such studies have highlighted three needs: (1) to compare multiple generations of heritage speakers, (2) to quantitatively analyze homeland (baseline) data, and (3) to examine additional languages. Following these suggestions, we examined Italian speakers, and showed that heritage and homeland speakers retain the same grammar in a remarkably robust fashion. We have seen this consistency previously among Heritage Italian speakers: no cross-generational differences were found in analyses of VOT, both word-initial (where English has longer VOT than Italian, cf. Nagy & Kochetov 2013) and in particular word-internal contexts (where Italian has longer VOT than English, Nodari et al. 2019) and in variable null subject use (cf. Nagy 2015). We can now add DOM to the list of variables that have been examined by comparing spontaneous speech samples from Homeland and Heritage Italian generations and do not show attrition-like cross-generational effects in how the variable is conditioned. In the current study we again see little difference in rates of use, and these differences are accounted for by the different distribution of tokens produced by each group. This is similar to an outcome reported for young Spanish teenagers, in an experimental study which also compared homeland and heritage speakers, by Guijarro-Fuentes & Marinis (2011: 227):

> the two groups showed a similar pattern of errors regardless of their grade of bilingualism. More importantly, their linguistic performance does not seem to be related to any of the external factors included in this study.

Additional evidence that speakers in all generations are still aware of the syntactic and semantic constraints on DOM is the virtually categorical lack of DO-marking of objects in the bottom half of the animacy-related hierarchy (Guardiano 2010), similar to the 0.7% rate of DOM reported for two corpora of Homeland Spanish speakers (Balasch 2011: 116).

The consistent effects of the linguistic factors, and the lack of effect for the social factors, supports the trend reported in previous studies that the role of internal factors is predominant. Montrul et al. (2015: 604), for example, compared DOM in three heritage groups (Hindi, Romanian and Spanish migrants in the US), showing that:

> While both internal linguistic factors and external sociolinguistic factors play a role in the structural changes observed, we support the conclusion that the structural properties of the DOM markers together with the syntax of definiteness and specificity in each language (more than external factors) seem to account for the degree of DOM erosion in each language.

While Montrul et al.'s (2015) experimental study reports erosion, our corpus-based findings for Italian instead robustly show our speakers' stochastic sensitivity to the syntactic and semantic factors described in the theoretical literature, consistently across generations. As discussed in Nagy (2015), we may attribute the difference in outcomes to methodological differences. These may begin with the selection of different types of speakers: HLVC participants are volunteers who say they are comfortable to talk for an hour in their heritage language while some experimental heritage-language studies exclude speakers who are "too fluent." The context of data collection also differs: HLVC speakers are recorded by a fellow heritage-language speaker in a context (such as their home or neighborhood café) where they are accustomed to speaking their heritage language, while many experimental studies are conducted in institutional settings where the heritage language has been proscribed throughout their school and/or work experience. Finally, the difference between living in a highly multilingual city like Toronto in an officially bilingual country vs. many of the American cities where experimental tasks were conducted may influence how heritage languages are maintained. So, while some of the studies of heritage Spanish report findings similar to ours (cf. Guijarro-Fuentes and Marinis, 2011; Irizarri van Suchtelen, 2016), these methodological differences may account for the outcomes that differ between previous studies of DOM and this first variationist study of DOM in Italian.

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Appendix A. Individual speaker information

Speaker	N	% DOM	EO	Network	School	Speaking Prefs
IXF14A	3	100				
IXF18A	1	0				
IXF22A	6	0				
IXF43A	3	33				
IXM35A	24	25				
IXM47A	6	0				
IXM61A	5	40				
IXM63A	10	20				
I1F61A	25	12	2	1.5	0	1.8
I1F65A	0	n.a.	2	1.5	0	2.0
I1F71A	41	22	1	1.5	n.d.	0.5
I1F73A	15	40	1	1.0	1	1.0
I1M60A	18	6	0	1.5	0	1.2
I1M61A	17	29				
I1M62A	13	0	2	1.5	1	1.2
I1M75A	20	10	1	1.3	1	0.5
I2F32A	1	0				
I2F34A	16	13	1	0.0	1	0.7
I2F44A	10	30	1	0.3	2	1.2
I2F45A	15	7	2	2.0	2	2.0
I2M14A	0	n.a.	1	1.5	2	1.2
I2M19A	6	17				
I2M28A	7	0	1	1.5	2	0.3
I2M30A	9	11	1	0.8	2	0.5
I3F20A	5	0	1	1.0	2	1.2
I3F21A	8	0	1	1.5	1	0.8
I3F31A	14	0	2	1.3	1	0.2
I3F33A	20	0	1	0.8	1	0.7
I3M18A	9	11	1	1.3	1	0.7
I3M22A	7	0	1	1.0	2	0.2
I3M27A	9	0	1	1.0	2	0.0
I3M28A	13	31	1	1.5	2	0.7
mean	11.1	15	1.2	1.2	1.3	0.9
median	9.0	11	1.0	1.3	1.0	0.7
std. dev.	8.7	21	0.51	0.48	0.73	0.57

CHAPTER 13

On (not) acquiring a sociolinguistic stereotype

A variationist account of L2-Catalan lateral production by L1-Spanish bilinguals

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Catalan exhibits a systematic velarization of alveolar lateral /l/ to (dark) [ɫ], somewhat infamously and even pejoratively recognized by speakers as *la ela catalana* 'the Catalan l,' in salient opposition to the non-velarized (or light) realizations of the parallel alveolar lateral Spanish category, realized as [l] (Bibiloni 2006; Davidson 2019; Hualde 2005). In light of an attested negative social stigma afforded to velarized /l/ (Davidson 2019; Pieras 1999; Simonet 2010a), in this study I examine the variable acquisition of Catalan /l/ by L1-Spanish speakers. In so doing, I problematize the assessment of successful second language acquisition for an L1 sociolinguistic stereotype (cf. Labov 2001), ultimately demonstrating how L2-speakers adopt native-like sociolinguistic variation with non-native-like speech variants.

Keywords: sociophonetic variation, Spanish-Catalan contact, second language acquisition, lateral velarization

Introduction[1]

Though Spanish and Catalan share an alveolar lateral phonemic category, the production of /l/ respectively in each language as either light (non-velarized [l]) or dark (velarized [ɫ]) is a considerably salient distinction that is afforded overt social value by Catalan-Spanish bilinguals and monolingual Peninsular Spanish

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speakers alike (Davidson 2019; Sinner 2002). Explicit pronunciation manuals of Catalan and Spanish describe lateral production as a fundamental distinction to preserve between the two languages (Bibiloni 2006; Navarro Tomás 1918: 88). In particular, L1-speakers of both languages have negatively associated Catalan dark laterals with rurality, older age, and lower social class, which has been claimed to motivate a change in progress from above (cf. Labov 2001) wherein younger, L1-Catalan female speakers are leading in the abandonment of dark [ɫ] for a lighter [l] (Pieras 1999; Simonet 2010a). Accordingly, the acquisition of Catalan laterals by L1-Spanish speakers exemplifies a unique intersection between second language acquisition and sociolinguistics fields: How do L2-learners navigate the native-like acquisition of a feature that is a sociolinguistic stereotype (cf. Labov 2001) in the target language?

