

Article

Variation in Spanish /s/: Overview and New Perspectives

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Abstract: The natural tendency for language variation, intensified by Spanish's territorial growth, has driven sibilant changes and mergers across the Spanish-speaking world. This article aims to present an overview of the most significant processes undergone by sibilant /s/ in various Spanish-speaking areas: devoicing, weakening, aspiration, elision, and voicing. Geographically based phonetic variations, sociolinguistic factors, and Spanish language contact situations are considered in this study. The sibilant merger and its chronological development in modern Spanish, along with geographic expansion, have resulted in multiple contemporary dialectal variations. This historical lack of stability in these sounds has marked modern regional variations. Tracing and framing the sibilants' geo-linguistic features has received much attention from scholars, resulting in sibilants being one of the most studied variables in Spanish phonetics. In this article, we provide a concise approach that offers the reader an updated sociolinguistic view of the modern cross-dialectal realizations of /s/. It is essential to study sibilant development to describe Spanish dialects, the differences between Transatlantic and Castilian varieties, and the speech features found in Spanish speaking communities in the Americas. Examining sibilance from different approaches with a representative variety of Spanish dialects as examples advances the importance of sociolinguistic phenomena to index language changes.



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1. Introduction

The scope of this article is to provide an account of /s/ variations in a selection of Spanish language dialects and sociolects, specifically those that show sibilance reduction and, consequently, a higher number of /s/ variants. In addition, the goal here is to deliver an analysis of the results of previous studies that focus on assibilation and /s/ variables. In particular, this investigation explores dialects in light of their realizations of /s/ weakening along with other resulting phenomena such as *jejeo*, hypercorrections, and intervocalic voicing. It also analyzes this sound class from a sociolinguist perspective, considering prestige and speech perception, socioeconomic class, gender, literacy, bilingualism, and other important factors for language change in local speech communities.

From full sibilance to total deletion, variation of the articulation of /s/, especially coda /s/, has long been analyzed as a very distinctive dialectal feature. Multiple studies have been carried out to investigate the internal and external factors regulating /s/ lenition across Latin American and Peninsular dialects from both diachronic and synchronic approaches. The repertoire of phonetic variations of coda /s/ encountered cross-dialectally includes sibilance [s], aspiration [h], glottal stop [ʔ], full deletion, and other resulting combinations of these with varying degrees of weakening. For certain speakers, sibilant [s] also shows variations that include the most common alveolar [s], the convex dentoalveolar [s̺], and the concave apicoalveolar [s̻].

The organization of the rest of this study is as follows. Section 2 provides the background to understand sibilant instability from a diachronic perspective. Section 3 explores /s/ weakening using synchronic data from various dialects and sociolects of Spanish. Section 4 discusses two anti-trend phenomena that defy the spread of /s/ weakening,

intrusive coda /s/, and /s/ voicing in intervocalic environments. Section 5 presents recent findings about the sociolinguistic perceptions of /s/ variants regarding prestige, speech style, economic status, literacy, and linguistic stereotypes, with special attention to gender and age.

2. Overview: Sibilant Instability and Diachronic Perspectives

To understand current variations of /s/ phenomena, it is helpful to explore sibilant changes within a historical framework. Modern cross-dialectal realizations stem from the evolutionary lack of sibilant stability in the Spanish language. Between the fifteenth and seventeenth centuries, the sibilant paradigm was altered by the merger of voiceless and voiced sound pairs [s]~[z], [ʃ]~[ʒ], [ts]~[dz]. These three pairs went through various consonant mutations such as devoicing, weakening, and, most recently, velarization and interdentalization, resulting in [s], [x], and [θ], respectively. These processes made Spanish unique among other peninsular and Latin-derived languages. By no means were these changes carried out uniformly in the peninsula; they went through considerable vacillation before they were standardized in the sixteenth century, depending on the social and geographical proximity to the Castilian variety. In addition, these phonetic changes impacted the evolution of emerging Spanish varieties, especially those in the south of the peninsula (in Andalusia) along with their trans-Atlantic extensions. The resulting drastic reduction of the sibilant system concluded with one phoneme /s/ for Andalusia and Latin American Spanish, known as *seseo*, and with the pair /s/~/θ/ for Northern Spain, known as *distinción* ‘distinction’, as illustrated in the opposition of *poso*~*pozo* ‘sediment, well’.

Sibilant instability and reduction resulted in a phonetic transformation with complex historical implications. Many linguists have analyzed this transformation, supporting their hypotheses with a vast corpus of research, resulting in many sometimes-conflicting conclusions. For example, [Canfield \(1962\)](#) notes that the apicoalveolar [ʃ] and [ʒ] were lost in the Americas early in the colonial period; however, [Hammond \(2001\)](#) notes that this pronunciation is still found in isolated parts of the Americas. The synchronic data that we have today on the multiple variations of /s/ weakening across dialects help us put together some pieces in this puzzle. In this section, we focus on the origins of /s/ aspiration and deletion, as /s/ weakening is the strongest phonetic differentiator of regional and social dialects in Spanish.

In an attempt to explain the sociohistorical reasons for the geographical distribution of /s/ reduction, [Canfield \(1981\)](#) indicates that aspiration was a late Andalusian trait that only spread to those regions that maintained a close trade connection to Seville, mainly the Caribbean. It did not spread to other cultural-governmental centers such as Mexico and Lima, more conservative and more in sync with what was occurring in the Madrid court, from which the prestige norms originated and spread. However, the question of when /s/ aspiration first emerged in Andalusia is, as yet, unsettled.

