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Chapter 13

On (Not) Acquiring a Sociolinguistic Stereotype:

A Variationist Account of L2-Catalan Lateral Production by L1-Spanish Bilinguals

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Abstract

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), I presently 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 acoustically non-native-like speech variants.

Keywords: Sociophonetic variation; Spanish-Catalan contact; Second language acquisition; Lateral velarization; Sociolinguistic stereotype

Introduction

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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 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

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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 and Espinosa 2005, 3; Recasens and 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 and 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]; "[velarized l] is completely foreign to the Spanish language" [Schwegler, Kempff, and Ameal-Guerra 2010: 299, my translation]).[1]

Despite these prescriptive calls, of course, non-standard, L2-productions of /l/ by Catalan-Spanish bilinguals are a staple feature of both languages acquired as a second language.

[1] Hualde (2005: 179) notes that Catalonia is the sole exception to Spanish /l/ being exclusively light, with Catalan-dominant speakers sometimes transferring Catalan's dark lateral into Spanish. Beyond the notable absence of Spanish in contact with English as another community with frequent lateral velarization (Díaz-Campos 2004; Solon 2017), this description suggests that dark laterals are effectively foreign to Spanish, occurring as an aberrant and non-systematic product of the acquisition of Spanish as an L2.

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 L1-Catalan speakers (Davidson 2014, 234; see also Davidson 2020, 411; Pieras 1999, 236). Crucially, however, velarization in both languages (i.e., both in Catalan as the standard or L1-variant as well as in Spanish as the 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, 330; 2015, 143, 148) similarly finds that weaker 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, and 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, and Tsukada

[2] As all speakers were of the same 18-30 years old age group, age stratifications went unexplored.

2006; Piske, MacKay, and 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 and 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 exclusively 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, and 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 and 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 and 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****òg**ica* [Cat.] / ***l****ógica* [Span.] 'logic'; ***l****àmina* [Cat.] / ***l****ámina* [Span.] 'sheet'; ***l****ent* [Cat.] / ***l****ento* [Span.] 'slow'; ***l****ímit* [Cat.] / ***l****ímite* [Span.] 'limit') and coda (e.g., *anima****l*** [Cat.] / *anima****l*** [Span.] 'animal'; *comta****l*** [Cat.] / *conda****l*** [Span.] 'county'; *corone****l*** [Cat.] / *corone****l*** [Span.] 'coronel'; *perfi****l*** [Cat.] / *perfi****l*** [Span.] 'profile'). With respect to coarticulation, two levels are established: adjacent front vowel (e.g., ***l****íquid* [Cat.] / ***l****íquido* 'liquid'; ***l****itre* [Cat.] / ***l****itro* [Span.] 'liter'; *mi****l*** [Cat.] / *mi****l*** [Span.] 'thousand'; *hote****l*** [Cat.] / *hote****l*** [Span.] 'hotel') and adjacent non-front vowel (e.g., ***l****aberint* [Cat.] / ***l****aberinto* [Span.] 'labyrinth'; ***l****upa* [Cat.] / ***l****upa* [Span.] 'lens'; *so****l*** [Cat.] / *so****l*** [Span.] 'sun'; *gandu****l*** [Cat.] / *gandú****l*** [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; 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.

