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Article

Asymmetry and Directionality in Catalan–Spanish Contact: Intervocalic Fricatives in Barcelona and Valencia

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Abstract: Multilingual communities often exhibit asymmetry in directionality by which the majority language exerts greater influence on the minority language. In the case of Spanish in contact with Catalan, the asymmetry of directionality, favoring stronger influence of Spanish as a majority language over Catalan, is complicated by the unique sociolinguistic statuses afforded to different varieties of Catalan. In order to empirically substantiate the social underpinnings of directionality in language contact settings, the present study examines the variable voicing and devoicing of intervocalic alveolar fricatives in Spanish, Barcelonan Catalan, and Valencian Catalan as processes that are historically endogenous and equally linguistically motivated in both languages. Intervocalic fricatives in both languages were elicited using a phrase-list reading task, alongside sociolinguistic interviews for attitudinal data, administered to 96 Catalan–Spanish bilinguals stratified by gender, age, and language dominance in Barcelona and Valencia, Spain. Patterns of sociolinguistic stratification consistent with community-level changes in progress favoring either Catalan-like voicing or Spanish-like devoicing varied by community, with a stronger influence of Catalan on Spanish in Barcelona and Spanish on Catalan in Valencia. These asymmetries, corroborated by attitudinal differences afforded to Catalan and Spanish in Barcelona and Valencia, ultimately reinforce the role of social factors in language contact outcomes.

Keywords: multilingualism; agentivity; directionality; fricative (de)voicing; Catalan–Spanish contact; sociophonetics

1. Introduction

Observations of asymmetry and directionality with regard to language contact effects have long been addressed in linguistics research, applicable both at the level of the individual multilingual speaker, as well as at the broader level of the multilingual speech community. With regard to individual-level effects, crosslinguistic influence between a speaker's first language (henceforth L1) and second language (henceforth L2) is characterized by unequal (i.e., asymmetric) effects by which the L1 more strongly influences the L2 (i.e., directionality of L1 to L2) (Winford 2005, p. 373). Indeed, various phonological models of production and perception of L2 speech (cf. Best 1995; Best and Tyler 2007; Escudero 2005; Flege 1995) posit that L1 categories directly mediate the variable acquisition of L2 categories, which together attempt to account for the persistence of an L2 accent despite relatively early and even prolonged exposure and usage of the L2 (among many, Bosch et al. 2000; Pallier et al. 1997; Flege 2002; Flege et al. 1997, 1995, 2006; Flege and Munro 1994; Guion et al. 2000). At the level of the multilingual speech community, asymmetry and directionality have been characterized along a probabilistic hierarchy of contact influence whereby a majority language is likely to exert greater linguistic influence on a minority language as resultant from an array of typical social differences

across L1-speaker groups and the languages themselves, such as population size (e.g., greater number of L1 speakers of the majority language), sociopolitical status (e.g., official status and linguistic capital afforded to majority language), sociocultural status (e.g., L1 speakers of the majority language as socioeconomically and culturally dominant), and language attitudes (e.g., more positive associations of power and linguistic vitality afforded to the majority language) (Thomason 2001, 2010; Thomason and Kaufman 1988).

Though the empirical investigation of crosslinguistic or contact influence has traditionally centered on cases of L1 to L2 directionality (or source language agentivity (Van Coetsem 2000)) or majority language to minority language directionality at the levels of the individual speaker and greater speech community, respectively, evidence of L2 to L1 directionality (or recipient language agentivity (Van Coetsem 2000)) and minority language to majority language directionality is robust. At the level of the individual speaker, for example, Flege (1987) found that French–English and English–French bilinguals developed a merged L1–L2 category with respect to the voiced onset time (henceforth VOT) of /t/, resulting, respectively, in a partially English-like L1-French /t/ and partially French-like L1-English /t/. Parallel cases regarding the VOT of English and Italian voiced stops by Italian–English and English–Italian bilinguals and the VOT of English stops (in addition to the first and second formant frequencies of select vowels) by L1-English L2-Korean bilinguals are respectively reported in MacKay et al. (2001) and Chang (2012), ultimately argued to evidence systematic phonetic interactions between the L1 and L2 categories in the shared phonetic sound space (Flege 2002). At the level of the speech community, L2 influence on an L1 is most predominantly documented with respect to lexical borrowing or the innovation of loanwords (Winford 2010). Cases of L2 influence in non-lexical domains, or structural borrowing (see, for example, Sanchez (2008)), have been posited to be either less common (Thomason and Kaufman 1988), highly constrained by the languages' grammars (Silva-Corvalán 1986), or perhaps altogether unattested (Poplack and Levey 2010).[1] Accordingly, to better address these asymmetries with regard to bidirectional (i.e., L1 to L2 and L2 to L1) contact effects, the present study explores a unique case of sociophonetic variation across bilingual speakers of Catalan and Spanish hailing from communities of distinct sociolinguistic status and language attitudes, operationalized with respect to measures of linguistic vitality and (c)overt associations of power and solidarity. This, alongside the selection of a phonetic variable equally motivated to appear in either language, permits an innovative analysis of the social underpinnings of community-level linguistic variation and change in multilingual communities.

2. Catalan and Spanish in Barcelona and Valencia

The sociopolitical histories between Spanish and Catalan involve centuries-old contact between the two languages, ultimately culminating in an 18th century shift from the previous state of societal monolingualism in Catalan (as a national language) to the declaration of Spanish as the sole language of the state, and indeed the compulsory acquisition of Spanish through public education in the 19th century (Vallverdú 1984, pp. 19–21; Vila-Pujol 2007, pp. 62–63). The rise of Spanish hegemony over Catalan reached a peak during Spain's fascist dictatorship under General Francisco Franco from 1939 until his death in 1975, during which legislation was actively passed to eliminate or otherwise Castilianize all non-Spanish institutions, as well as outlaw Catalan and other non-Spanish languages in the public sphere (Newman et al. 2008, p. 307; Turell Julià 2000, p. 47; Vallverdú 1984, p. 24; Vila-Pujol 2007, p. 64). The restoration of Catalan as a co-official language in the Autonomous Communities of Valencia, Catalonia, and the Balearic Islands came as a product of Spain's 1978 Democratic Constitution, shortly after which (in 1983) the Law of Linguistic Normalization and the Use and Teaching of Valencian

[1] The polemic status of structural borrowing is rooted in competing viewpoints regarding language-internal (or endogenous) and language-external (or contact-induced) factors, which fall outside the scope of the present paper. See Thomason (2008) and references therein for a fuller discussion of these arguments.

Act (respectively for Catalonia and Valencia) restored Catalan as a vehicle for public education (Huguet 2006, p. 150; Newman et al. 2008, pp. 306–7; Vann 1999, pp. 317–18).

Despite the restoration of Catalan as a language of (co-)official status, the sociolinguistic trajectories of Catalan in Catalonia and Valencia have shown considerable degrees of divergence. In Catalonia, thanks in part to ample efforts on behalf of the local government and media to consistently promote Catalan's strong expansion throughout the public and legislative sectors (Pradilla 2001, pp. 63–65), Catalan is readily characterized as the language of local political and economic power, with Spanish being associated with the lower socioeconomic class and immigrant communities (Siguan 1988, p. 454; Sinner 2002, p. 161). A longitudinal series of language attitude research featuring the matched guise technique (Woolard 1984, 1989, 2009, 2011; Woolard and Gahng 1990; Newman et al. 2008) since the 1980s has shown that positive associations of the Catalan language, and even a Catalanized accent in Spanish, commonly index a bilingual, expressly Catalonian identity, tied overtly and covertly to attributes of solidarity in the community (Davidson 2019). Barcelona (city) 2011 census data show that self-reported competence in Catalan for understanding, reading, speaking, and writing are respectively 95%, 79%, 72%, and 53% (Institut d'Estadística de Catalunya 2014), which have steadily increased since the 1980s and reflect the considerable degree of linguistic vitality of this minority language (Pradilla 2001, p. 62).

The status of Valencian Catalan, on the other hand, contrasts rather directly with that of Barcelonan Catalan. Since 1995, efforts to restore the administrative and ideological status of Catalan to match (or even surpass) that of Spanish in Valencia have been actively curtailed by a series of conservative political party leaders who have aligned themselves with a group of pro-Spanish, Valencian elites that gained considerable power and wealth during the Franco regime (Casesnoves Ferrer 2010, pp. 479–80; Casesnoves Ferrer and Sankoff 2004, p. 2; Pradilla 2001, pp. 68–69). A highly successful propaganda campaign was launched against (Catalonian) Catalan, based off the fear that the growing Catalonian independence movement would subsume the Valencian state. Beyond disparaging ties to Catalonia and its speakers, this campaign additionally positioned Valencian as a completely unrelated language from (Catalonian) Catalan, which served to fuel a pro-Valencian (and specifically anti-Catalan) movement that was ideologically aligned with Spanish and the nation-state as symbols of anti-Catalan-ness, rather than Valencian (Casesnoves Ferrer 2010, p. 480; Pradilla 2001, pp. 69–70).[2] Under this campaign, Valencian has rarely been used in administrative contexts, and the once-thriving *Canal 9* Valencian TV station was shut down in 2012 (Pradilla 2001, p. 69). Matched guise research in Valencia has found that whereas positive, local affiliations of solidarity were originally (in 1998) afforded to Valencian, in 2008, these were newly afforded to Spanish in the capital city of Valencia (Casesnoves Ferrer 2010, p. 486). The 2011 census data for the aforementioned self-reported competences for Valencian Catalan in understanding, reading, speaking, and writing in the city of Valencia are respectively 89%, 61%, 48%, and 61% (Generalitat Valenciana 2011), which, when compared to the corresponding aforementioned census data for Barcelona, notably lag behind the most in terms of speaking competence.