The historical origins of /s/ weakening are not clear both in terms of dating and causation. The estimated dates of appearance vary considerably among academics. [Lapesa](#) indicates that, at the end of the fifteenth century, syllable-final /s/ already showed variability with “aspiración, caída total y ultracorrecciones” ‘aspiration, complete loss and hyper-correction’ ([Lapesa 1942](#), p. 387). [Menéndez Pidal \(1940b\)](#) explains that /s/ deletion started at the beginning of the sixteenth century, based on documentation written by Columbus’ son, who was raised in Cordoba. He wrote *Sofonifa* for *Sophonisba*, with *f* for *sb* (*f* as the resulting sound of /s/ aspiration preceding *b*). This example is the oldest document with a clear /s/ reduction in Spanish, according to [Menéndez Pidal](#). [Zamora Vicente \(1960\)](#) and [Alvar \(1955\)](#) also concur with this hypothesis. Nevertheless, [Mondéjar Cumpián \(1979\)](#) believes that /x/ aspiration started after the seventeenth century, with /s/ aspiration occurring in Andalusia after the eighteenth century. For [Jiménez Fernández \(1999\)](#), the aspiration of coda /s/ started in the eighteenth century, although he believes that the aspiration of Castilian /x/ started in the sixteenth century ([Herrero de Haro 2016a](#)). [Torreblanca \(1989\)](#) considers it a new phenomenon, non-existent before the seventeenth

century, while Frago Gracia (1983) claims that there was evidence of aspiration in late Latin inscriptions. Based on the fact that a similar lenition exists in French, some linguists believe that /s/ reduction began in Latin (Seklaoui 1989; Wallace 1984). Alvar (1955) notes that the tendency of Andalusian Spanish to drop coda /s/ was already a feature in the Latin spoken in Malaga and Seville in the second century. In the seventh century, this was documented and considered to be a vulgar trait, which suggests that syncope or apocope of /s/ could be much older than initially thought. Other authors estimate the origin of coda /s/ lenition to be around the beginning of the seventeenth (Terrell 1981). The historical emergence of /s/ weakening continues to be controversial. Nevertheless, it is reasonable to assume that aspiration of /s/ was not unusual in Andalusia, especially in the Seville province, toward the first half of the sixteenth century (Romero 1995).

The conditions that caused /s/ reduction are also a contentious topic. This applies not just to Andalusian Spanish, but also to other related Romance languages with /s/ weakening, such as French. Several hypotheses are considered. Méndez Dosuna (1987) suggests syllabic principles as a possible cause for /s/ aspiration. Straka (1964) mentions that the weakening of the tongue movement might be associated with the presence of a predorsal /s/ in syllable final position. Martinet (1955) credits a more universal linguistic tendency toward open syllables. Grammont (1946) raises the possibility that the previous vowel caused the opening of the constriction for /s/. The vowel articulation offers minimal restriction to the air stream, which makes achieving friction in the following /s/ difficult. Ohala (1981) claims that certain diachronic changes are conditioned by acoustic/auditory similarities. Accordingly, Widdison (1995) offers a close explanation, suggesting that [h] and [s], under certain speech conditions, such as fast rate, unstressed environment, or syllable coda position, might have been identified as the same sound. Mowrey and Pagliuca (1995) advocate a theory of sound change based on articulatory principles; sound changes can be viewed as weakening processes, where articulatory gestures overlap and blend over time and are reduced in their magnitude. Romero (1995) indicates that it is precisely the laminal nature of Andalusian /s/ that might have given rise to aspiration through gestural reduction in this dialect but not in Castilian. On the other hand, García Marcos (1987) offers a sociolinguistic cause, explaining that the loss of /s/ was a change that originated in less prestigious sociolects.

Despite different approaches, there is a general consensus regarding articulatory economy motivating /s/ reduction and the phonetic context in which /s/ weakening emerges across dialects. Both diachronically and synchronically, /s/ lenition originates in preconsonantal environments. This lenition is not categorical. On the contrary, there are multiple gradient realizations of the same aspiration process depending on several linguistic and non-linguistic factors. Register (formal or informal), style, literacy, gender, age, social class, origin, professional network, language or dialect contact situations, ideologies, and prestige perceptions are included among the non-linguistic factors. Thus, /s/ lenition is perceived as a continuum, a variable gradient feature. The following section analyzes the progression of [s] passing through gradient stages toward deletion.

3. Spanish /s/ Reduction Variants

This section explores present day /s/ variations due to /s/ weakening. Questions such as why /s/ reduction takes place, how it functions, who tends to produce it, and where it spreads are taken into account to analyze this phonetic process. /s/ reduction in Spanish is an essential articulatory characteristic of dialects from lowlands such as Andalusia, the Caribbean, Central America, and coastal areas of South America. The vast majority of studies on /s/ variation deal with coda /s/ weakening (end of syllable or word as in *costas* [kóh.taʰ] ‘coasts’), in contraposition to the less-explored onset of /s/ reduction (beginning of syllable or word as in *sábana* [há.βa.na] ‘sheet’, itself quite an underexplored variant).

Sibilant weakening shows different variables for the fricative phoneme /s/, written with the graphemes <s, ce, ci, z> in *seseo* areas and as <s> in distinction peninsular Spanish. Traditionally, these variables are described in a tripartite system consisting of sibilant

maintenance [s], aspiration [h], and full deletion [Ø] (see Figure 1), in addition to other variants resulting from a combination of these. For instance, a fourth variable [s⁰], between [s] and [h], is described by Brogan and Bolyanatz (2018) in the speech of some Salvadorans. A fifth variable [ʔ], a glottal stop close to the aspirate [h], is studied by Chappell (2021) in Nicaraguan Spanish. Both [h] and [ʔ] have very similar articulations, both are articulated in the glottis, respectively produced through friction and constriction: “the shift from a glottal aspiration [h] to a glottal stop [ʔ] involves only a slight constriction of the glottis, since both [h] and [ʔ] are devoid of supra-laryngeal features” (Lipski 2011, p. 76).