In order to address this research question, this investigation explores variability in the production of Catalan /l/ by L2-Catalan speakers by employing not only traditional comparisons of acoustic quality with L1-Catalan speakers and cross-linguistic comparisons with Spanish, but also by examining the social and linguistic correlates of lateral velarization as a sociolinguistic variable. Far from "unsuccessful" acquisition, I shall argue that L2-Catalan speakers' Catalan production of stylistically stratified and distinctly non-Spanish laterals demonstrates their capacity to fully acquire native-like sociolinguistic speech patterns while avoiding stigmatized speech variants, illustrating a unique case of phonetically gradient sociolinguistic conditioning.

The production and acquisition of Catalan laterals

The status of Catalan laterals

The Catalan alveolar voiced lateral /l/ is characterized as velarized in all linguistic contexts, accomplished via a secondary velar constriction resultant from tongue dorsum retraction toward the velum (Recasens & Espinosa 2005: 3; Recasens & Pallarès 2001: 37, 47–48). In contrast, the parallel Spanish alveolar lateral category is described as non-velarized in all linguistic contexts, with a lone tongue-tip occlusion in the alveolar region (Hualde 2005: 178; Recasens & Espinosa 2005: 3). As can often be the case for multilingual settings with long histories of language contact, prescriptive calls to keep each language distinct from the other are readily available in pronunciation manuals for each of Catalan ("It's very important to pronounce l […] with a very different articulation from the Spanish one, namely as velarized l. […] An l articulated the Spanish way […] is considered a serious pronunciation flaw" [Bibiloni 2006, my translation]) and Spanish ("…[the tongue]

is made slightly concave; but in no instance reaching the velar articulation of the […] Catalan l, whose use should be carefully avoided in Spanish" [Navarro Tomas 1918: 88, my translation]).

Despite these prescriptive calls, of course, variable L2-productions of /l/ by Catalan-Spanish bilinguals are a staple feature of both languages acquired as a second language. In Catalan, for example, a non-velarized lateral is a key feature of an L2-variety or dialect known as *xava*, with origins in the L1-Spanish working class of Barcelona (Ballart 2002; Julià i Muné 2008, 74). Similarly, in the Spanish of L1-Catalan speakers, velarized laterals have been found to be the majority variant (relative to non-velarized /l/) even in carefully read speech, approaching categorical usage rates in select speakers (Davidson 2014: 234; see also Davidson 2020: 411; 2022: 411; Pieras 1999: 236). Crucially, however, velarization in both languages (i.e., both in Catalan as the traditionally standard or L1-variant as well as in Spanish as the traditionally non-standard or L2-variant) has recently been linked to negative, overt social stigma. In the case of L2-velarization in Spanish, Sinner (2002, 163) found in a survey of Madrid monolinguals that this was the only phonetic feature they could name that distinguished the Spanish of Catalan speakers, which they described as 'country-like,' 'strange,' 'harsh,' 'ugly,' and 'aggressive' (Sinner 2002: 165, my translation). Similarly, an empirical matched guise conducted by Davidson (2019: 72–74) in Barcelona revealed covert associations of Spanish lateral velarization with incorrect or poor Spanish and rural speech, alongside overt commentary naming the *ela catalana* as part of a Catalanized Spanish accent that directly elicits social ridicule amongst peers. Nonetheless, positive covert and overt associations of in-group solidarity for an explicitly bilingual Catalan-Spanish identity were also afforded to velarized /l/ (Davidson 2019: 57–58, 71). For Catalan, Simonet (2010a, 675) reports commentary from sociolinguistic interviews (conducted in Palma de Majorca) that evidences a negative association with rurality for strongly velarized /l/.

Notably, production patterns concerning correlates of gender and age show parallel trends for the velarization of /l/ in both Catalan and Spanish, which together with the aforementioned explicit negative social commentary, suggest velarized /l/'s status as a sociolinguistic stereotype (cf. Labov 2001). For the Catalan of Palma de Majorca, Simonet (2010a: 671; 2010b: 88–89) found that stronger velarization degrees were being abandoned in apparent time, led by younger female speakers as part of a change in progress in response to velarized /l/ as a negative stereotype. In Barcelona, Davidson (2020: 409) observed a parallel gender stratification whereby velarization degrees for Catalan /l/ were weaker for female speakers.[2] As for Spanish, Davidson (2012, 2022: 330; 2015: 143, 148) similarly finds that weaker

2. As all speakers were of the same 18–30 years old age group, age stratifications went unexplored.

velarization degrees are used by youth female speakers in Barcelona, in parallel with findings for the Spanish of Palma de Majorca bilinguals (Pieras 1999: 235, 238, 240; Simonet 2010a: 308). Thus, despite being a native or L1-feature of the prescriptive norm, Catalan lateral velarization in the modern Catalan speech community exhibits social stratifications and overt metalinguistic commentary consistent with a sociolinguistic stereotype. This feature has additionally become a hallmark of the (L2-)Spanish of the Catalan-Spanish bilingual speech community, where it similarly shows social stratification consistent with a sociolinguistic stereotype.

The acquisition of Catalan laterals

The acquisition of a foreign or second language sound system, in contrast to the lexicon, morphology, and even syntax, is notorious when it comes to the notion of general failure to achieve native-like acquisition (cf. Bley-Vroman 1990, Flege, Yeni-Komshian & Liu 1999). Highlighted as a particularly insurmountable obstacle even in some of the earliest seminal work concerning critical periods of language learning (e.g. Lenneberg 1967: 176), the pervasiveness of foreign accent, even in instances of significant exposure and usage of the second language during early childhood (before age 7), has been a reoccurring finding in a robust series of empirical studies (for example [among many others], Flege, Birdsong, Bialystok, Mack, Sun & Tsukada 2006; Piske, MacKay & Flege 2001). Non-native-like outcomes for accent stand in rather stark contrast to the relatively successful, native-like acquisition of various L2 morphosyntactic features by similarly aged (pre-7) children (e.g. Johnson & Newport 1989; Newport 1990). Somewhat serendipitously as concerns the focus of the present study, one of the seminal studies reporting non-native-like acquisition of L2 phonology involves the acquisition of Catalan phonology by native Spanish-speaking children, who receive abundant exposure to Catalan in Barcelona and use it as the primary language of schooling by age 6. Pallier, Bosch, and Sebastián-Gallés (1997) examined the perception (and by inference, production) of Catalan /ɛ/ and /e/ by a group of 40 fully functional Catalan-Spanish bilingual university students in Barcelona, and found that the L1-Spanish bilinguals showed surprisingly poor (often with 50% error rates) discrimination for this Catalan contrast. The non-native-like acquisition of this core phonemic contrast in Catalan, on behalf of L2-Catalan speakers who acquired Catalan prior to age 6 (and who continue to use Catalan daily) in a community of widespread bilingualism, indeed evidences the grim prospects of native-like L2 phonological acquisition. Accounts for the particularly difficult acquisition of L2 phonology include the positing of extremely early (for example, as soon as 6 months of age) critical periods for phonology (cf. Kuhl, Conboy, Coffey-Corina, Padden, Rivera-Gaxiola & Nelson