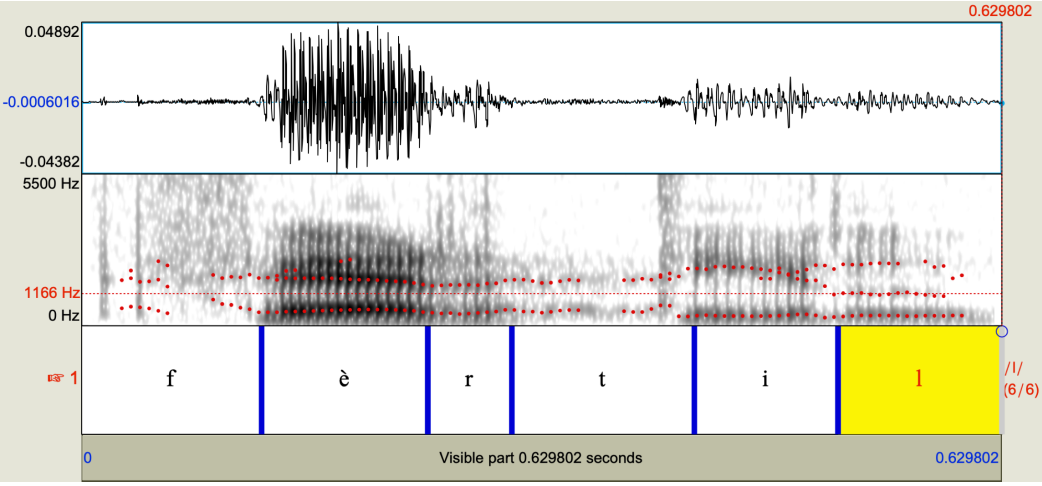

Figure 1. L1-Catalan male production of Catalan *fèrtil* 'fertile' (F2 = 1166hz).

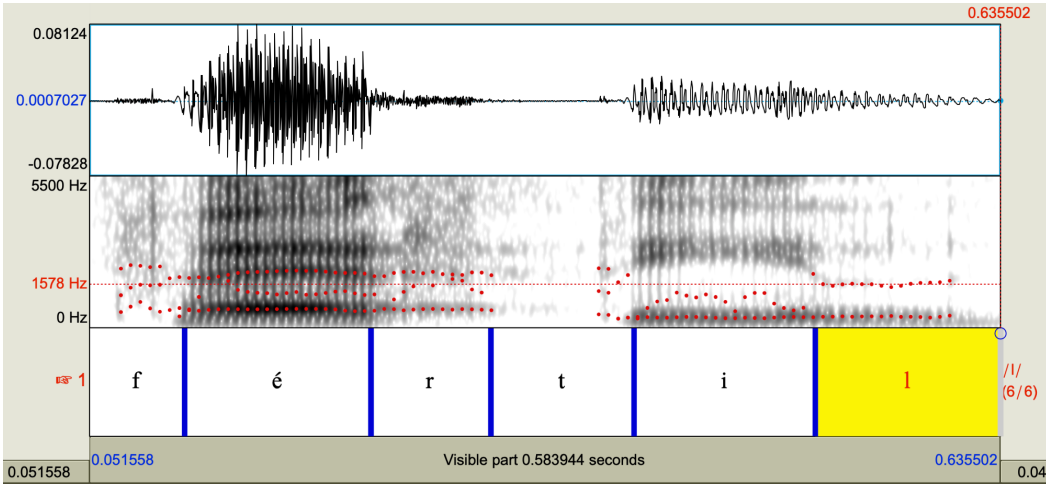

Figure 2. L1-Spanish female production of Spanish *fértil* 'fertile' (F2 = 1578hz).

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 and 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 indiscriminately.

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)*	.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	.008
Careful	.1362	4.985	<.0001
Spanish: Onset	.1958	5.917	<.0001

*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.

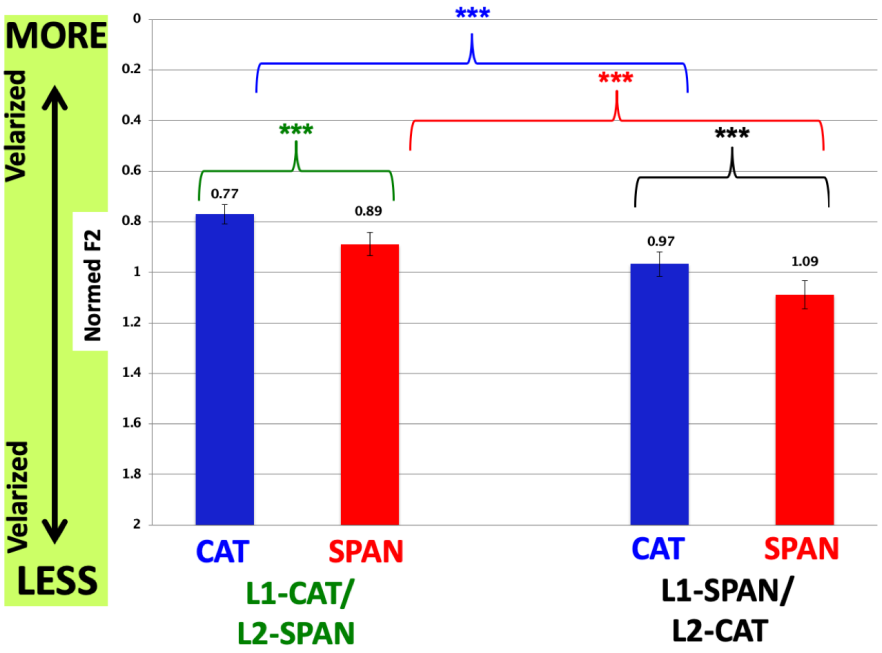

Figure 3. Effect of native language group on Catalan and Spanish lateral production (*** = significant at 0.001 level)

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 and 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, and Buckingham 2007; Recasens and Farnetani 1990; Recasens, Fontdevila, and 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.