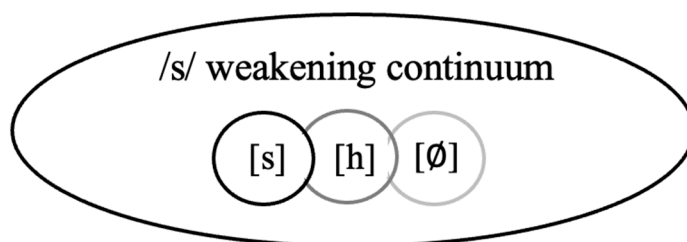


Figure 1. Coda /s/ weakening continuum: sibilance, aspiration, and elision.

We can explain /s/ reduction as part of a consonantal lenition gradient phenomenon based on recent findings from acoustic analysis. Recent research reports that weakening occurs in a continuum, a spectrum of variations from standard sibilance [s] to phonetic zero [Ø], in opposition to other theories based on a dichotomy of presence versus absence of sibilance. The core idea of sound weakening “as applied to consonants is some reduction of constriction degree or duration” (Kirchner 2004, p. 313). In other words, for /s/ weakening, that means that [h] has less constriction and a shorter duration than [s], which can be analyzed and quantified with spectrographic acoustic measurement (see Erker 2010). In terms of frication duration, the articulation of strident [s] “requires particular precision to achieve their characteristic strong turbulence” (Zuraw 2009, p. 8). Without time to produce this strong turbulence, resulting weakening may occur. Therefore, many linguists have explained this process as a result of articulatory economy or reduced articulatory efforts, as [h] needs no tongue movement to produce frication, eliminating a step in oral gesture (see Seklaoui 1989; Guitart 1976). Assimilation derived from phonetic conditions related to timing and gestural impact also affects weakening (Campos-Astorkiza 2014).

This reduction has been proven to be systematic, meaning that it happens in the same environments with similar conditioning factors and frequencies. There is a general consensus that /s/ lenition happens much more often in syllable-final position. Across most dialects of Spanish, the /s/ weakening first emerges in syllable-final preconsonantal position as in *casta* [káh.ta] < [kás.ta] ‘caste’ or as in *los patos* [loh.pá.toh] < [los.pá.tos] ‘ducks’ in word-medial and word-final environments, respectively. This initial stage is observed in Peruvian-Limeño Spanish, which is in fact considered a non-/s/-reducing dialect (Caravedo 1990). In a second stage, the /s/ reduction is extended first to prepausal and then to prevocalic contexts as in *diles, Tom* [dí.leh.tóm] < [dí.les.tóm] ‘tell them, Tom’, and *las olas* [la.hó.lah] < [la.só.las] ‘the waves’. In prevocalic contexts, the phonetic production causes the re-syllabification of coda /s/ to onset position, for example, [la.hó.lah] ~ [lah.ó.lah], generating a new syllable of consonant plus vowel (CV), the combination that is favored by Romance languages. In dialects such as Cuban Spanish, coda /s/ reduction happens in all these contexts (see Lynch 2009; López Morales 1971). In dialects with radical sibilant reduction, /s/ lenition results in deletion [Ø]. All these /s/ lenition variables range from sibilant retention to full elision of [s] within an articulatory continuum (see Figure 1). The effect of word position, along with stress and phonological context, seems to predict the distribution of /s/ reduction cross-dialectally with a clear tendency to favor this relative order of frequency “word final > word medial > word initial positions” (Brown and Cacoullos 2002, p. 30).

Aspiration of /s/ can present variations throughout the Spanish-speaking world. The most widely spread variable is simple aspiration [h] in syllable coda before consonants. In this context, aspiration can also result in gemination (consonant lengthening), particularly preceding voiceless stops (*p, t, k*). In addition, in word-final prevocalic position, especially before tonic vowels, aspiration can produce glottalization, as in *los otros* [lo.ʔó.tro] ‘the others’ (Lipski 2011, p. 76). Both gemination and glottalization are less common and they do not have a graphic representation in literary narrative. /s/ aspiration has graphic correlates as <h> in coda and <j> in onset position (with <j> representing aspiration of initial [s], [f] or <h>, thus, *jejeo*) in narrative texts, as in Example (1) below.

- (1) *No jaga dihparahteh < No haga disparates*
 ‘Don’t be foolish’ (*La carreta*, Marqués 1963)

In dialects with gemination, /s/ aspiration can be produced as simple aspiration [h], aspiration with gemination, and gemination in preconsonantal coda position, as in *mosca* [móh.ka], [mó^hk.ka], [mók.ka] < [mós.ka] ‘fly’, respectively. There is also a gradient variability among these three features; however, they are constrained in this diachronic progression—from aspiration to aspiration with gemination and finally to gemination—cf. (Widdison 1995; Penny 1991; Terrell 1981) and determined by coda condition, structural reassociation, and positional markedness. According to Campos-Astorkiza, gemination provides a way of keeping the same number of elements; it “repairs a banned structure deleting the features of the targeted consonant while keeping the same number of input segments” (Campos-Astorkiza 2003, p. 2). According to Mondéjar Cumpián (1979), gemination can also be considered phonemic, as it can contrast pairs such as *pisto* [pít.to] ‘ratatouille’ and *pito* [pí.to] ‘whistle’, *mismo* [mím.mo] ‘same’, and *mimo* [mí.mo] ‘mime’. Aspiration–gemination variants have been observed and are widely documented in southern Peninsular Spanish, mostly in the areas of Andalusia (south of Granada province) and Extremadura (west of Cáceres province). Latin American Spanish also exhibits gemination in Caribbean dialects, Cuba (Arias 2019; Carlson 2011), parts of Atlantic coastal Colombia such as Bolivar, Cordoba, and Sucre, and Chile, especially before *m* and *n* as in *mismo* ‘same’, *desnudo* ‘naked’ (Varona Cordero et al. 2017; Bolyanatz 2017; Oroz 1966). In the same way, gemination can also affect coda /r/ and /l/ as in *pierna* [pjén.na] ‘leg’ and *culpa* [kúp.pa] ‘guilt’ in the aforementioned regions.