Accordingly, Barcelona and Valencia present two unique sociolinguistic and sociopolitical realities for the same language contact pairing between Catalan as a minority language and Spanish as a majority language. While linguistic differences between these contact settings are not unilaterally determined from their distinct social contexts, their comparison nonetheless facilitates an empirical assessment of the contributions of these social differences to linguistic outcomes as concerns the notions of directionality and asymmetry of contact influence.

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[2] Anecdotally, the visual landscapes of modern Valencia and Barcelona are quite telling. From my travels in 2018, the hanging of a *senyera* (the Catalan flag of nationhood and independence) off one's balcony has become an extremely prevalent practice in Barcelona. In Valencia, the analogous Valencian flag can only rarely be found, hidden amidst a sea of (national) Spanish flags adorning the balconies of the city's thoroughfares.

3. Alveolar Fricatives in Spanish and Catalan

North-Central Peninsular Spanish features an apical-alveolar voiceless /s/, articulated with a gesture of the tongue-tip toward the alveolar ridge (Hualde 2014, p. 147; Martínez Celdrán and Planas 2007, p. 110; Quilis 1981, pp. 234–35). In monolingual Spanish varieties that do not exhibit aspiration or deletion of /s/ in pre-consonantal positions, such as North-Central Peninsular Spanish (e.g., Barcelonan Spanish and Valencian Spanish), two allophones of /s/, namely voiceless [s] and voiced [z], are prescriptively found in complementary distribution via regressive assimilation of voicing to the following consonantal segment. Before voiced (semi)consonants, /s/ is realized as [z] (e.g., *rasgo* [ráz.ɣo] 'feature'; *mis hierbas* [miz.ʝéɾ.βas] 'my herbs'), whereas in all other contexts, /s/ is produced as [s] (e.g., *rasco* [ráz.ko] 'I scratch'; *casa* [ká.sa] 'house'; *monos* [mó.nos] 'monkeys') (Hualde 2014, pp. 154–55; Morgan 2010, p. 248). Accordingly, monolingual Spanish productions of [z] outside of the context of a following voiced (semi)consonant (e.g., the intervocalic context in particular) are prescriptively disallowed:

> "*La s sonora aparece únicamente, en nuestra lengua, en posición final de sílaba, precediendo inmediatamente a otra consonante sonora; en cualquier otra posición su presencia es anormal y esporádica*" [The voiced /s/ in our language appears solely in syllable-final position immediately preceding another voiced consonant; in any other position, its presence is abnormal and sporadic]. (Navarro Tomás 1918, p. 83)

In contrast to Spanish, Catalan features two apical-alveolar fricative phonemes, voiceless /s/ and voiced /z/. This phonemic voicing contrast is active word-initially and word-medially, producing minimal pairs such as *zel* 'zeal' [zɛ́ɬ] / *cel* 'sky' [sɛ́ɬ] and *pesar* 'to weigh' [pə.zá] / *passar* 'to pass' [pə.sá]. Critically, this phonemic voicing contrast is neutralized word-finally, resulting in [s] or [z] depending on the voicing feature of the following segment (that is, the voicing neutralization of word-final Catalan alveolar fricatives (and, in fact, all Catalan sibilants) resolves by means of anticipatory assimilation). When followed by a voiced segment, such as a vowel, the word-final fricative is systematically voiced (e.g., *gos* [s] 'dog'; *gos estrany* [z] 'strange dog') (Hualde 1992, pp. 371–72, 393–94; Hualde and Prieto 2014, p. 109; Recasens 2014, pp. 239–40; Wheeler 2005, pp. 147–49, 162).

Accordingly, voiced intervocalic fricatives in Catalan are resultant from word-initial /z/, word-medial /z/, and as a product of voicing assimilation of word-final prevocalic /s/ and /z/ (or archiphoneme /S/)). This accordingly sets up an interesting pair of opportunities for bidirectional contact influence contingent on syllable position. With respect to syllable-initial contexts, productions of Spanish *pesar* 'to weigh' or *casa* 'house' as [pe.záɾ] and [ká.za] on the part of an L1-Catalan speaker could evidence the transfer of a Catalan phoneme (/z/) into Spanish, whereas productions of Catalan *pesar* 'to weigh' or *casa* 'house' as [pə.sá] and [ká.sə] on the part of an L1-Spanish speaker could evidence the substitution of Spanish /s/ for Catalan /z/, potentially eliminating the phonemic voicing contrast in Catalan. With respect to word-final contexts, the production of Spanish *las albas* 'the dawns' as [la.zál.βas] by an L1-Catalan speaker or the production of Catalan *les albes* 'the dawns' as [lə.sál.βəs] by an L1-Spanish speaker would constitute a case of largely phonetic, rather than phonemic, transfer (i.e., the respective transfer of a Catalan or Spanish phonotactic voicing rule, which would not create or eliminate any phonological contrasts).[3]

Notably, though the phonological voicing contrast between Catalan /s/ and /z/ is a feature of the prescriptive, standardized academy norms for both Barcelonan Catalan (Julià i Muné 2008, pp. 66–67) and Valencian Catalan (Real Acadèmia de Cultura Valenciana 2000; Acadèmia Valenciana de la Llengua

[3] Though Catalan /z/ is sometimes framed as a novel L2 category for L1-Spanish learners to acquire (Carrera-Sabaté et al. 2016, p. 48), the existence of Spanish [z] before voiced consonants suggests that, rather than a case of foreign category acquisition, the present study instead entails the acquisition of novel phonotactic structure, wherein [z] is to appear in non-Spanish contexts (e.g., syllable-initially (contrastive with /s/) and prevocalic word-finally (non-contrastive with /s/)).

2006, p. 29), select oral vernaculars of Barcelonan and Valencian Catalan have been characterized as having lost the voicing contrast in favor of exclusively voiceless intervocalic alveolar sibilants. In a sociophonetic investigation of *xava* Catalan, a Barcelonan sociolect originally associated with the L1-Spanish-speaking working class, Ballart (2013, p. 145) finds that /z/ is realized as [s] with a frequency of 15% by L1-Catalan speakers, in comparison to the 58% rate of [s] production exhibited by L1-Spanish speakers. For Valencian Catalan, the regional vernacular known as *apitxat* is similarly characterized as lacking voiced /z/ (Prieto 2004, p. 216; Moll 2006, p. 109), deemed *no recomanable* ("not recommendable") by the Valencian Academy of Language (Acadèmia Valenciana de la Llengua 2006, p. 29). Ultimately, since prescriptive academy norms do not accurately reflect real language use, the existence of *xava* and *apitxat* do not hinder the present investigation concerning intervocalic fricative production in Barcelona and Valencia, and instead are indicative of the pervasive reality of sociolinguistic variation at even the phonological level, which I aim to expressly link to select social and linguistic factors. Indeed, it is unlikely that *apitxat* Catalan exhibits a truly categorical absence of /z/ (despite dialectological entries that insist on the absence of /z/ in this variety), and instead is more likely, as attested by Ballart (2013) for *xava* Catalan, to exhibit variability that is socially and linguistically conditioned.

The selection of intervocalic fricatives in Catalan and Spanish for the present study is motivated by the variable voicing and devoicing of Romance fricatives as "natural" and "unremarkable" processes both historically and synchronically (Hualde and Prieto 2014, p. 111). The voicing of intervocalic /s/ to [z] can be characterized as a product of lenition, modeled within a framework of gestural phonology (cf. Browman and Goldstein 1991) as a reorganizing or even undershooting of glottal gestures (e.g., vocal fold abduction) necessary to restrict voicing for [s] while permitting it for the adjacent vowels. As for the devoicing of /z/, the demands for maintenance of a turbulent airstream for sufficient strident frication and the maintenance of voicing are in aerodynamic opposition, which can be resolved with the loss of voicing (Hualde and Prieto 2014, p. 111; see also Ohala 1983, pp. 201–2). The voicing and devoicing of intervocalic sibilants in Romance (e.g., Latin /kása/ > Old Spanish /káza/ > Modern Spanish /kása/ (Penny 2002, pp. 98–103)) accordingly constitute variable processes that are each equally endogenously motivated in Catalan and Spanish, which facilitates the assessment of potential differences in the directionality and asymmetry of contact influence in the present case of Catalan–Spanish contact as all the more reflective of non-linguistic (i.e., social) factors.