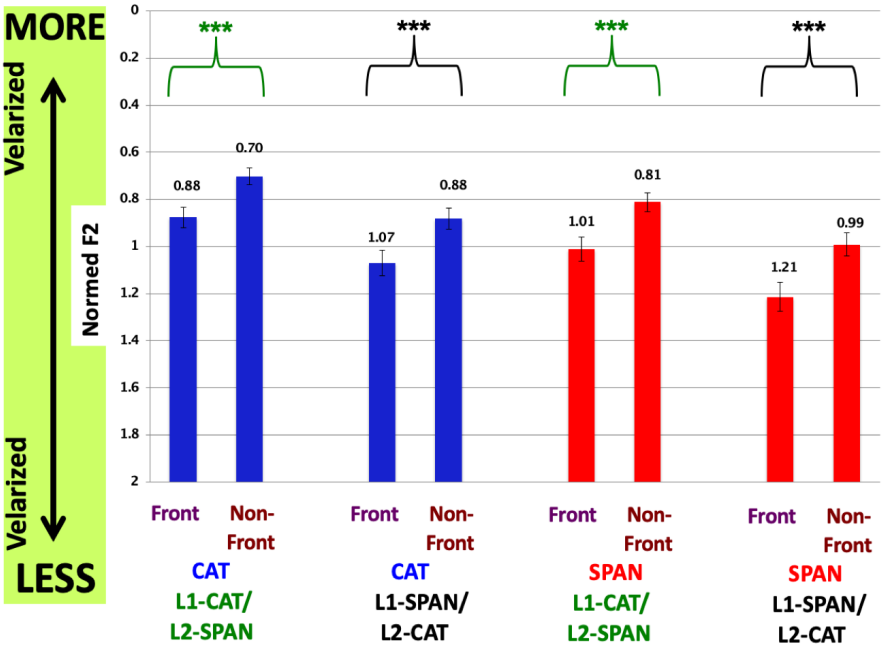

Figure 4. Effect of adjacent vowel coarticulation on Catalan and Spanish laterals

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

[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.

laterals that are sufficiently non-velarized (cf. Davidson 2020; Recasens 2012; Recasens and 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.

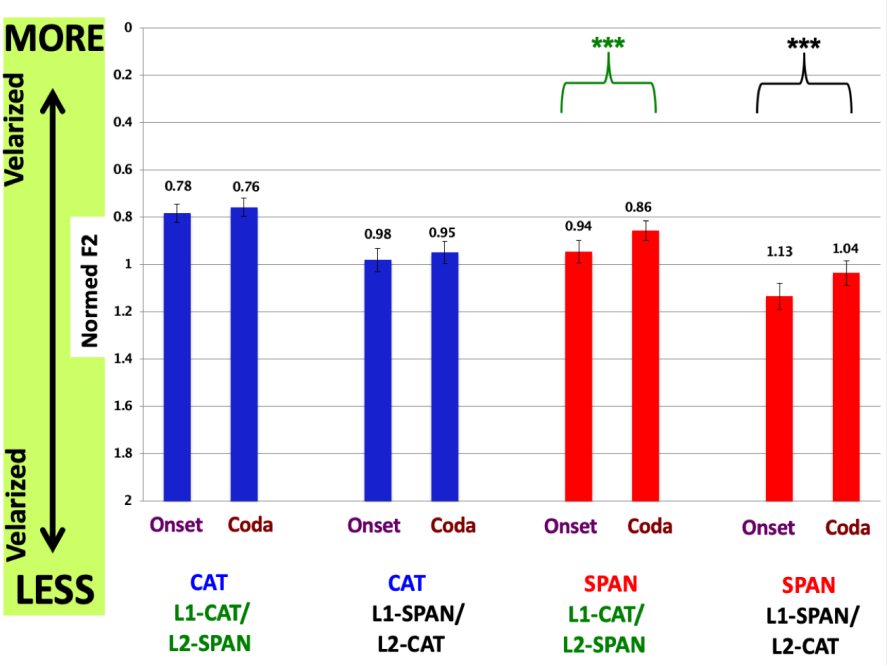

Figure 5. Effect of syllable position on Catalan and Spanish laterals

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 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.