Glottalization occurs when aspiration is produced as a partial or complete closure of the glottis. It happens most often in word-final prevocalic contexts, especially before a tonic vowel, as in *las horas* [la.ʔó.ra] ‘the hours’. The articulatory motivation to have a glottal stop [ʔ] “appears to be breaking hiatus combinations” (Lipski 2011, p. 76). Although previous research has focused more on glottalization occurring between vowels (Tellado González 2007; Valentín-Márquez 2006), recent studies show that glottalization can also occur before a consonant or a pause, for example, in *los tacos* [loʔ.tá.koh], as observed in Puerto Rican Spanish (Mohamed and Muntendam 2020). Glottalization has been documented in the Spanish of Paraguay, northeastern Argentina (Thon 1989), and Nicaragua (Chappell 2021). For all stages in /s/ reduction see Example (2).

- (2) (1st) Syllable-final preconsonant aspiration: *los postes* ‘the posts’ [los.pós.tes] > [loh.póh.teh]
 (2nd) Syllable-final prepause and prevowel aspiration: *los amos* ‘the owners’ [lo.sá.mos] > [loh.á.moh] > [lo.há.moh]
 (3rd) Deletion: *hasta* ‘until’ [ás.ta] > [áh.ta] > [a^h.ta] > [á.ta]; *vos* ‘you’ [bós] > [bó]
 Gemination: *susto* ‘fright’ [sús.to] > [súh.to] > [sú^ht.to] > [sút.to]
 Glottalization: *las horas* ‘the hours’ [la.só.ras] > [la.hó.ra] > [la.ʔó.ra]
 (4th) Syllable-initial (onset): *sí, señorita* ‘yes, miss’ [sí.se.ño.rí.ta] > [hí.he.ño.rí.ta]

Coda /s/ reduction occurs frequently in many coastal Spanish dialects, but full deletion is not categorically characteristic of all of them. In some, there is relatively stable /s/ aspiration; in others, on the contrary, there is a reversal of /s/ weakening in certain demographic groups that choose to retain [s] for social and ideological factors to differentiate themselves from speakers associated with /s/ lenition, as, for example, is

the case with Miami Cuban Spanish and Colombian-Cartagena Spanish (see Lynch and Parera 2021; Lafford 1986). Similarly, in Puerto Rican Spanish, speakers are moving away from full /s/ deletion for social and prestige considerations to distinguish themselves from Dominicans in Puerto Rico, who commonly delete coda /s/. As a result, Puerto Ricans are increasing their use of the glottal variants [h] and [ʔ] (Valentín-Márquez 2006).

In syllable-initial position, /s/ weakening may also occur in some Spanish dialects, typically those that also have coda /s/ reduction. However, this phenomenon is limited to a small group of lexical items and is therefore much less productive than coda /s/ reduction. This process is also called *jejeo*, as speakers perceive and articulate initial [s] as an aspiration [h], transcribed with the grapheme <j>, therefore *jejeo*, as in *esa* [éha] <eja> ‘that’. For more in-depth analysis of *jejeo*, see Section 3.3.

Conditioning factors to explain /s/ reductions are well documented and can combine both linguistic-articulatory and social predictors. Phonetic predictors include articulatory economy, fricative duration, phonetic environment, stress, word frequency, word positioning, speech rate, analogy (Ferguson 1990), and assimilation (Campos-Astorkiza 2014). Among social or ideological predictors, linguists have considered age, gender, education, socioeconomic status, speaker’s origin (region, urban versus rural), local attitudes, speech style (formal vs. casual speech), and social prestige. Dialectal variation for /s/ weakening in Spanish is often predicted by a combination of several of these factors. Social predictors have been studied much less thoroughly than linguistic ones, according to (Penny 2000, p. 161). Age, gender, and education seem to be the most common social denominators for /s/ variables in recent research.

Age has been labelled as an important predictor for /s/ weakening across Spanish dialects. Some findings have shown that younger speakers reduce /s/ to aspiration and deletion more often than older speakers do, deviating from the prestige variant and embracing innovation, as seen in Valdivia, Chile, or in Dominican Santiago Spanish (cf. Poblete 1995; Alba 1990). Others have found the opposite. For example, young Miami-Cuban speakers tend to maintain coda /s/ more than their older counterparts to distance themselves from the more recently arrived immigrants from Cuba, with whom these young groups do not want to be associated (Lynch and Parera 2021; Lynch 2009). Regardless of the direction of the change, there seems to be value in realizing /s/ in a way that is contrastive and that projects a unique identity.

Speaker sex is also a conditioning factor for /s/ reduction. Many scholars have established that men reduce /s/ at significantly higher rates than women do in dialects found in the Dominican Republic, Puerto Rico, Chile, and Colombia (see Alba 1982; López Morales 1983; Poblete 1995; Cepeda 1995; Lafford 1986). This hypothesis is consistent with the gender paradox, first stated by Labov, in which “women conform more closely than men to sociolinguistic norms that are overtly prescribed, but conform less than men when they are not” (Labov 2001, p. 293). Men are more likely to use nonstandard variants, while women are more likely to use prestige forms and avoid stigmatized variants; however, women are also more likely to lead language change by using innovative forms. In contrast to this paradox, in El Salvador, older rural women produce the stigmatized initial /s/ weakening, while “young men are leading a change toward standardization of /s/ production” (Brogan and Bolyanatz 2018, p. 227).