4. Research Methodology

The subject population for this study consists of 96 Catalan–Spanish bilinguals, stratified equally by each of gender (male vs. female), age (18–30 vs. 45–60), language profile (L1-Catalan vs. L1-Spanish), and community (Barcelona vs. Valencia). This research was approved by the UC-Berkeley IRB, under protocol # 2016-06-8891. 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[4], is a social constraint that is highly relevant for investigating L1 and L2 differences in the use of an overtly proscribed variant (as is the case for each of Catalan /z/ and Spanish /s/). Along the same vein, age is included in order to assess potential change in progress via generational differences via the apparent time construct (Bailey 2004; Ballart et al. 1991; Chambers 2004). Notably, when applying this methodological construct, patterns of social stratification (especially age and gender) observed in synchronic data are interpreted to evidence possible diachronic trends (i.e., eventual language change which, in the present, is characterized as a potential change in progress), with the understanding that

[4] Changes from above and changes from below, following Labov (2001, pp. 272–74, 279), respectively refer to the community-wide, gradual adoption of a linguistic variant that either is or is not overtly proscribed. Accordingly, the adoption of Spanish [s] and/or Catalan [z] would constitute a change from above, whereas the adoption of Spanish [z] and/or Catalan [s] would constitute a change from below.

"not all variability and heterogeneity in language structure involves change; but all change involves variability and heterogeneity" (Weinreich et al. 1968, p. 188).

With regard to language profile, 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, since, as was previously discussed, functional or practical bilingualism in both languages is widespread in both communities. Table 1 displays the general distribution of the 96 speakers recruited for this study.

Table 1. Subject population.

Language Profile	Speaker Counts (6 Older Male; 6 Older Female; 6 Younger Male; 6 Younger Female)	Home/Native/Parent Native Language	Weekly Use of Catalan (with Friends, Family, School/Work, Shopping)
L1-Catalan/L2-Spanish (Barcelona)	24	Catalan	85% (SD = 7.8)
L1-Spanish/L2-Catalan (Barcelona)	24	Spanish	25% (SD = 9.9)
L1-Catalan/L2-Spanish (Valencia)	24	Catalan	44% (SD = 9.5)
L1-Spanish/L2-Catalan (Valencia)	24	Spanish	8% (SD = 5.2)

Five test instruments were administered to each of the 96 participants. The first test instrument is a sociodemographic questionnaire containing 22 questions used to screen participants according to the social criteria outlined in Table 1.

The second and third test instruments are a pair of recorded phrase-list readings in Catalan and Spanish that elicit self-monitored speech. In each language, subjects were asked to read aloud, using their best Catalan or Spanish pronunciation, a series of 60 target words (all cognates across the languages) with intervocalic Spanish /s/, intervocalic Catalan /z/, and prevocalic word-final Catalan /S/. Target items were stratified according to two linguistic factors across the languages, namely word position (word-medial vs. prevocalic word-final) and syllable stress (unstressed vs. stressed). Word position was included to assess phonotactic variability produced in each language, since the word-medial context in Catalan is the site of phonemic voicing contrast, as opposed to the prevocalic word-final context in which voicing is the result of phonemic neutralization and anticipatory assimilation. The motivation for the inclusion of syllable stress is grounded in the concept of local hyper-articulation for stressed syllables, or the notion that the speaker may reduce otherwise expected effects of gestural overlap with a neighboring segment across stressed syllables, since these kinds of syllables have longer durations and allow the speaker to better time-articulatory gestures independently of one another (Browman and Goldstein 1991; Hualde 2014, p. 251). More concretely, this would suggest that fricative tokens in a syllable with nuclear stress would be the most resistant to voicing as an effect of the greater opportunity (across stressed syllables) for the successful coordination of vocal fold abduction for voiceless [s] relative to the vocal fold adduction gesture of the adjacent nuclear vowel. Token stratification according to word position and stress yielded four cells (word-medial, stressed: *hombre casado/home casat* 'married man'; word-medial, unstressed: *cosa gigante/cosa gigant* 'huge thing'; prevocalic word-final, stressed: *compras agua* / *compres aigua* 'you buy water'; prevocalic word-final, unstressed: *las amigas/les amigues* 'the friends') of 15 tokens each (per language), which were mixed amongst a set of 60 distractor tokens in each language that did not contain intervocalic fricatives.

The fourth and fifth test instruments consist of a pair of 20-min sociolinguistic interviews in each of Catalan and Spanish, in which participants were asked to discuss their opinions on questions of language identity, the status of Spanish and Catalan in their communities, and issues of linguistic vitality

for each language. The interviews accordingly elicited attitudinal data to corroborate sociolinguistic and sociopolitical differences between Catalan varieties in the two communities of study.

Each participant was recorded individually during one experimental session lasting approximately one hour. In order to limit the effects of language mode (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 min 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 empty classroom at the *Universitat de Barcelona* or *Universitat Pompeu Fabra*, or in a private office at the *Universitat de València*.

Regarding the acoustic analysis of intervocalic fricative tokens, in order to calculate voicing durations for each fricative segment, fricative boundary segmentation was performed manually in Praat by marking left and right boundaries for each segment by using both the waveform and spectrogram to find the zero-intercept in the waveform closest to the first and last signs of aperiodic noise (File-Muriel and Brown 2011, pp. 227–28; Rohena-Madrazo 2015, pp. 298–99). Once intervocalic fricative segments were segmented, exact voicing durations were measured as proportions of each fricative segment that exhibited each of a fundamental frequency (that is, a pitch track), a voice bar at the bottom of the spectrogram, and glottal pulses, with the viewing window exactly twice the size of and centered on the fricative segment (Campos-Astorkiza 2014, p. 21; Gradoville 2011; Hualde 2014, pp. 48–53; Rohena-Madrazo 2015, pp. 298–99; Schmidt and Willis 2011, p. 6; Torreira and Ernestus 2012).[5] Example spectrograms illustrating less voiced and more voiced realizations of intervocalic fricative tokens in Catalan and Spanish appear as Figures 1–4.

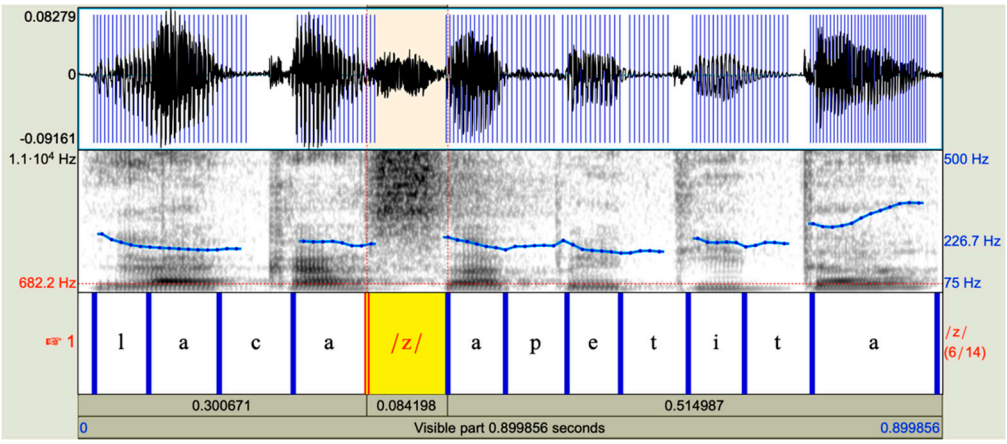


Figure 1. Younger L1-Catalan female rendition of *la ca/z/a petita* ('the little house') in Valencian Catalan (~9% voiced).

[5] The manual calculations of segments' proportions of voicing were verified with Praat's voice report automated algorithm, though gross discrepancies between the manual calculation and voicing report were resolved in favor of manual calculation, following Gradoville (2011, pp. 69–71).