2008), as well as interactional accounts whereby L1 and L2 sound categories show bi-directional influence between them (cf. Flege 1995; 2002).

Regardless of which cognitive account(s) one ascribes to regarding the pervasiveness of foreign accent in L2-speakers, the assessment of non-native-like L2 speech production is most often conducted using native-speaker (or L1) comparisons, whereby acoustic and/or articulatory metrics form the baseline for what is considered 'native-like.' For alveolar laterals and their variable velarization, a commonly utilized acoustic correlate is that of second formant (F2) frequency, which varies inversely with degree of velarization, such that lower F2 values indicate greater velarization degrees (Davidson 2020: 386; Recasens & Espinosa 2005: 3; Simonet 2010a: 668). This continuous metric reflects the treatment of lateral velarization as a phonetically (as well as articulatorily) gradient phenomenon, with no discrete acoustic or articulatory threshold differentiating intrinsically velarized and non-velarized lateral tokens (Davidson 2020; Recasens 2012; Recasens & Espinosa 2005). Simonet (2010a), for example, compared F2 values for Catalan laterals between L1- and L2-Catalan speakers as one assessment of native-like production, in addition to crosslinguistic comparisons with Spanish /l/ as a means of evaluating whether or not L2-speakers had acquired a new, distinctly Catalan lateral (or new category formation [cf. Flege 1995]).

Ultimately, following a framework of Second Language Phonological Acquisition (cf. Flege 1995), the aforementioned comparisons between L1- and L2-speakers reveal valuable insights into the native-like or non-native-like acquisition of a particular speech sound. However, the limiting of second language acquisition analysis to the binary question of "Do L2-speakers produce the same speech sound as L1-speakers" fails to acknowledge the reality (as premised in a framework of Variationist Sociolinguistics [cf. Labov 2001; Tagliamonte 2012]) of sociolinguistic constraints that govern linguistic variation in (a second) language. For example, in the present case of Catalan /l/, for which native speakers show usage patterns and attitudes consistent with a negative social stereotype that could result in the abandonment of velarized /l/, how appropriate is it to expect that L2-learners of Catalan acquire a salient and stigmatized variant? Moreover, beyond the acoustic comparisons between the average Catalan /l/ for L1- and L2-speakers, to what (if any) linguistic and social constraints on lateral production are L2-speakers sensitive, and how do these compare to those attested for native speakers? If L2-speakers produce Catalan /l/ identically to L1-speakers in terms of acoustic quality, but show unique sensitivities to linguistic and/or social constraints relative to L1-speakers, to what degree is their acquisition "successful"? These complexities highlight the inherent subjectivity involved in defining "success" of acquisition, which will be reflective of the particular framework of linguistic theory applied. In the present

investigation, I purposefully explore the linguistic and social factors that mediate lateral velarization in Catalan for both L1- and L2-speakers in order to more completely assess as well as problematize "successful" L2-acquisition, in particular as regards a salient sociolinguistic variable.

Experimental methodology

Linguistic factors

The present investigation incorporates a set of two linguistic factors for /l/ production in each of Catalan and Spanish, namely syllable position and adjacent segment place of articulation (or coarticulation). With respect to syllable position, two levels are established: onset (e.g., *l**ò**gica* [Cat.] / *l**ó**gica* [Span.] 'logic'; *l**à**mina* [Cat.] / *l**á**mina* [Span.] 'sheet'; *l**e**nt* [Cat.] / *l**e**nto* [Span.] 'slow'; *l**í**mit* [Cat.] / *l**í**mite* [Span.] 'limit') and coda (e.g., *animal* [Cat.] / *animal* [Span.] 'animal'; *comtal* [Cat.] / *condal* [Span.] 'county'; *coronel* [Cat.] / *coronel* [Span.] 'coronel'; *perfil* [Cat.] / *perfil* [Span.] 'profile'). With respect to coarticulation, two levels are established: adjacent front vowel (e.g., *l**í**quid* [Cat.] / *l**í**quido* 'liquid'; *l**i**tre* [Cat.] / *l**i**tro* [Span.] 'liter'; *mil* [Cat.] / *mil* [Span.] 'thousand'; *hotel* [Cat.] / *hotel* [Span.] 'hotel') and adjacent non-front vowel (e.g., *l**a**berint* [Cat.] / *l**a**berinto* [Span.] 'labyrinth'; *l**u**pa* [Cat.] / *l**u**pa* [Span.] 'lens'; *sol* [Cat.] / *sol* [Span.] 'sun'; *gandul* [Cat.] / *gandúl* [Span.] 'loafer'). These two linguistic factors were selected for inclusion in the present study due to their relationship with the articulatory configurations associated with a prototypical velarized and non-velarized lateral. Following Recasens (2012: 369–370, 376–377), Recasens and Espinosa (2005: 6–7), and Davidson (2020: 390–392), velarized laterals (due to their more constrained articulatory configuration) are expected to show less or ideally no sensitivity to each of syllable position and coarticulatory effects. In contrast, for non-velarized laterals, velarization degrees are expected to be stronger in the coda and adjacent non-front vowel contexts.

Social factors and subject population

The present investigation incorporates a set of three social factors for /l/ production in each of Catalan and Spanish, namely gender, native language group, and style (expounded upon in the following section as task type). Following the variationist sociolinguistic framework (Labov 2001; Tagliamonte 2012), gender stratification, wherein female speakers are likely to use variants with overt negative social stigma less than their male counterparts in cases of stable variation or ongoing change from above, is a social constraint that is highly relevant for investigating L1- and

L2-differences in the use of an overtly stigmatized variant. The investigation of gender stratification is especially relevant given that in each of Catalan and Spanish in both Barcelona and Palma de Majorca, gender stratification favoring weaker velarization on the part of female speakers has been previously attested (cf. Davidson 2012, 2015, 2020, 2022; Pieras 1999; Simonet 2010a; 2010b).