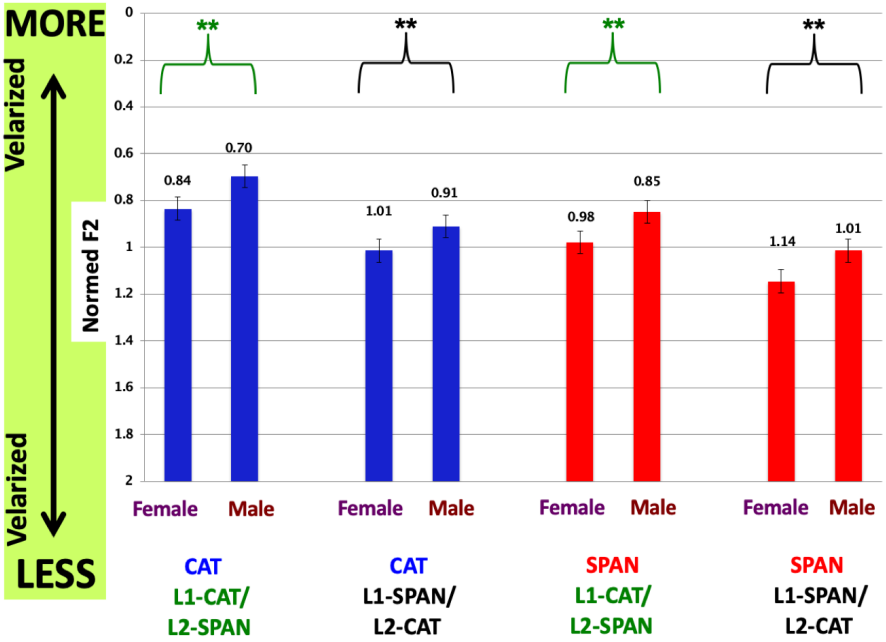

Figure 6. Effect of gender on Catalan and Spanish laterals (** = significant at 0.01 level).

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.

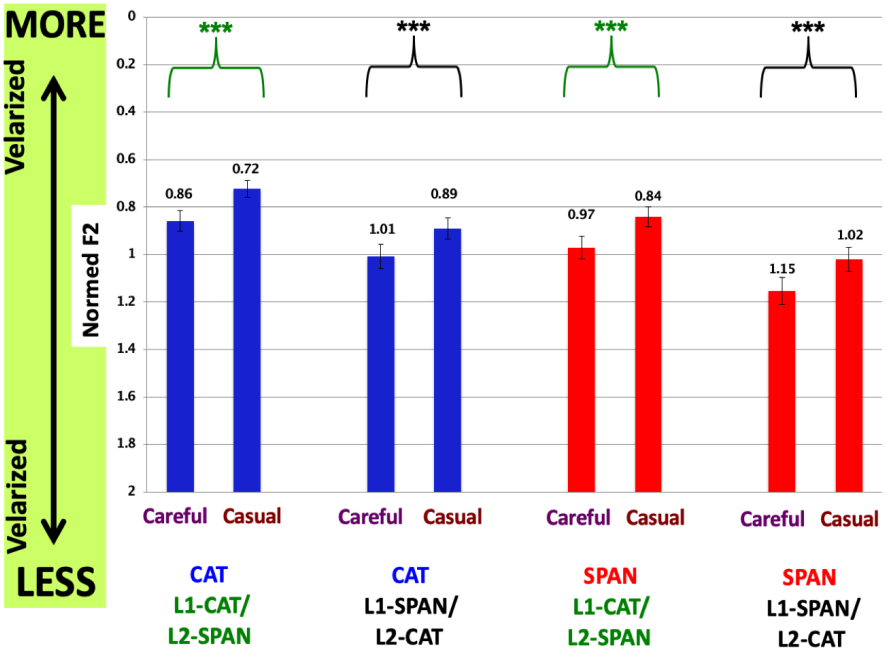

Figure 7. Effect of style on Catalan and Spanish laterals

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 is 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 could 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 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). 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 and untenable. 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 (see also chapters 3, 8, and 10 of this volume for additional examples of linguistic outcomes being mediated by specific social and ideological contexts).

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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