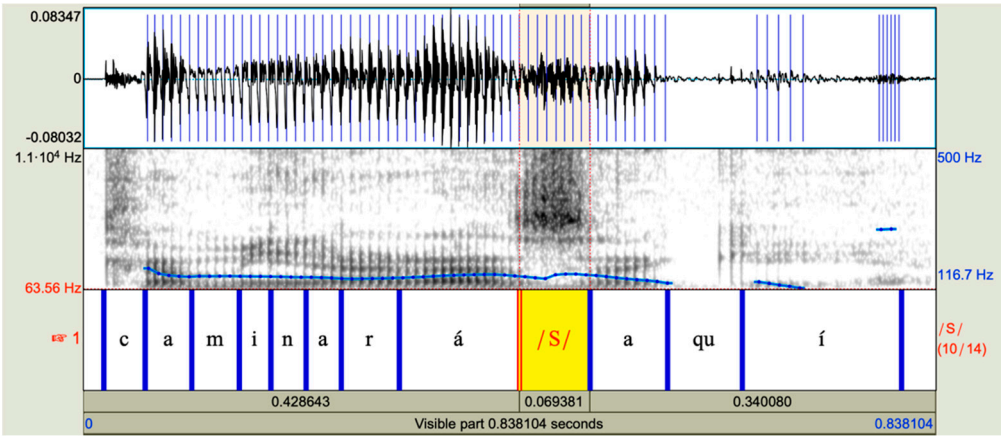


Figure 2. Younger L1-Spanish male rendition of *caminarà/S/aquí* ('you will walk here') in Barcelonan Catalan (~100% voiced).

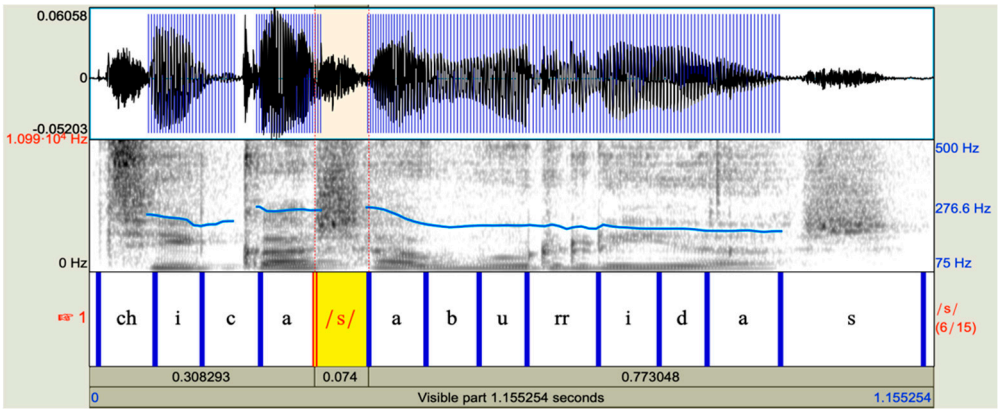


Figure 3. Younger L1-Spanish female rendition of *chicas aburridas* ('bored girls') in Valencian Spanish (~6% voiced).

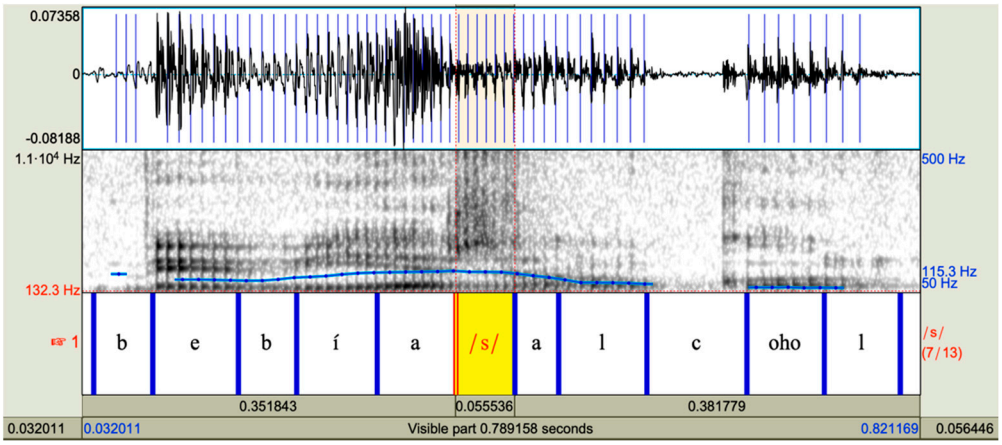


Figure 4. Older L1-Catalan male rendition of *bebía/s/alcohol* ('you drank alcohol') in Barcelonan Spanish (~100% voiced).

The phrase-list reading tasks in Catalan and Spanish each elicited 5760 intervocalic fricative tokens, yielded 11,520 tokens in total. The relatively few tokens with notable speaker disfluencies (principally pauses between words for prevocalic word-final fricatives) were discarded from analysis, leaving 5654 Catalan tokens and 5635 Spanish tokens. A kernel density plot of all fricatives' voicing proportions per language appears in Figure 5, which evidences a bimodal distribution of voicing proportions.

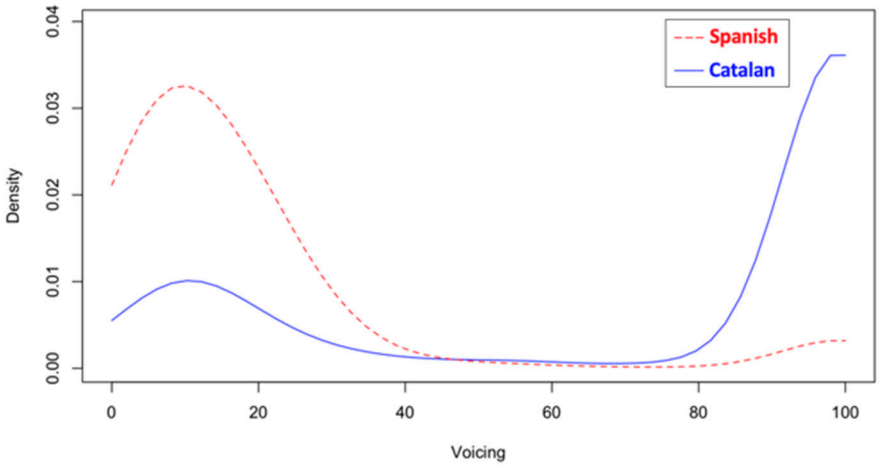


Figure 5. Kernel density plot of Catalan and Spanish intervocalic fricative voicing proportions.

A test of bimodality was conducted in R (R Core Team 2020) using the 'modes' package, which calculates a bimodality coefficient for each language's distribution of voicing proportions ranging from 0 (completely unimodal) to 1 (completely bimodal), for which coefficients greater than 0.555 indicate a bimodal distribution, and coefficients less than or equal to 0.555 indicate a unimodal distribution. The coefficients for Catalan and Spanish fricatives were, respectively, 0.736 and 0.638, indicating bimodal distributions in both languages favoring productions with voicing proportions near either 0% or 100%, with significantly fewer in the middle range of the proportional continuum. Interpreting these modes as articulatory targets for either voiceless [s] or voiced [z], the data were subsequently coded categorically as either [s] for voicing proportions within the range of 0% through 20%, or [z] for voicing proportions within the range of 80% through 100%. This categorical treatment of the bimodal voicing distributions, in line with Campos-Astorkiza (2014), yielded a grand total of 4732 Catalan fricatives and 4578 Spanish fricatives for subsequent statistical analysis (or ~49 Catalan tokens and ~48 Spanish tokens per speaker).

5. Results

5.1. Intervocalic Alveolar Fricative Production

Two mixed-effects logistic regression models (one for Barcelonan data and one for Valencian data) were performed in R (R Core Team 2020) using voicing ([s] vs. [z]) as the dependent variable with treatment contrasts, testing for fixed effects of three linguistic factors (language (Spanish vs. Catalan), word position (medial vs. pre-vocalic word-final), and stress (stressed vs. unstressed)) and three social factors (language profile (L1-Spanish vs. L1-Catalan), gender (male vs. female), and age (older vs. younger)). Interaction terms between language profile, language, and each of all the other independent variables were included in order to assess if any of the remaining effects varied significantly according to language and/or whether the language was the L1 or L2 of each speaker. Individual speaker and token (or word) were included as random effects in both models, for which the alpha level was manually adjusted to 0.025 in order to compensate against Type I errors.

The results of each logistic mixed-effects regression appear in Tables 2 and 3 (note that positive and negative β coefficients respectively indicate greater or lesser log-odds of [z] production relative to the intercept). Given the complex nature of these models, I shall elaborate on them separately, offering additional information and post-hoc analyses as necessary for each finding.

Table 2. Summary of the mixed-effects logistic regression model fitted to Barcelonan fricatives.

	β (in Logits)	***z***	***p***
(Intercept) *	−4.913	−7.967	<0.0001
Catalan	4.882	7.493	<0.0001
Prevocalic word-final	3.751	5.628	<0.0001
Unstressed	2.959	4.791	<0.001
L1-Catalan	−0.145	−0.175	0.893
Younger	3.284	6.174	<0.0001
Female	3.349	6.234	<0.0001
Catalan: Prevocalic word-final	−3.697	−4.913	<0.001
Catalan: Unstressed	0.271	0.285	0.794
Catalan: L1-Catalan	2.172	4.568	<0.001
Catalan: Younger	0.125	0.131	0.859
Catalan: Female	0.163	0.155	0.831
L1-Catalan: Prevocalic word-final	0.752	2.819	0.004
L1-Catalan: Unstressed	0.136	0.189	0.815
L1-Catalan: Younger	0.123	0.174	0.861
L1-Catalan: Female	0.137	0.163	0.769
Catalan: L1-Catalan: Younger	−3.205	−4.638	<0.0001
Catalan: L1-Catalan: Female	−3.403	−4.956	<0.0001
Catalan: L1-Catalan: Prevocalic word-final	−0.028	-0.104	0.927
Catalan: L1-Catalan: Unstressed	−3.003	−4.472	<0.0001

* The intercept is older, L1-Spanish males producing stressed, word-medial fricatives in Spanish.