With regard to native language group, participants in the present study are grouped according to first language (matched with parents' L1 and the language in the home so as to avoid complications with using the labels "L1" and "L2" with early simultaneous bilinguals [e.g. L1A-L1B]) and self-reported current estimates of typical language use. Table 1 displays the general distribution of the 60 speakers recruited for this study, all hailing from the urban capital city of Barcelona. All participants were between the ages of 18 and 30 years, permitting interpretations of lateral production data as reflecting contemporary speech.

Table 1. Subject population according to native language group

Language profile group	Speaker count by gender (18–30 years old)	Home / native / parent native language	Weekly use of Catalan (with family, friends, at school/work, shopping)
L1-Catalan / L2-Spanish	30 (15M, 15F)	Catalan / Catalan / Catalan	76% (s.d. = 10.1)
L1-Spanish / L2-Catalan	30 (15M, 15F)	Spanish / Spanish / Spanish	20% (s.d. = 9.6)

Test instruments

This study utilizes five test instruments. The first is a socio-demographic questionnaire containing 22 questions used to screen participants according to the social criteria outlined in the previous section. Its purpose is to gather language histories of participants to facilitate their groupings according to the native language groups that appear in Table 1.

The second and third test instruments employed in this investigation, namely a pair of approximately 20-minute sociolinguistic interviews (cf. Labov 2001), in Catalan and Spanish, were used to elicit more casual, spontaneous speech. Participants were asked to discuss casual topics such as food preferences, hobbies, and vacation spots.

The fourth and fifth test instruments, a pair of recorded word readings in Catalan and Spanish, were used to elicit more self-monitored speech. In each language, subjects were asked to read aloud, using their best pronunciation, a series of 60 target words (all cognates across the languages) with /l/, stratified according to the aforementioned two linguistic factors (15 tokens per cell). Target items in

each language's reading list were interspersed within a set of 40 distractor items that did not contain /l/. Beyond the benefit of ensuring an equal number of lateral tokens produced per participant across the aforementioned linguistic factor cells in each language, this task serves to gather more careful speech data to contrast with the aforementioned interview data, permitting an analysis of speech style (via task type) on lateral production in each language. The inclusion of style in this investigation reflects the expectation that overtly stigmatized speech variants, like velarized /l/, are more likely to be avoided in more formal or self-monitored speech styles, relative to more spontaneous or casual speech (Moreno Fernández 2009, 101; Tagliamonte 2012, 34).

Data collection methods

Each participant was recorded individually during one experimental session lasting approximately one hour. In order to limit the effects of language mode (cf. Grosjean 2001), given that bilinguals produced Spanish and Catalan speech during a single interview session, the interview session was strictly divided in two parts, namely an L1-portion followed by an L2-portion. The sociodemographic questionnaire was given in each participants' L2, after the L1-tasks (interview and subsequent word reading) and before the L2-tasks (interview and subsequent word reading), providing a buffer of approximately 15 minutes between language tasks to allow participants to switch from their L1 to their L2. Participants were recorded using an SE50 Samson head-mounted condenser microphone and an H4n Zoom digital recorder (sampling at 44,100 hz) in an audiometric booth in the phonetics laboratory at the Universitat Autònoma de Barcelona, in an empty classroom at the Universitat de Barcelona or Universitat Pompeu Fabra, or in a quiet room in a participant's home.

Data analysis methods and results

Acoustic analysis

Following Simonet (2010a, 668), F2 values were measured from each /l/ production's midpoint, calculated from hand-marked segment boundaries via transition cues in the waveform and spectrogram. In order to minimize formant tracking errors, the number of formants and the formant ceiling for each lateral were specified according to linguistic context and speaker gender, adapted by trial and error from those used in Simonet (2010a, 668). Any gross tracking errors were corrected by hand. Example spectrograms illustrating a lighter and darker realization of /l/ in the tokens *fèrtil* [Cat.] / *fértil* [Span.] 'fertile,' produced by speakers of unique L1s, appear in Figures 1 and 2.

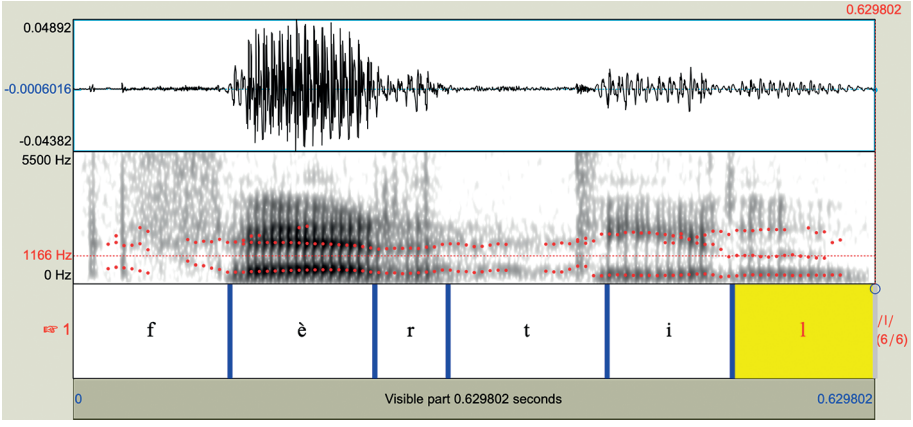

Figure 1. L1-Catalan male production of Catalan *fèrtil* 'fertile' (F2 = 1166hz)

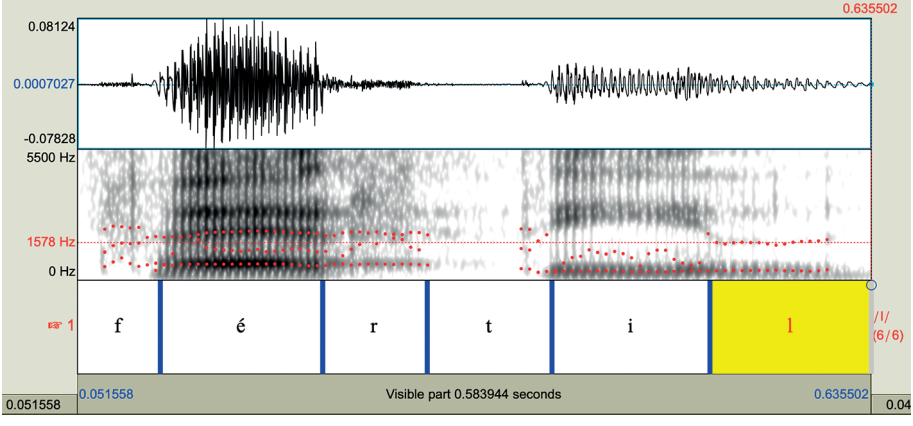

Figure 2. L1-Spanish female production of Spanish *fértil* 'fertile' (F2 = 1578hz)