Both education and socioeconomic status are inextricably linked to predict /s/ weakening. Speakers with higher levels of education are usually more exposed to a language standard. Across Spanish speaking regions, there is still a high percentage of illiteracy for multiple reasons (poverty, lack of easy access to schools and resources, rural conditions, isolation of indigenous communities, civil wars, gang violence, etc.). This is pertinent to El Salvador where, until 1992, over a quarter of its population was illiterate (Brogan and Bolyanatz 2018). In Cuban-Havana Spanish, sibilance retention is highest among the most educated groups, while deletion prevails among the least educated (Dohotaru 1998).

Another conditioning factor for /s/ weakening depends on the differences between rural and urban areas. Rural speakers, on average, engage in higher rates of /s/ reduction.

This has been attested by numerous studies on Spanish in Puerto Rico, Panama, El Salvador (cf. López Morales 1983; Cedergren 1978; Brogan and Bolyanatz 2018), and also in other dialects where *jejeo* (onset /s/ weakening) is present. When *jejeo* has been observed, it has been mostly among rural speakers (see *jejeo* below).

3.1. Reducing /s/ Dialects: Synchronic Comparisons

Almost half of Spanish speakers in the world use some variation of /s/ reduction (Canfield 1981; Terrell 1981). Nevertheless, syllable-final /s/ aspiration and deletion are considered nonstandard features and, in some dialects, are perceived as socially stigmatized. /s/ variation is essential to provide a geographical classification of *Spanish(es)*, which are mostly distributed between two wide geographic categories:

- Highland Spanish (northern peninsular Spanish, Mexico City, Guatemala, Bogotá, and the Andean regions of South America);
- Lowland Spanish (Andalusia, Canary Islands, the Caribbean, the Venezuelan coasts, Colombia and Ecuador, all of Chile, Argentina, Uruguay, and Paraguay), where /s/ reduction is quite common in all socioeconomic levels of society (see Figure 2).



Figure 2. Distribution of coda /s/ aspiration in Spanish. Available online: https://www.reddit.com/r/Spanish/comments/1g8nxb/map_of_s_aspiration_or_reduction_of_spanish/ (accessed on 20 November 2021).

Higher rates of reduction are well documented for the coastal and lowland areas of Mainland Latin American, including the Caribbean, in comparison to speakers from the interior or highlands. Among Peninsular speakers, rates of reduction are higher in the South as opposed to Central Northern provinces. Due to the wide expansion of /s/ lenition, various stages of adoption and spread are found across all these dialects. In order to show recent research on /s/ variations and /s/ reduction with the resulting impact on the preceding vowel, in the present section, the macro-dialects from the following areas are analyzed: the Caribbean, Nicaragua, Ecuador, Colombia, Uruguay, the United States, and the Iberian Peninsula.

There are so many regions where /s/ weakening occurs that it is more economical to start listing the ones that tend to retain coda sibilance: northern Spain, most of Mexico, Guatemala, Costa Rica, and the highlands of Colombia, Ecuador, Peru, and Bolivia. Speakers from the rest of the Spanish-speaking countries reduce /s/ to varying degrees. In Latin America, the Caribbean (including Cuba, Puerto Rico, Dominican Republic, Panama, coastal Venezuela, coastal Colombia and the Mexican coastline around Veracruz and Campeche) shows the highest rates of elision of coda /s/. In addition, the Mexican Pacific coastline also reduces final /s/ with a frequency similar to the Caribbean (Moreno de Alba 1994). In Central America, /s/ reduction is widespread in Nicaragua and occurs to a lesser degree in El Salvador and Honduras. In South America, all of the Pacific coast from Colombia to Chile is an area of heavy /s/ reduction. In Argentina and Uruguay, /s/ lenition is more balanced in big cities, but reaches high levels in provincial areas; likewise, the same happens throughout Paraguay and eastern Bolivia (Lipski 2012).

Among the Caribbean regions, aspiration of /s/ has high rates in Cuba, Puerto Rico, and Nicaragua. Venezuelans (in coastal regions) have approximately equally high rates of aspiration and deletion, while Dominicans mostly have deletion. Hondurans have the highest rates of sibilance (63% in word-internal position and 19% in word-final, preconsonantal position). According to Fox (2006), other countries with advanced lenition show very low rates of sibilance, with full [s] realization counted as sibilance: El Salvador (10%), Panama (4%), Chile (4%), Paraguay (2%), Uruguay (4%), and Argentina (11%). Other countries that retain sibilance such as Guatemala and Costa Rica also show coda /s/ aspiration (30% and 29%, respectively) in word-final, preconsonantal position. In coastal Mexico (both Caribbean and Pacific), rates of aspiration and deletion occur at rates between 20% and 30% (Fox 2006).

- Caribbean Spanish

Most studies on coda /s/ reduction focus on the alternation of three variables: the full sibilant [s], the weakened or aspirated [h], and the deleted [Ø]. In all Caribbean varieties, the full sibilant coda [s] is generally absent from pronunciation. Aspiration [h] and deletion [Ø] are so frequent that, in certain cases, some researchers have proposed that speakers have lost the concept of final /s/ in their mental word-representations. In his studies of Cuban Spanish, Terrell has observed that speakers “have completely restructured lexicons in which no word ends in /s/” (Terrell 1979, p. 610). That principle has led to the notion of “s-less” or “lost-s” speakers, particularly attributed to groups with little or no education. While syllable-initial /s/ is not affected, in certain Caribbean dialects, “/s/ has been systematically and completely lost in syllable-final position” (Harris 2002, p. 97).