Table 3. Summary of the mixed-effects logistic regression model fitted to Valencian fricatives.

	β (in Logits)	***z***	***p***
(Intercept) *	−4.924	−7.986	<0.0001
Catalan	3.425	5.736	<0.0001
Prevocalic word-final	2.936	5.148	<0.0001
Unstressed	2.896	4.887	<0.001
L1-Catalan	0.172	0.168	0.884
Younger	−0.184	−0.176	0.831
Female	−0.162	−0.158	0.893
Catalan:Prevocalic word-final	−3.113	−5.472	<0.0001
Catalan: Unstressed	0.165	0.193	0.849
Catalan: L1-Catalan	0.735	3.032	<0.001
Catalan: Younger	−1.049	−4.026	<0.0001
Catalan: Female	−1.472	−4.471	<0.0001
L1-Catalan: Prevocalic word-final	0.685	2.958	<0.001
L1-Catalan: Unstressed	-0.104	−0.162	0.875
L1-Catalan: Younger	−0.116	−0.175	0.858
L1-Catalan: Female	−0.123	−0.182	0.843
Catalan: L1-Catalan: Younger	1.009	4.011	<0.0001
Catalan: L1-Catalan: Female	1.495	4.326	<0.0001
Catalan: L1-Catalan: Prevocalic word-final	−0.152	−0.184	0.874
Catalan: L1-Catalan: Unstressed	0.048	0.115	0.927

* The intercept is older, L1-Spanish males producing stressed, word-medial fricatives in Spanish.

To begin, I focus on attested social constraints on Catalan and Spanish [z] production in Barcelona and Valencia. With respect to language profile, Tukey post-hoc analyses[6] performed on the significant two-way interactions between language profile and language in both communities revealed that while

[6] Post-hoc analyses were conducted using the 'emmeans' package (which automatically uses a logit response scale when applied to logistic regression models) with Tukey *p*-value adjustments of multiplicity.

[z] production in Barcelona and Valencia was significantly favored in Catalan over Spanish ($p < 0.0001$ for each community) and by L1-Catalan speakers over L1-Spanish speakers ($p < 0.0001$ for each community), the magnitude of effect for language profile was stronger for Catalan fricatives relative to Spanish fricatives ($p < 0.0001$ for each community). Figures 6 and 7 visualize these differences in Barcelona and Valencia, respectively, and additionally depict the observed categorical favoring of [z] in the Catalan of L1-Catalan speakers in Barcelona. Note that in all subsequent figures, the use of three asterisks denotes comparisons for which $p < 0.0001$, whereas the use of two asterisks denotes comparisons for which $p < 0.001$.

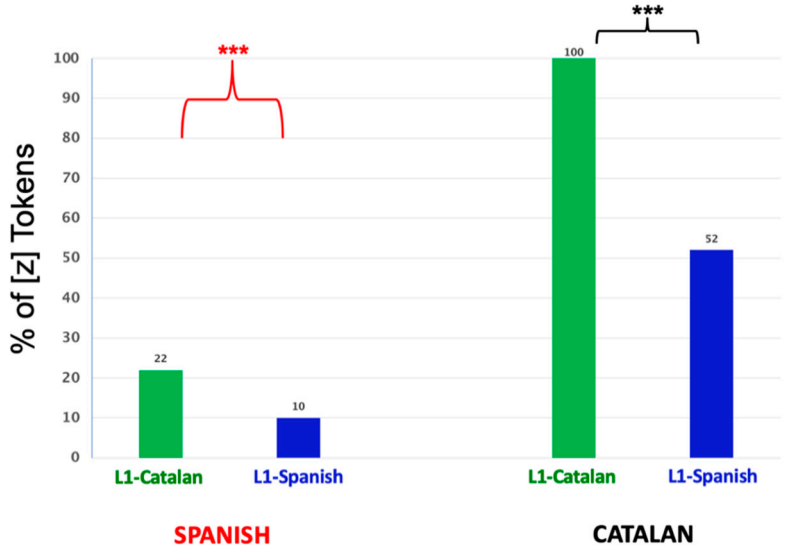


Figure 6. Effects of language profile and language on Barcelonan fricative production.

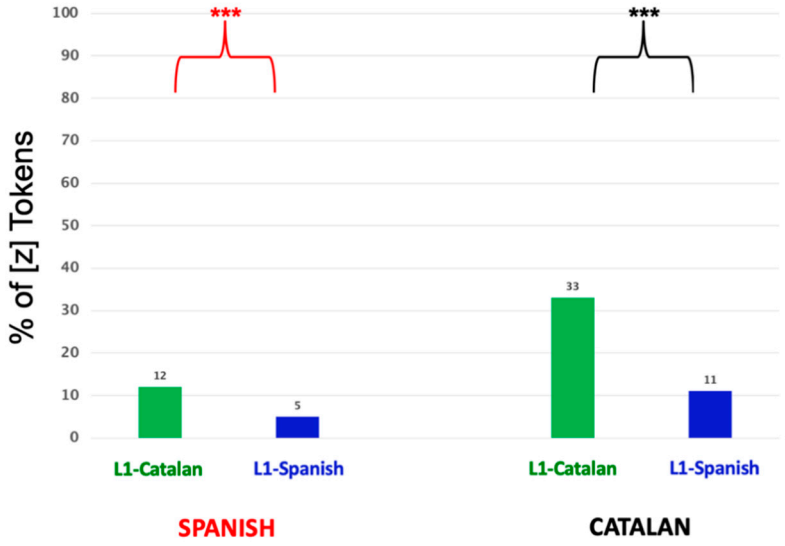


Figure 7. Effects of language profile and language on Valencian fricative production.

With respect to gender, Tukey post-hoc analyses on the significant three-way interaction in Barcelona and Valencia between gender, language profile, and language revealed unique stratifications for each community. For Barcelonan bilinguals, whereas [z] production is favored by females over males in Spanish (for L1-Spanish speakers, $p < 0.0001$; for L1-Catalan speakers, $p < 0.0001$), in Catalan, the parallel gender effect is exclusively present for L1-Spanish speakers ($p < 0.0001$), since L1-Catalan speakers display a categorical favoring of [z] across genders ($p > 0.999$). For Valencian bilinguals, whereas no significant gender stratification is attested in Spanish (for L1-Spanish speakers, $p = 0.749$;

for L1-Catalan speakers, $p = 0.768$), in Catalan, [z] is favored by males exclusively for L1-Spanish speakers (for L1-Spanish speakers, $p < 0.0001$; for L1-Catalan speakers, $p = 0.816$). These stratifications are visualized for Barcelona and Valencia in Figures 8 and 9, respectively.

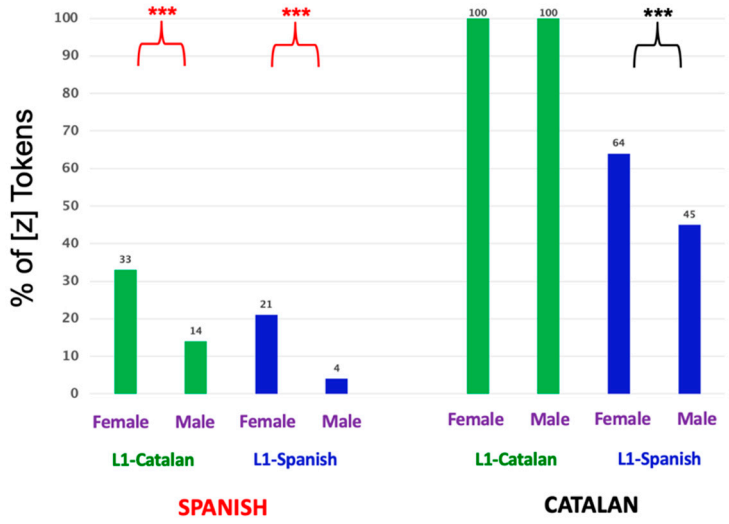


Figure 8. Effect of gender as mediated by language profile and language on Barcelonan fricative production.