After midpoint F2 (hertz) values were extracted with a Praat script, they were converted from hz into Bark units and subsequently transformed and normalized using an adaptation of the S-procedure (Fabricius 2007; Watt & Fabricius 2002), following Simonet (2010a). This normalization procedure expresses individual /l/ tokens as terms of how '[u]-like' (more velarized) or '[i]-like' (less velarized) they are in relation to each speaker's vowel space. Each speaker's vowel space was calculated (in terms of F2) by measuring the average F2 value (converted to Bark units) for the vowels /u/ and /i/. Once these /u/ and /i/ limits were established for a given speaker, they were averaged together and served as the denominator over which the F2 (in Bark) of that speaker's individual /l/ token was divided, yielding a normalized (henceforth, normed) F2 value with respect to 1 with asymptotes at

0 and 2. Normed F2 values closest to 2 denote more [i]-like (i.e., less velarized) laterals, whereas normed F2 values closest to 0 denote more [u]-like (i.e., more velarized) laterals.

In order to permit direct comparisons between Spanish and Catalan laterals expressed in normed F2 units, it was necessary to confirm that the vowel spaces across the languages did not significantly differ from one another. Accordingly, a linear mixed-effects regression model (with independent variables of *vowel* (i.e., /i/ vs. /u/), *language* (i.e., Catalan vs. Spanish), and the interaction between the two) was run with *F2* (in Bark) as the dependent variable and *speaker* and *token* as random effects using R. Crucially, neither the main effect of *language* ($F(1,13.91) = 0.04$; $p = 0.84$) nor the interaction between *language* and *vowel* ($F(1,13.83) = 0.09$; $p = 0.77$) was statistically significant, confirming that the vowel spaces for Catalan and Spanish are not distinct, thus warranting the use of the S-procedure across the two languages.

Total counts of collected lateral production data

The word list readings in Spanish and Catalan each yielded a total of 3600 lateral tokens. The relatively few tokens with erroneous formant structures and/or notable speaker disfluencies were discarded from analysis, leaving 3,501 Catalan and 3,475 Spanish laterals produced in a monitored speech style available for statistical analysis. These tokens, in combination with the 3,120 Catalan and 3,120 Spanish lateral tokens (52 tokens per speaker, 13 tokens per cell) from the sociolinguistic interviews in each language, yielded the resultant 6,621 Catalan and 6,595 Spanish tokens of /l/ (totaling 13,216 laterals, or roughly 110 Catalan and 110 Spanish laterals per speaker).

Results

The entirety of the Barcelonan laterals dataset was submitted to a single mixed-effects linear regression model in R using *normed F2* as the dependent variable, testing for fixed effects of three linguistic factors (*language* [Catalan vs. Spanish], *syllable position* [onset vs. coda], and *coarticulation* [front vs. non-front]) and three social factors (*native language group* [L1-Catalan vs. L1-Spanish], *gender* [male vs. female], and *style* [careful vs. casual]). Three-way interaction terms between *native language group* and *language* with each of all the other independent variables were included in order to assess whether or not any of these effects varied significantly according to the different native language groups, by language. *Individual speaker* and *token* were included as random effects.

The results of the linear mixed-effects regression appear in Table 2 (only significant effects reported), with positive β coefficients indicating lesser velarization degrees compared to the intercept. Given the complex nature of this model, I shall elaborate on each of these findings separately, offering additional information (and post-hoc analyses) as necessary for each finding.

Table 2. Summary of mixed-effects linear regression model fit to bilinguals' laterals

	β	*t*	*p*
(Intercept)[a]	.7254	20.317	<.0001
Front Vowel	.1536	7.355	<.0001
L1-Spanish	.2412	7.935	.0003
Spanish	.2321	7.611	.0005
Female	.1526	5.814	.0008
Careful	.1362	4.985	<.0001
Spanish: Onset	.1958	5.917	<.0001

a. The intercept is L1-Catalan male speakers producing Catalan coda laterals adjacent to non-front vowels in casual speech

To begin, I address the main effects of *native language group* and *language*, which respectively speak to L1 vs. L2 production differences and crosslinguistic differences between Catalan and Spanish laterals. With respect to the effect of *native language group*, velarization degrees for /l/, regardless of language, are greater for L1-Catalan speakers relative to L1-Spanish speakers. This hierarchy reveals important differences in L1 vs. L2 production, in that Catalan laterals are significantly more velarized in the speech of L1-Catalan speakers than in the speech of L2-Catalan speakers. In parallel, Spanish laterals are significantly more velarized in the speech of L2-Spanish speakers than in the speech of L1-Spanish speakers. From these comparisons alone, it can be determined that neither L2-Catalan nor L2-Spanish /l/ production reaches L1- or native-like velarization degrees. As for cross-linguistic differences between Catalan and Spanish /l/ as revealed by the main effect of *language*, velarization degrees for Catalan laterals are significantly greater than those of Spanish laterals, independent of (or equally for each) *native language group*. This indicates that all bilinguals maintain a significant difference in velarization degree across their two languages, though as previously noted, neither L2-lateral is fully L1-like in terms of velarization degree. This finding suggests that neither native language group's L1-lateral is being fully transferred or imposed (see Van Coetsem [2000]) into speakers' L2. Figure 3 visualizes these velarization hierarchies in Catalan and Spanish for each native language group.[3]

3. Note that all subsequent error bars represent 1 standard deviation from the mean.

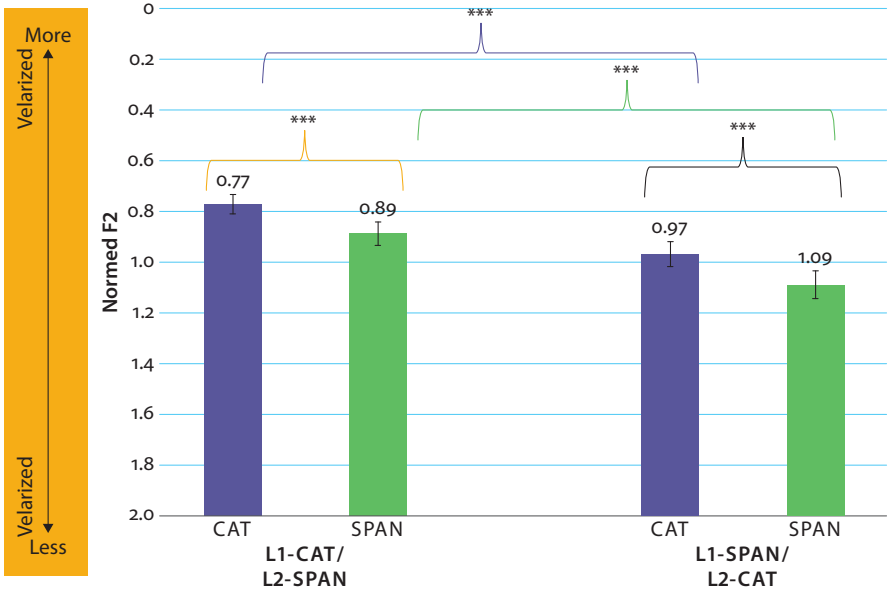

Figure 3. Effect of native language group on Catalan and Spanish lateral production (*** = significant at 0.001 level)