Previous findings on Dominican Spanish have reported that the aspirated variant [h] is almost non-existent, and that the deleted one is, by far, the most frequent one in adult speech (see Bullock et al. 2014; Terrell 1986). While aspiration of /s/ was attested in the 1920s and 1930s (Henríquez-Ureña 1940), today, deletion is well advanced, especially among younger speakers (Jiménez Sabater 1975). This continuous /s/ weakening seems to have found an end in popular Dominican Spanish, where no coda sibilance variables are found. Terrell (1986) reports deletion rates as high as 98% in some of the Dominican semiliterate adult speakers he sampled. Hence, he claims that Dominican speakers have no underlying /s/ in final position and categorizes them as “lost-s” speakers. López Morales (1990) also tested another group of semiliterate speakers, finding that 91.8% deleted coda /s/ in spontaneous speech in comparison to 68.2% in careful speech. Likewise, other authors claim that preconsonantal and syllable-final /s/ are categorically deleted by semiliterate speakers (Alba 2004; Núñez Cedeño 1980).

In colloquial speech, in contemporary Dominican Spanish, coda /s/ is rarely pronounced. The only few instances where /s/ may occur are dependent on social and prestige markers and hypercorrections. In certain social situations, Dominicans attempt to speak *high class* by inserting an [s], whether or not it is needed etymologically (graphically). In casual speech, coda sibilance is stigmatized. In formal styles and higher registers, coda sibilance has overt prestige. Even highly educated speakers are careful not to exceed certain

limits of coda-production. Using too many sibilants is considered “un-Dominican” (Bullock et al. 2014, p. 23). Higher rates of coda /s/ are perceived to be affected and associated with a lack of authenticity and, in addition, a lack of masculinity among male speakers. Therefore, the absence of coda sibilance is expected in modern Dominican Spanish, indicating covert prestige. /s/ deletion appears to be the preference. In this dialect, the null variable is preferred as a social marker of community belonging. On the other hand, total /s/ deletion seems to be compensated by a sporadic intrusive-s in rare hypercorrections among illiterates, e.g., *fosto* < *foto* ‘photo, picture’ (see Section 4 below).

In Puerto Rican Spanish, full coda /s/ deletion is also widespread. However, it seems that speakers are moving away from it for social reasons. Comparing datasets from the 1980s to 2004, Valentín-Márquez (2006) finds that the use of final /s/ deletion is decreasing. In response, more glottal variants (aspiration [h] and glottal stop [ʔ]) are emerging among younger groups and female Puerto Ricans. This increase in glottal production seems to originate from a social motivation to distinguish themselves from other speakers that delete final [s] (such as Dominicans). Valentín-Márquez (2006) also adds that glottalization of word-final prevocalic /s/ is an emergent process found predominantly among younger speakers in urban areas. On the other hand, this pronunciation is also observed in the Spanish of Paraguay and northeastern Argentina (Thon 1989), “where it is correlated with a Guaraní substrate and colloquial speech” (Lipski 2011, p. 76). In both Puerto Rican and Cuban Spanish, /s/ reduction is very advanced in all registers and social contexts. Syllable- and word-final /s/ are aspirated and deleted in almost all speech styles. Sibilance is retained only in the most formal styles, when reading or giving speeches (Terrell 1977).

In Dominican, Puerto Rican, and Cuban Spanish, as in other Caribbean dialects, sibilant realizations in coda position are uncommon in conversational speech. Speakers delete /s/ with more frequency than they pronounce it. Aspiration and deletion of coda /s/ have been generally adopted among all sociolects with a continuous progression towards full elision. This tendency has been associated with the influence of speakers of African origin. This hypothesis comes from the fact that West and Central African languages that came into contact with Spanish typically lack coda consonants (Lipski 2011). Megenney (1989) shows a correlation between massive elision of coda /s/ and contemporary Afro-Hispanic speech communities, not only in Caribbean Spanish, but also in Brazilian Portuguese. Reductive coda consonant processes, such as /s/ deletion, correspond to areas with strong African influence. Language contact and bilingualism contributed to the /s/ lenition in these coastal areas.

For the most part, this distribution reflects the historical geography of slavery—the areas where Africans were present in significant numbers. However, by far the largest concentrations of African slave labor in the Spanish Empire were in the Caribbean. Moreover, [. . . Coda consonant reductions] are notably absent in territories where the Spaniards relied on indigenous labor and Africans were rare, e.g., Mexico and the Andean regions (Guy 2017, p. 55).

- Nicaraguan Spanish

Nicaraguan Spanish has been mostly included in the wide generalization of Central American Spanish; however, it differentiates itself from other neighboring regions due to the extreme reduction of coda [s]. To the north, Honduran speakers sometimes produce /s/ as a dental or interdental fricative (Herranz 1990); in addition, they reduce /s/ not only in coda position, but also in syllable-initial and word-initial environments, for example, *lo sé* ‘I know’ is pronounced as [lo.hé]. These features are not documented among Nicaraguans. To the south, Costa Ricans are known for keeping sibilance in all contexts (Lipski 1994). Nicaraguans are well known among their neighbors in Central America for their common practice of “cutting off” coda /s/. Nicaraguans’ frequent reduction of syllable- and word-final /s/ is “comparable to Caribbean dialects” (Lipski 1994, p. 291). They tend to produce coda /s/ as an aspiration [h] before consonants and pauses more than Caribbean variants. Aspiration is common throughout all regions and social classes.