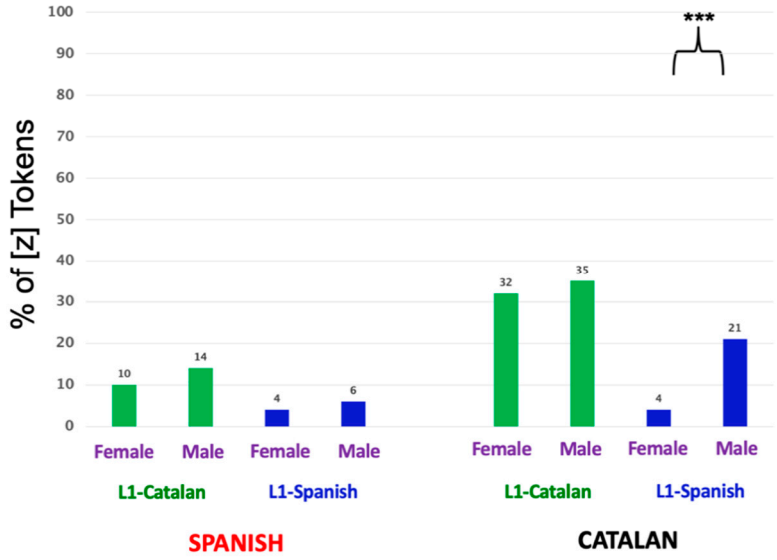


Figure 9. Effect of gender as mediated by language profile and language on Valencian fricative production.

With respect to age, Tukey post-hoc analyses on the significant three-way interaction in Barcelona and Valencia between age, language profile, and language revealed unique stratifications for each community. For Barcelonan bilinguals, whereas [z] production is favored by younger speakers over older speakers in Spanish (for L1-Spanish speakers, $p < 0.0001$; for L1-Catalan speakers, $p < 0.0001$), in Catalan, the parallel age effect is exclusively present for L1-Spanish speakers ($p < 0.0001$), since L1-Catalan speakers display a categorical favoring of [z] across age groups ($p > 0.999$). For Valencian bilinguals, whereas no significant age stratification is attested in Spanish (for L1-Spanish speakers, $p = 0.682$; for L1-Catalan speakers, $p = 0.704$), in Catalan, [z] is exclusively favored by older, L1-Spanish bilinguals (for L1-Spanish speakers, $p < 0.0001$; for L1-Catalan speakers, $p = 0.757$). These stratifications are visualized for Barcelona and Valencia in Figures 10 and 11, respectively.

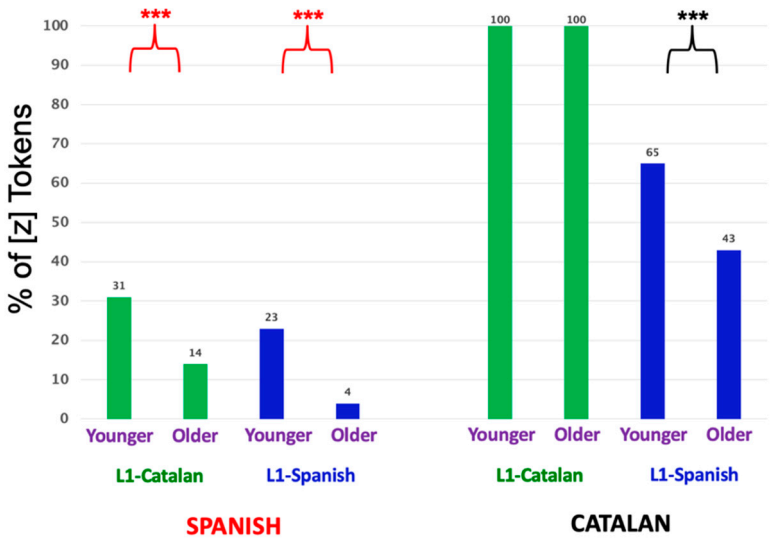


Figure 10. Effect of age as mediated by language profile and language on Barcelonan fricative production.

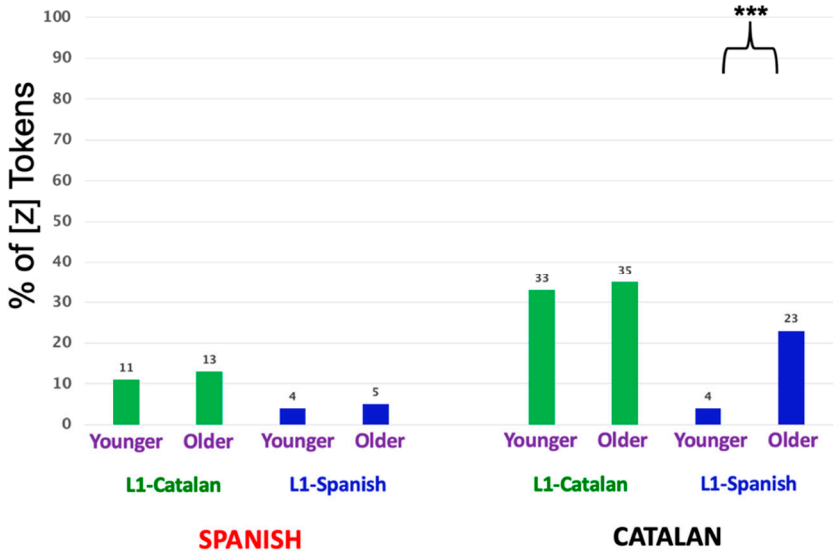


Figure 11. Effect of age as mediated by language profile and language on Valencian fricative production.

As regards linguistic constraints on Barcelonan and Valencian intervocalic fricative production, Tukey post-hoc analyses performed on the pair of significant two-way interactions between word position and each of language profile and language revealed parallel trends in each community. In Barcelona, whereas Spanish [z] production is significantly favored in prevocalic word-final contexts over word-medial contexts (for L1-Spanish speakers, $p < 0.0001$; for L1-Catalan speakers, $p < 0.0001$), Catalan [z] production is not constrained by word position (for L1-Spanish speakers, $p = 0.739$; for L1-Catalan speakers, $p > 0.999$). In Valencia, whereas Spanish [z] production is significantly favored in prevocalic word-final contexts over word-medial contexts (for L1-Spanish speakers, $p < 0.0001$; for L1-Catalan speakers, $p < 0.0001$), Catalan [z] production is not constrained by word position (for L1-Spanish speakers, $p = 0.684$; for L1-Catalan speakers, $p = 0.703$). These stratifications are visualized for Barcelona and Valencia in Figures 12 and 13, respectively, which additionally illustrate the near-categorical absence of [z] tokens in Spanish word-medial contexts across all bilingual participants.

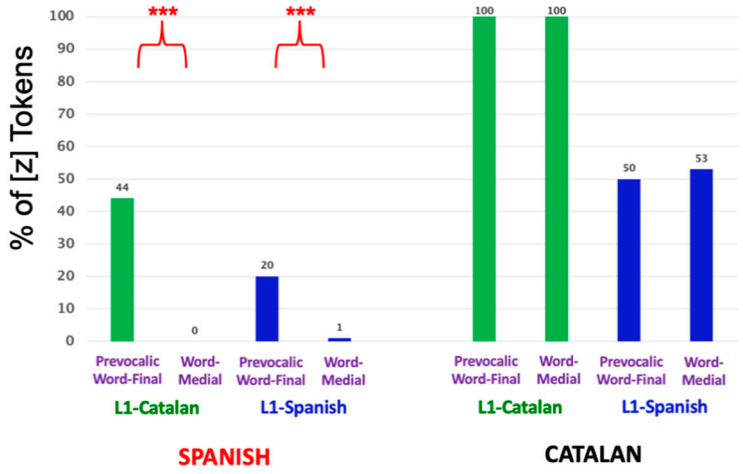


Figure 12. Effect of word position as mediated by language profile and language on Barcelonan fricative production.

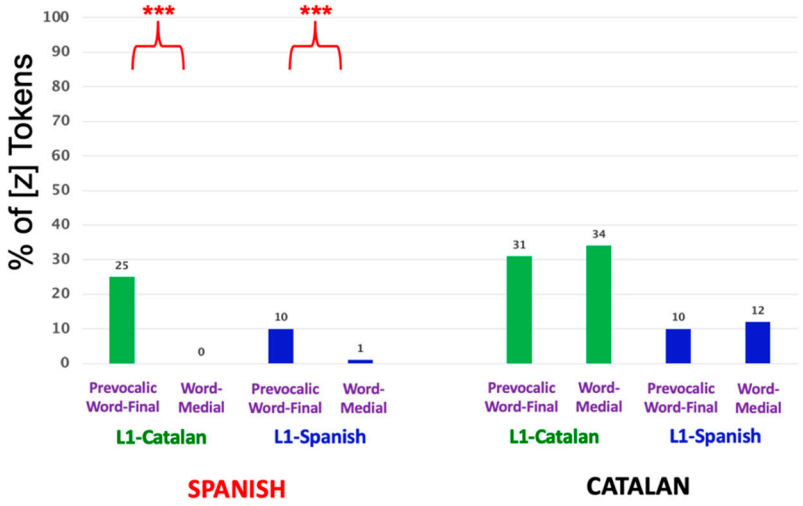


Figure 13. Effect of word position as mediated by language profile and language on Valencian fricative production.