Next, I turn to an analysis of linguistic constraints evidenced in Catalan and Spanish by each native language group. With respect to the main effect of *coarticulation*, velarization degrees for laterals adjacent to non-front vowels are significantly greater than those adjacent to front vowels, independent of (or equally for each) *language profile group* and *language*. The direction of this effect is consistent with prior accounts of lateral velarization degrees as mediated by adjacent segment place of articulation (cf. Davidson 2020; Recasens 2012; Recasens & Espinosa 2005), although it is worth noting that additional studies on English and Romance laterals have suggested that strongly-enough velarized laterals can be immune to coarticulation effects (cf. Oxley, Roussel & Buckingham 2007; Recasens & Farnetani 1990; Recasens, Fontdevila & Pallarès 1996). This may indicate that the Catalan laterals analyzed in the present study are less velarized in comparison to those of select other language varieties.[4] Figure 4 displays these *coarticulation* effects for Catalan and Spanish laterals by native language group.

4. See Davidson (2020) or Recasens (2012) for further discussion of crosslinguistic hierarchies of lateral velarization within and across intrinsic categories of dark and light laterals.

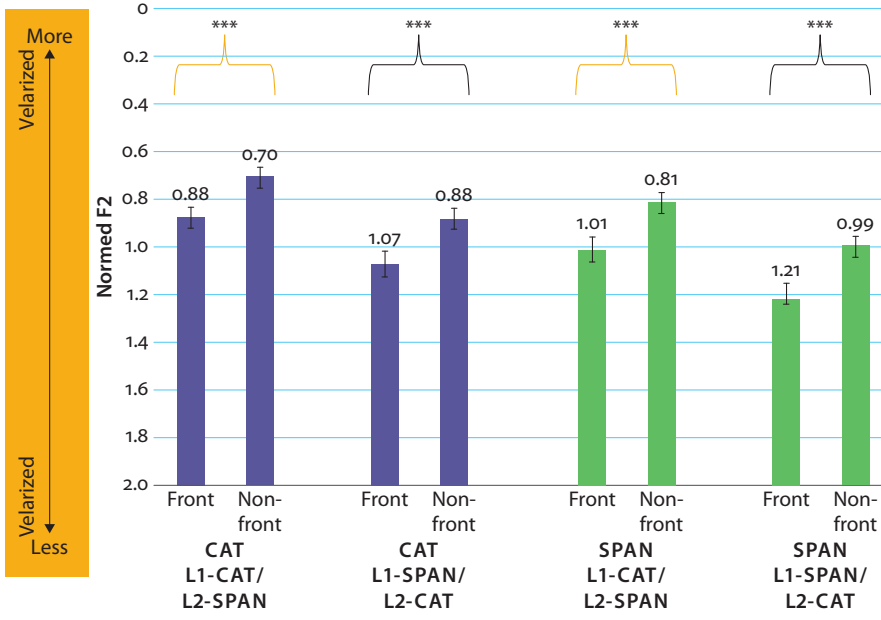

Figure 4. Effect of adjacent vowel coarticulation on Catalan and Spanish laterals

With respect to *syllable position*, a significant two-way interaction with language was obtained. Pairwise comparisons from Post-hoc analysis with Bonferroni correction revealed that whereas velarization degrees for Catalan laterals in coda position were not distinct from those in onset position ($p = .317$), Spanish laterals in coda position uniquely were significantly more velarized than those in onset position ($p < .0001$). The lack of sensitivity to syllable position for Catalan laterals, in addition to the direction of effect observed for Spanish laterals, are both consistent with prior accounts of lateral velarization degree being mediated by increased articulatory strengthening and increased articulatory weakening in onset and coda positions, specifically for laterals that are sufficiently non-velarized (cf. Davidson 2020; Recasens 2012; Recasens & Espinosa 2005). Notably, the lack of significant three-way interaction with *native language group* suggests that L2-speakers of Catalan and Spanish both exhibit the specific L1-like sensitivity (or lack thereof) to syllable position. Figure 5 illustrates this differential *syllable position* effect in Catalan and Spanish for each native language group.

Lastly, I turn to an analysis of social constraints evidenced in Catalan and Spanish by each native language group. With regard to the main effect of *gender*, velarization degrees for Catalan and Spanish laterals produced by female speakers are significantly weaker than those produced by males, a direction of effect consistent

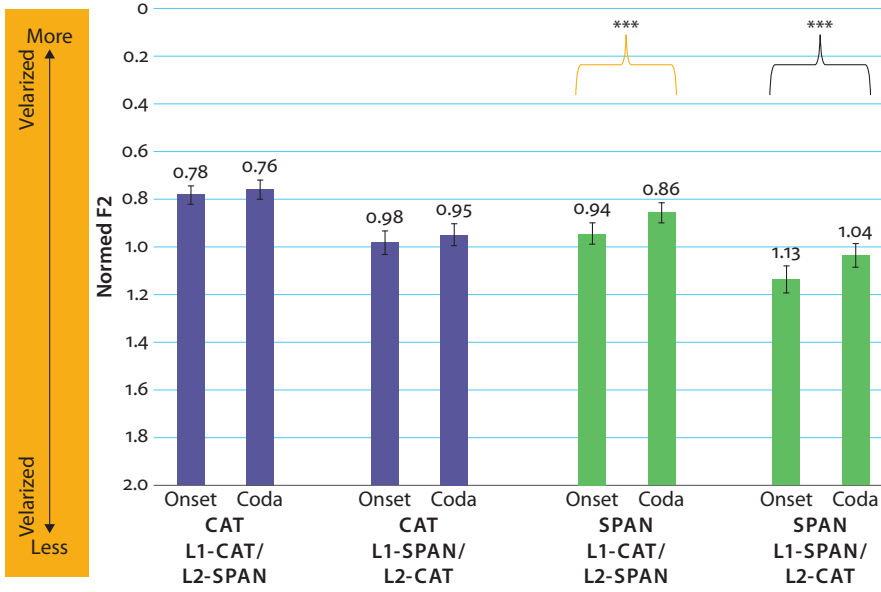

Figure 5. Effect of syllable position on Catalan and Spanish laterals

with prior accounts of lateral velarization in both Catalan and the Spanish of Catalan-Spanish bilinguals as overtly stigmatized (cf. Davidson 2019; Pieras 1999; Simonet 2010a). The lack of significant three-way interaction with *native language group* indicates that L2-speakers of each language show L1-like sensitivity to gender stratification. Figure 6 displays this *gender* effect for Catalan and Spanish laterals by native language group.

As for the remaining main effect of *style*, velarization degrees for Catalan and Spanish laterals produced in more careful or monitored speech (via the word reading task) are significantly weaker than those produced in a more casual speech (via the sociolinguistic interview). This direction of effect is consistent with the aforementioned accounts of lateral velarization in both Catalan and the Spanish of Catalan-Spanish bilinguals as overtly stigmatized (cf. Davidson 2019; Pieras 1999; Simonet 2010a). The lack of significant three-way interaction with *native language group* indicates that L2-speakers of each language show L1-like sensitivity to stylistic stratification. Figure 7 displays this *style* effect for Catalan and Spanish laterals by native language group.

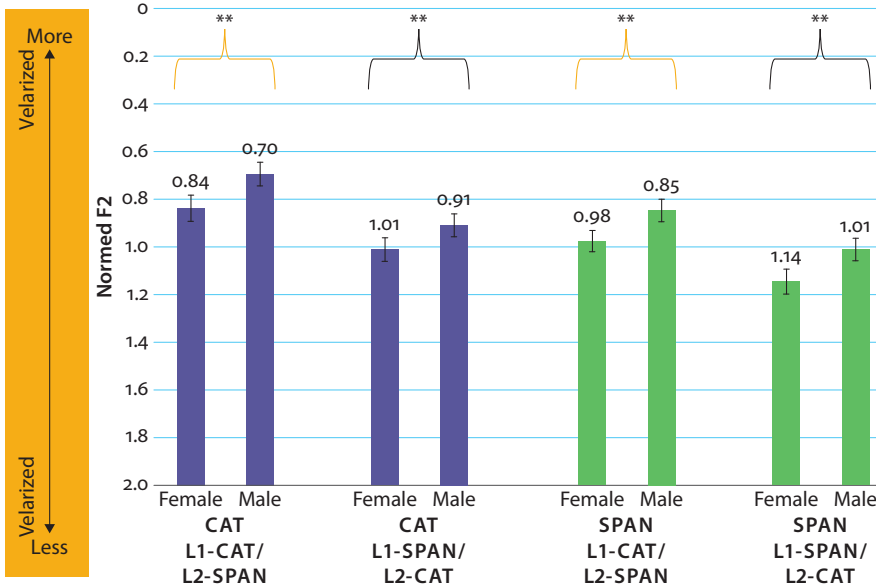

Figure 6. Effect of gender on Catalan and Spanish laterals (** = significant at 0.01 level)

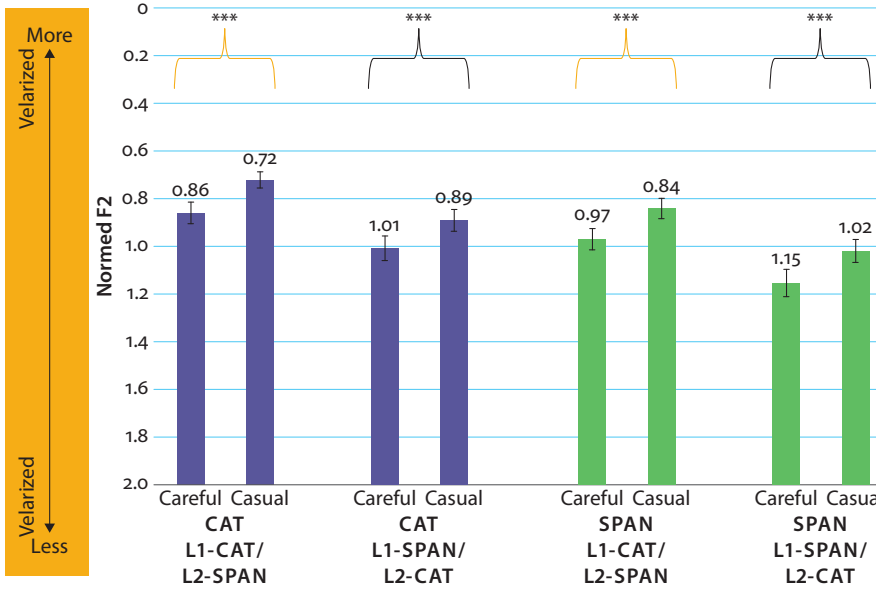

Figure 7. Effect of style on Catalan and Spanish laterals

Discussion

In order to assess the acquisition of Catalan laterals by L1-Spanish bilinguals, the present study empirically examined gradient degrees of lateral velarization across both Catalan and Spanish. With respect to traditional acoustic comparisons between L1- and L2-speakers, lateral velarization in L2-Catalan was significantly weaker than that exhibited for Catalan laterals produced by L1-speakers. This suggests, in perhaps the most basic sense, a lack of successful acquisition of this distinctively Catalan phonetic category, indeed despite significant exposure to and usage of Catalan on behalf of L1-Spanish speakers. Maturational (i.e., critical period effects for phonology [cf. Kuhl et al. 2008]) and cognitive (i.e., influence between L1- and L2-categories [cf. Flege 1995, 2002]) accounts for this persistent non-native-like production on behalf of L2-speakers may certainly be applied to explain this finding. However, given the sociolinguistic status of lateral velarization in Catalan (and indeed in Catalonian Spanish as a contact feature), an alternative, sociolinguistic account also is applicable: the weaker velarization degrees on behalf of L2-Catalan speakers are a demonstration of an active avoidance of strongly velarized, L1-like velarization degrees, which warrant social ridicule in the speech community (cf. Davidson 2019). Given these competing accounts, additional metrics of "successful" acquisition were explored, including within-speaker, crosslinguistic comparisons between Catalan and Spanish, as well as L1 and L2 comparisons of linguistic constraint sensitivity and social stratification.