Lastly, with respect to stress, a significant three-way interaction between stress, language profile, and language was attested for Barcelonan bilinguals, whereas a main effect of stress was obtained for Valencian bilinguals. Tukey post-hoc analyses on the significant three-way interaction revealed that whereas [z] production is favored in unstressed contexts over stressed contexts in Barcelonan Spanish (for L1-Spanish speakers, $p < 0.001$; for L1-Catalan speakers, $p < 0.001$), in Barcelonan Catalan, the parallel stress effect is exclusively present for L1-Spanish speakers ($p < 0.0001$), since L1-Catalan speakers display a categorical favoring of [z] across age groups ($p > 0.999$). In Valencia, productions of [z] are similarly favored in unstressed contexts over stressed contexts, independent of language and language profile ($p < 0.001$ for all comparisons). This constraint is visualized for Barcelona and Valencia in Figures 14 and 15, respectively.

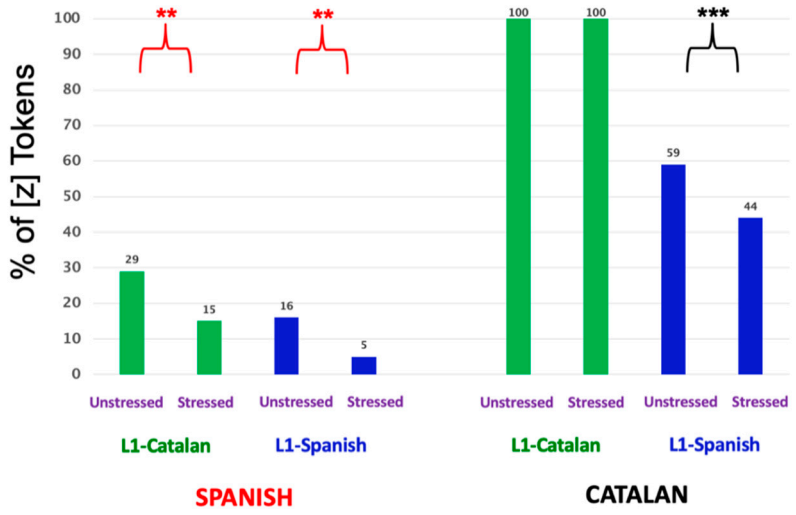


Figure 14. Effect of stress as mediated by language profile and language on Barcelonan fricative production.

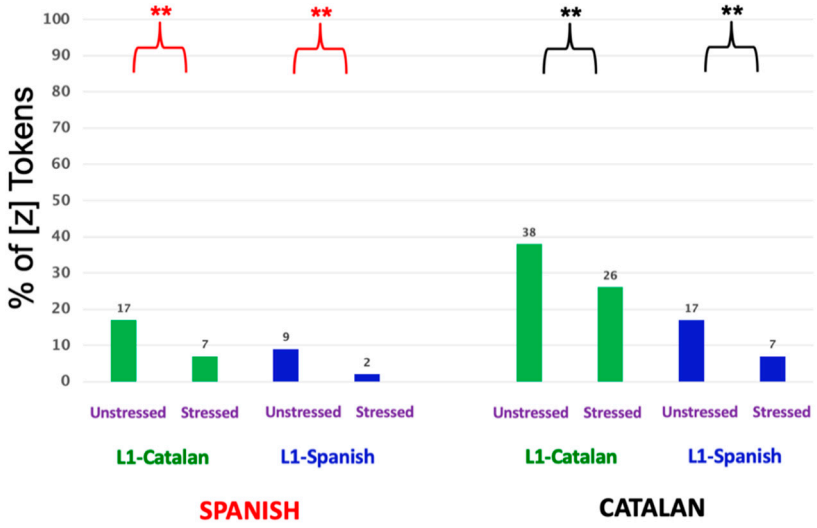


Figure 15. Effect of stress as mediated by language profile and language on Valencian fricative production.

5.2. Language Attitudes

While the majority (95%) of all participants expressed an appreciation of the existence of bilingualism and co-officiality in their respective communities, differences between language attitudes in Barcelona and Valencia largely related to speakers' views toward actively using and promoting Catalan. For example, whereas 81% of Barcelonan participants expressed a desire for their (eventual, hypothetical) children to learn and use Catalan, only 40% of Valencian participants expressed the same desire. As even the Valencian group of L1-Catalan speakers reported a predominance in the use of Spanish over Catalan in their daily lives (refer back to Table 1), perhaps it is unsurprising that the majority (60%) of Valencian participants noted that it was perfectly acceptable to live life in Valencia without even knowing Catalan, and that while it would be nice if their children learned the language, they would not predominantly communicate with them in Catalan.

With regard to language and identity, 100% of Barcelonan participants expressed an association between being Catalan and either understanding the Catalan language or having an appreciation for it. For example, one of the younger female (L1-Catalan) participants noted that "there are many Catalans that choose not to use Catalan, but at least they can understand it and appreciate its presence."

In contrast, 33% of Valencian participants indicated that Valencian identity was tied more strongly to Spanish than to Valencian Catalan, serving to distinguish Valencia from Catalonia: "We put out [on our balconies] Spanish flags and use Spanish to show that in Valencia, we don't reject Spanish like the Catalans do" (Older L1-Spanish Female). Valencian identity as a question of anti-Catalan-ness (via the support of Spanish), rather than as one of Valencian Catalan, is additionally evidenced in the derogatory labeling of overtly pro-Valencian-language individuals as *catalanistas* 'Catalan nationalists': "I've been to Barcelona before, and if you go into a store and speak in Catalan, they either respond in Catalan or in Spanish, but you don't have to change how you speak. Here in Valencia, if you walk into a store speaking Valencian, they'll usually ask you to switch to Spanish, and if you refuse, you're seen as a *catalanista*" (Younger L1-Catalan Male).

When asked if Catalan and Valencian were two different languages, 98% of Barcelonan participants responded negatively, affirming their relationship as related dialects. In Valencia, however, 27% believed Valencian to be an independent language from Catalan. Barcelonan participants were wholly unaware of any conflict regarding the status of Barcelonan Catalan and Valencian Catalan as unique languages, instead noting that Catalan is sometimes wrongly thought to be a dialect of Spanish by outsider, non-Catalonians. Valencian participants, in contrast, were readily able to contextualize the Catalan–Valencian debate within local Valencian politics, noting that it is a point of contention more so for politicians than for the actual Valencian public.

6. Discussion

The patterns of social and linguistic stratification attested for the voiced or voiceless quality of intervocalic fricatives in Barcelonan and Valencian Catalan and Spanish are consistent with unique directionalities and asymmetries of contact influence across these two communities.[7] First, with respect to Barcelonan Catalan and Spanish, evidence in support of Catalan's phonetic influence on Spanish in the form of (prescriptively) non-standard [z] production consists of the observed stratification by language profile, whereby Spanish [z] was favored by L1-Catalan speakers over L1-Spanish speakers. Notably, across both profiles of speaker, Spanish [z] production was nearly categorically constrained by word position, with Spanish [z] appearing nearly singularly in the prevocalic word-final context as opposed to word-medial contexts, the site of phonemic voicing contrast in Catalan. Though the lenition of intervocalic Spanish /s/ (to [h] or [Ø]) in monolingual varieties has similarly been found to be favored word-finally over onset contexts (cf. Hualde and Prieto 2014; Chappell and García 2017; Torreira and Ernestus 2012), the presently observed magnitude of word position effect, categorical for L1-Catalan speakers and near-categorical for L1-Spanish speakers, has not been attested for monolingual Spanish varieties. Moreover, a matched guise study concerning Barcelonan Spanish [z] by Davidson (2019, p. 67) reveals that this feature is covertly associated with Catalan bilingualism within the local bilingual speech community. Taken together with the linguistic stratification by stress (favoring [z] in unstressed contexts), Barcelonan Spanish [z] illustrates a confluence of both endogenous and contact-induced constraints. The additional social stratifications attested for Barcelonan Spanish [z], namely its favoring by younger female speakers, is consistent with a change in progress from below (cf. Labov 2001). In the prevocalic word-final context, younger L1-Catalan females produced [z] at a rate of 74%, which, given the self-monitored nature of the elicited production task, likely undershoots actual [z] production in more casual and spontaneous (or natural) contexts. Accordingly, younger L1-Catalan females lead in the production of Barcelonan Spanish [z] as a majority variant (prevocalic word-finally).

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[7] For the assessment of contact effects, I adopt Thomason (2010, 2008, 2001) more flexible treatment of contact-induced innovation as any case in which a linguistic variant is predicted to be more likely to have arisen in the setting of language contact than in a non-contact setting, which is justified or operationalized with respect to sensitivity to specific linguistic and/or social factor constraints consistent with source language agentivity (e.g., a variant's use being mediated by bilingualism and/or language dominance, cognate status with the source language, or any other non-monolingual-like constraint). Language contact accordingly need not be the only (or even principal) source or impetus behind a feature's use in order for it to be considered contact-induced.