With respect to crosslinguistic comparisons between Catalan and Spanish, both native language groups exhibited significantly distinct velarization degrees produced for Catalan and Spanish, suggestive of new category formation (cf. Flege 1995). The significant difference in velarization degrees produced for all speakers when using Catalan vs. Spanish evidences that L2-speakers are not simply transferring or imposing an L1 category into their respective L2, but instead have successfully acquired a distinctly L2 lateral. As the acoustic quality of this L2-category is equally non-native-like for both L2 languages, notably despite the L1-target in Spanish lacking the negative social stigma afforded to the L1-target in Catalan, this suggests that accounts for the persistence of an L2-accent cannot exclusively appeal to a feature's sociolinguistic status, and instead likely involve maturational, cognitive, and sociolinguistic factors in tandem.

With respect to the linguistic (syllable position, adjacent vowel coarticulation) and social (style, gender) correlates of lateral velarization, L2-speakers exhibited parallel sensitivities to those of L1-speakers, indeed in both languages. Catalan and Spanish laterals for all speakers exhibited greater velarization degrees in the context of an adjacent non-front vowel, and whereas Spanish laterals showed sensitivity to syllable position, favoring greater velarization in coda contexts, the more strongly

velarized Catalan laterals for all speakers resisted syllable position effects. Gender and style effects, favoring greater velarization on behalf of male speakers in a less monitored speech style, were equally present for L1- and L2-speakers in both languages, consistent with previous accounts of lateral velarization, in both languages, as a negative sociolinguistic stereotype (cf. Davidson 2019; Pieras 1999; Simonet 2010a). The adherence to these complex L1 linguistic and social constraints on behalf of L2-speakers clearly stands at odds with the aforementioned acoustic interpretation of either language's L2 acquisition as, in a word, a failure.

Accordingly, I shall focus on how L2-speakers navigate the production of this uniquely gradient and socially meaningful phonetic feature. In Davidson (2019), overt attitudes toward Catalonian Spanish were elicited in interviews with 48 Barcelonan Catalan-Spanish bilinguals. The majority (60%), when prompted to name any phonetic hallmarks of the Spanish of Catalan speakers of which they were aware, named the *ela catalana* (which in fact made it the phonetic feature of greatest explicit awareness) (Davidson 2019: 68). When asked to elaborate on their perceptions of the *ela catalana*, the majority of L1-Catalan speakers (63%) and L1-Spanish speakers (81%) alike expressed a desire to produce laterals (in both languages) that aren't so "exaggeratedly Catalan-like," to avoid having a "super Catalan accent" (Davidson 2019: 68–70). The present study thus complements prior attitudinal data with production evidence as to how this avoidance of overly strong velarization degrees is acoustically manifested in the Catalonian bilingual speech community. L1- and L2-speakers of Catalan actively negotiate degrees of lateral velarization (in both languages) through stylistic and gender stratifications, effectively reducing velarization strength in a more careful or monitored speech style, and on behalf of women relative to men. Curiously, for L2-Catalan speakers in particular (since their Catalan /l/ is already less velarized than the Catalan /l/ of L1-speakers), no additional social stratification (such as gender or style effects) is in theory necessary to avoid the social ridicule afforded to L1-like Catalan /l/. However, in exhibiting the aforementioned gender and stylistic stratification of Catalan /l/, L2-speakers effectively demonstrate their native-like acquisition of the sociolinguistic norms that constrain Catalan laterals in their bilingual speech community. Lateral velarization, indeed in both languages, is gradiently negotiated by L2-speakers so as to avoid the negative social stigma associated with very strongly velarized /l/, while still maintaining enough velarization so as to index positive affiliations of in-group, bilingual identity that differentiate the laterals of Catalonia from those of monolingual Spanish regions like Madrid (Davidson 2019, 2020, 2022). Therefore, far from "unsuccessful" acquisition, L2-Catalan speakers' production of /l/ illustrates the skillful capacity to gradiently navigate sociophonetic variation as aligned with L1-speakers' attributions of negative social stigma, on the one hand, and a positive, shared bilingual identity, on the other.

Ultimately, the notion of "successful" second language acquisition is irrevocably grounded in comparisons with L1- or monolingual speaker norms. In the same vein that the notion of a bilingual as two monolinguals in one (cf. Grosjean 1989) has been dispelled on account of the understanding that one's language(s) and grammar(s) are a reflection of one's particular linguistic and social environments or experiences, the expectation that "successful" L2 acquisition necessarily involves identical, L1-like production is inherently problematic. However, by studying the variation in speech production as constrained by social and linguistic factors, in addition to feature-by-feature comparisons between L1- and L2-speakers, one can investigate a greater number of metrics by which to evaluate second language acquisition, and accordingly better account for the inevitable differences between unique profiles of speaker.

Conclusion

The present study sought to examine the acquisition of Catalan /l/ as a sociolinguistic stereotype (cf. Labov 2001) in a unique community of widespread Catalan-Spanish bilingualism. Acoustic measurements of Catalan lateral production were compared across L1- and L2-Catalan speakers, complemented by parallel assessments of Spanish /l/ production. Though Catalan laterals were found to be produced with greater velarization degrees than Spanish laterals by all speakers, evidencing the successful acquisition of a uniquely Catalan lateral category, L2-Catalan laterals did not reach L1-like degrees of velarization. The assessment of "successful" Catalan lateral acquisition was additionally addressed through comparisons of linguistic and social factor constraints, which were found to operate uniformly amongst both L1- and L2-speakers, motivating an evaluation of native-like adherence to the social and linguistic constraints of Catalan /l/.

Given the tendency for second language acquisition research to traditionally focus on non-sociolinguistically salient variables, perhaps licensing the absence of investigation of sociolinguistic variation therein, the continued study of L2-acquisition of sociolinguistic variables is of course well-warranted. Additionally, given that the present study's results pertain to a community of intense language contact coupled with early bilingualism, it would be beneficial to compare the findings reported here with those for communities in which the L2 is considerably more socially marginalized than is Catalan in Catalonia, with the expectation that more divergent linguistic and social experiences between L1- and L2-speakers be reflected in more divergent linguistic outcomes.

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Subject index

Variationist work in Second Language Acquisition (SLA) began in the mid 1970s and steadily progressed during the 1980s. Much of it was reviewed along with newer approaches in Bayley and Preston 1996 (B&P), heavily devoted to VARBRUL analyses that exposed the variability in developing interlanguages and placed variationist work within the canon of SLA. This new volume features three developing trends. First, it widens the scope of L1s of learners (from 6 in B&P to 8) and L2 targets (2 in B&P to 7) and in each case has brought more careful demographic and variable considerations to bear, including heritage languages and study abroad. Second, it modernizes statistics by moving from VARBRUL to the more widely used log-odds probabilities that allow more detailed consideration of variables and their influences. Finally, it deepens consideration of variable sociolinguistic meaning in learner behaviors, a dominating feature of 3rd Wave variationist work.

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