With regard to intervocalic fricatives in Barcelonan Catalan, Spanish contact influence can similarly be ascribed through the stratification by language profile, whereby Catalan [s] (in place of prescriptively expected [z] via /z/ and /S/) was favored by L1-Spanish speakers over L1-Catalan speakers. Indeed, Catalan [z] was categorically favored over [s] by L1-Catalan speakers, suggesting that, at least in contexts of more closely self-monitored (or less spontaneous) speech, the phonemic voicing distinction in Catalan is fully maintained. For L1-Spanish speakers, additional social stratifications of age and gender suggest a possible change in progress from above (cf. Labov 2001), with the gradual adoption of more prescriptively normative [z] being led by younger female speakers, who use [z] as a majority variant at a frequency of 68%. Though unconstrained by word-position, voicing rates in Catalan (by L1-Spanish speakers) are greater in unstressed contexts, indicative of the contributions of phonetic-level lenition on the phonological variability of this voicing contrast.

In comparing intervocalic fricative production across Barcelonan Catalan and Spanish, the aforementioned findings illustrate an intriguing asymmetry. Whereas the sociolinguistic stratification of (prevocalic word-final) Spanish [z] indicates an advancing contact variant whose adoption is led by L1-Catalan speakers, the analogous Catalan [s] instead shows signs of gradual abandonment in favor of [z] on behalf of L1-Spanish speakers. Looking at the production frequencies of Spanish (prevocalic word-final) [z] and Catalan [s] by the younger female leaders of each language profile, Spanish [z] is used at over twice the rate of Catalan [s] (respectively, 74% vs. 32%). For younger female L1 speakers of each language, Spanish prevocalic word-final [z] on behalf of L1-Spanish speakers is used at a frequency of 39%, in comparison to Catalan [s] on behalf of L1-Catalan speakers, which is not attested (0%). Accordingly, in Barcelona, the influence of Catalan on Spanish appears considerably stronger than the influence of Spanish on Catalan, though both directions of effect are still present insomuch as both contact variants are favored by L1 speakers of the contact language (i.e., source language agentivity (Van Coetsem 2000)).

With respect to intervocalic fricative production in Valencian Catalan and Spanish, bidirectional contact influence can similarly be observed regarding the usage patterns of Spanish [z] and Catalan [s]. The influence of Catalan on Spanish is attested in the stratification of Spanish [z] by language profile, with L1-Catalan speakers favoring [z] over L1-Spanish speakers. As was the case for Barcelonan Spanish, in Valencian Spanish, across both profiles of speakers, word-position was a near-categorical constraint, effectively barring [z] in the word-medial context, the site of phonemic voicing in Catalan. Unlike in Barcelona, however, no significant social stratifications of age or gender were obtained for Valencian Spanish, which indicates that Catalan [z] (used by L1-Catalan and L1-Spanish speakers, respectively, with frequencies of 25% and 10% in the prevocalic word-final context) is not presently involved in a process of active adoption or change in the community.

As regards the influence of Spanish on Valencian Catalan, Catalan [s] was again favored by L1-Spanish speakers over L1-Catalan speakers, though, in contrast to Barcelonan Catalan, Valencian Catalan [s] is the majority variant even for L1-Catalan speakers, who notably even self-report a greater use of Spanish than Catalan in their daily lives (see Table 1). Additional social stratification in the form of age and gender effects was exclusive to L1-Spanish speakers, favoring Catalan [s] in the speech of younger female speakers, consistent with a change in progress from below (cf. Labov 2001). Younger L1-Spanish females produced [s] at an overall rate of 93%, suggesting that in less self-monitored speech settings, [s] may likely be (near-)categorical, in line with dialectological descriptions of *apitxat* as lacking the voicing contrast (Prieto 2004; Moll 2006). Still, Valencian Catalan [z] was attested roughly one-third of the time by L1-Catalan speakers, underscoring the reality that the *apitxat* variety, like any linguistic variety, is inherently comprised of sociolinguistic variability. Lastly, stress effects favoring [z] production in unstressed contexts (in parallel with Barcelonan Catalan) highlight the role of phonetically lenitive processes in the variability of a phonological voicing contrast.

As was the case for Barcelonan bilinguals, intervocalic fricative production in Valencian Catalan and Spanish evidences crosslinguistic asymmetry. Beyond stratification by language profile, no sociolinguistic correlates were obtained for Spanish [z], whereas for Catalan [s], L1-Spanish younger

females lead their older male counterparts in the adoption of this feature. A comparison of usage frequencies between Spanish prevocalic word-final [z] by L1-Catalan speakers (25%) and Catalan [s] by younger L1-Spanish females (93%) illustrates the greater influence (by a magnitude of nearly four) of Spanish on Catalan for this community. For L1-speakers of each language, Spanish prevocalic word-final [z] on behalf of L1-Spanish speakers occurs at a rate of 10%, while Catalan [s] on behalf of L1-Catalan speakers is used at a rate of 67%. Accordingly, in Valencia, the influence of Spanish on Catalan appears considerably stronger than the influence of Catalan on Spanish, though both directions of effect are still present insomuch as both contact variants are favored by L1-speakers of the contact language (i.e., source language agentivity (Van Coetsem 2000)).

Ultimately, the aforementioned findings evidence a case of opposing contact asymmetries across the bilingual communities of Barcelona and Valencia. Operationalized as differential magnitudes between the production of Spanish (prevocalic word-final) [z] and Catalan [s] by L1-Catalan speakers and L1-Spanish speakers, respectively, the influence of Barcelonan Catalan on Barcelonan Spanish is stronger by a factor of approximately two, whereas in Valencia, the influence of Spanish on Catalan is stronger by a factor of approximately four. As the voicing of Spanish /s/ to [z] is just as articulatorily motivated as the devoicing of Catalan /z/ (or /S/) to [s] (Hualde and Prieto 2014, p. 111), differences in the strength of directionality between Catalan as a minority language and Spanish as a majority language can be more transparently linked to the distinct social realities of each language in each community. In Barcelona, the present sociolinguistic interview data corroborate prior claims (cf. Siguan 1988; Sinner 2002) that Catalan is in a position of equal (if not greater) linguistic and social capital than Spanish. Barcelonan speakers in the present investigation readily articulated their esteem of Catalan as part of an expressly bilingual Catalonian identity (corroborating covert attitudes to the same effect in Davidson (2019)), with most advocating for its continued maintenance (if not predominance) amongst subsequent generations of Catalonians. For Catalonians, the active adoption of Spanish [z] is accordingly a " ... linguistic resource available to [speakers] in their variety of Spanish as another ethnolinguistic and ideological assertion besides language choice" (Vann 2007, p. 271), the directionality of which (i.e., the greater adoption of Spanish [z] than Catalan [s]) notably mirrors the community's active ideological embrace of Catalan.

In Valencia, in contrast, speakers in the present investigation largely expressed a general apathy toward the use and preservation of Valencian Catalan, tied in part to a social stigma of being too pro-Catalan. The predominant outlook toward Valencian as not a particularly essential language for normal life in Valencia, when coupled with the sizeable minority (33%) of informants that affirmed Spanish as the primary language expressive of Valencian identity, accordingly patterns with the directionality favoring the adoption of Catalan [s] over Spanish [z]. While I do not claim the asymmetry regarding the greater social stratification and use of Valencian Catalan [s] as compared to Valencian Spanish [z] to be a singular, direct consequence of the greater hegemonic distance between Spanish and Catalan in Valencia, the stronger contact influence of Spanish on Valencian Catalan can nonetheless be understood as a probabilistically conditioned outcome of social factors in this community, including population size, sociopolitical status, sociocultural status, and language attitudes (Thomason 2001, 2010; Thomason and Kaufman 1988), all of which uniquely favor Spanish over Catalan in this community. Though both linguistic and social factors are posited to contribute to language variation and change, the present case study, specifically as concerns two equally endogenously motivated changes (e.g., Spanish [z] and Catalan [s]), notably demonstrates how unique social contexts serve to probabilistically favor distinct linguistic outcomes.

7. Conclusions

The present study aimed to explore intervocalic fricative production as a variable feature of Catalan–Spanish contact in two unique communities of Catalan–Spanish bilingualism in order to address questions of directionality and asymmetry of contact influence between them. The unique asymmetries of influence between Catalan and Spanish across Barcelona and Valencia were linked

to the asymmetric sociopolitical and sociolinguistic relationships between the languages in each community, which probabilistically condition contact influence at the level of the greater speech community. Accordingly, the social context of language contact plays an essential role in the dynamics of linguistic variation and change in contact settings, in addition to the linguistic and cognitive factors often investigated regarding contact effects at the level of the individual bilingual speaker.

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