There are two main geographical regions in Nicaraguan Spanish: the Atlantic Coast and Western Nicaragua. According to Chappell (2021), most scholars refer to the Western variety when they describe Nicaraguan Spanish; the Atlantic Coast is characterized by its multilingualism, due to the influence of British colonizers and the contact of Miskitu and other indigenous languages of Nicaragua with English. Atlantic Nicaraguan Spanish is considered a radical dialect with extreme sibilance reduction. Coda /s/ is reduced to aspiration categorically before a consonant, e.g., *este* [éh.te] ‘this’, and is reduced to aspiration, glottal constriction or deletion almost categorically before a vowel, e.g., *más allá* [má.ha.já], [má.ʔa.já], [má.a.já], ‘beyond’ (Chappell 2016b, p. 262). Miskitu-Spanish bilingualism is common in this area, with younger speakers becoming more dominant in Spanish. Spanish has replaced the prestige status of English, especially in northern cities such as Bilwi. Among Miskitu speakers with Spanish as a second language, coda /s/ is reduced more frequently in prevocalic environments, as this context allows them to hear the /s/ reduction the best. This finding differs from most research on this issue, as monolingual Spanish speakers tend to reduce /s/ the most in preconsonantal positions (see Chappell 2016b).

The western region was colonized by small Spanish farmers who remained quite isolated from other regions, since this territory was neglected during colonization due to a lack of material resources. The African population never reached a significant number in this region. Most of the Afro-Nicaraguans reside on the Caribbean coast. Over the last thirty years in monolingual Western Nicaragua, coda /s/ reduction has increased with higher rates of deletion, most notably in the lower socioeconomic groups (Chappell 2021). The increase in coda /s/ deletions, along with frequent aspiration, suggests that /s/ reduction is advancing in this dialect, generating other phonetic results such as the use of glottal constrictions [ʔ]; for example, *más acá* [má.ʔa.ká] ‘over there’, and hypercorrections, as in *fisno* < *fino* ‘fine’. In the same contexts, the glottal constriction also exists in other varieties such as Puerto Rican, Paraguayan, Argentinian, Philippine-*Chabacano*, and Yucatan Spanish cf. (Mohamed and Muntendam 2020; Thon 1989; Lipski 1986; Michnowicz and Kagan 2016). Glottal variations of coda /s/ are explained as a result of syllable-internal fortition and as a contact feature in bilingual settings.

Overall deletion of coda /s/ has increased in Nicaraguan Spanish, although the upper class and most educated speakers resist this continuously growing process. Aspiration, deletion, and hybrid glottal variations are the result of a widespread /s/ reduction among Nicaraguans. Nevertheless, in formal registers, coda sibilance occurs among all speakers, especially the youngest and most educated. Consequently, sibilance has attracted a social significance as a marker of prestige. Still, glottal variants are so popular even in formal registers that “coda sibilance may be losing ground to glottal constrictions as a formality strategy” (Chappell 2021, p. 234). Nicaraguan Spanish shows a great variation in /s/ reduction in all socioeconomic groups and is advancing towards deletion. As an example, *las once* ‘eleven o’clock’ can be pronounced as [la.ón.se] with elision; [la.hón.se] with aspiration; [la.ʔón.se] with glottal constriction; [la.són.se] with sibilance; and [las.ʔón.se] with sibilance and glottal constriction (Chappell 2021, p. 218).

- Ecuadoran Spanish

Ecuadoran Spanish is considered a macro-dialect with three distinctive micro-dialects and cultural regions: coastal, highland, and Amazonian territories. One of the differences that separates the coastal area from the Andean Highlands is that coda /s/ is routinely aspirated to [h] or is elided, just as in all the coastal dialects throughout the Pacific. Coastal Ecuadoran regions reflect /s/ reduction such as Caribbean Spanish and island speech communities. Coda /s/ is aspirated or deleted before consonants, vowels, and pauses.

Highland Spanish usually does not exhibit /s/ weakening and is considered a conservative variety, maintaining and rarely aspirating coda /s/. However, it offers quite a diversity of dialectal features related to sibilance. Some of these realizations of /s/ are summarized in the following characteristics:

- (a) Voicing of intervocalic /s/, especially in word-final prevocalic environments, i.e., *es él* [é.zél] ‘is he’; *pues en* [pwé.zen] ‘well, in’. This feature is restricted to the central highlands, with Quito as the epicenter. Some rare cases of word-internal intervocalic /s/ voicing are attested, but it occurs sporadically, i.e., *desastre* [de.zás.tre] ‘disaster’. Chappell (2011) shows 90% voicing of word-final prevocalic [z] in the Spanish of Quito in comparison to just over 10% in word-medial intervocalic position. Word boundary seems to be the predictor for this /s/ voicing. Word frequency, vowel quality, stress or grammatical function do not appear to affect it (Lipski 2021). Nevertheless, García (2015) reports that voicing happens more often in faster speech, before non-high vowels (*a, e, o*) and between unstressed syllables among young males in her samples of Ecuadoran-Loja Spanish. See Section 4.2 below for more information about /s/ voicing.
- (b) Partial or stripped plurals with a strong [s] on the first element and no [s] on the remaining words, i.e., *los guagua* < *los guaguas* ‘the small children’, *sus casa* < *sus casas* ‘their houses’. This plural is most common in the Spanish of the Afro-Ecuadoran groups in the Chota region. The Chota river valley, surrounded by Andean uplands, is home to approximately 38 Afro-descendent communities. The *Afro-Choteño* dialect is closer to the rural high-land pronunciation than that of the black speakers of the coast in spite of the loss of word-final /s/ in partial plurals (Obando 1985). Chota Spanish is characterized by a strong sibilant pronunciation of coda /s/, sharing phonetic traits with other Highland Ecuadoran varieties. One of the hypotheses to explain partial plural in *Choteño* is based on African influence, as this phenomenon is also found in other Spanish and Portuguese dialects with some African influence such as Afro-Bolivian Spanish, Brazilian Portuguese, and the Portuguese of Mozambique, Angola, Cape Verde, etc. (Figueiredo 2009; Lipski 2021). Not all linguists agree with this theory, and some reject the African connection to explain partial plurals (see Naro and Scherre 2007). Partial plural marking can also occur sporadically in dialects with no African contribution, as happens in the Ecuadoran Spanish of Quechua-dominant bilinguals. Lipski (2021) proposes the more general notion of simplification in language-contact situations to explain this trait.
- (c) Assibilation of trill /r/. In Highland Ecuadoran Spanish, speakers can pronounce the voiced alveolar trill /r/ (i.e., *perro* ‘dog’) as well as the word final tap /ɾ/ (i.e., *por* ‘for, by’) as a sibilant, with a non-lateral fricative articulation similar to the [ʒ] in English ‘vision’. For example, *ver algo* ‘see something’, is pronounced as [bé.ʒál.ʝo] with resyllabification. The word final /ɾ/ creates “another context for intervocalic sibilants” (Lipski 2021, p. 271). Some other speakers in the region articulate trilled /r/ as a voiced sibilant [z], similar to the voiced apical sibilant [ʒ] reported in Highland Bolivian Spanish (specifically in lower-classes and is absent in upper-middle groups, according to (Morgan and Sessarego 2016, p. 204)). For example, *perrito* ‘dog’ and *corre* ‘you, run!, (imperative)’ are articulated as in [pezíto], [kóze], respectively, comparable to Highland Bolivian [pezíto] and [kóze]. On the other hand, in the northern and central regions, the lateral palatal /ʎ/ (as in *calle* ‘street’) can also be pronounced as the voiced sibilant [ʒ] (similar to Argentinian dialects). Consequently, Highland Ecuadorans assibilate both rhotics (trilled /r/ and tap /ɾ/) and lateral (/ʎ/) as an additional source of sibilance. Rhotic assibilation is found in other Latin American Spanish regions such as Bolivia, Costa Rica, Chile, Dominican Republic, Argentina, and Mexico (Morgan and Sessarego 2016; Quilis and Carril 1971; Mazzaro and González de Anda 2020; Bradley and Willis 2012; Willis 2007; Rissel 1989); as well as in Spain (Henriksen and Willis 2010).
- (d) Vowel reduction in contact with /s/. This articulatory weakening is observed when the vowel is unstressed and in contact with /s/, both in preceding or following environments, as in *presidente* [pres.ðé̃n.te] ‘president’, *satisfacción* [sats.fak.sjón] ‘satisfaction’ (Lipski 2021, p. 263). The vowel deletion enhances the sibilance of /s/, sounding much more prominent and noticeable.

Departing from the usual manifestations of coastal sibilant reduction, Highland Ecuadoran Spanish almost never reduces coda /s/ to aspiration or deletion. Omission of /s/ in this region is immediately noticeable (Lipski 2021). Sibilant pronunciation continues to evolve in the highland dialects as several ethnographic groups and sociolinguistic traits come together in this compact but diverse area.

Amazonian Ecuadorian Spanish has yet to develop, as most of its inhabitants are transplants from other regions of Ecuador or speak indigenous languages, adding further variability, according to Lipski (2021). This variety is greatly influenced by local indigenous languages. Traditionally and linguistically ignored, Amazonian dialects could add a lot of insights to the field of phonetics and ethnolinguistics in the near future, if properly acknowledged and investigated.

- Colombian Spanish

Colombian Spanish has two basic macro-dialects, differentiated by whether coda /s/ is reduced or not. In the coastal or lowland areas, the *Costeño* dialect has extreme /s/ reduction, while, in the interior highlands, including the Andean Highlands, *Cachaco* features more conservative variants of sibilance maintenance. In both macro-dialects, but particularly in *Costeño*, *jejeo* or initial /s/ weakening has been observed (i.e., [he.mána] < *semana* ‘week’, [é.he] < *ese* ‘that’) along with a small degree of intervocalic voicing (i.e., *casa* [káza] ‘house’). In *Costeño* Spanish, coda /s/ is aspirated or deleted, as throughout the Caribbean. The occurrence of coda /s/ in the *Cachaco* dialect and its aspiration or deletion in the *Costeño* dialect are seen as the main distinctions between the two (see Orozco and File-Muriel 2012; Quesada Pacheco 2000; Flórez 1961; Lipski 1994; Montes Giraldo 1985, among others).

Colombia’s geography and demography (with white, *mulato*, black, and indigenous people) has led to a rich linguistic present with different languages (over 60 indigenous languages), many dialects and two Afro-Colombian creoles: Palenquero and Sanandresano. In the highlands, we can find the following subdialects: the Spanish spoken in Bogotá called *Rolo*, *Cachaco*, or *Bogotano* is characteristic for its formality, clarity, and the pronunciation of /s/. It is the Spanish broadcasted in the media. *Cundiboyacense* and *Paisa* also retain sibilance. *Paisa*, also known as *Antioqueño*, has a distinctive feature of pronouncing /s/ with a whistling-like sound, similar to Castilian apicoalveolar [s̺] and close to the sibilant in the English word *she*, when spoken both quickly and quietly, e.g., *pues* ‘then’ sounds like [pwés], *Paisa* [páɪsa]. Colombian-*Antioqueño* and Highland Bolivian Spanish are the only two places in Latin American Spanish where /s/ has an apical articulation [s̺], as in northern Spain (Canfield 1981, p. 17). *Valluno*, also known as *Bugueño* or *Caleño*, resembles *Paisa*; *Caleños* pronounce /s/ strongly, but they also make use of *jejeo* in intervocalic contexts, as in *necesitar* [nehesítár] ‘to need’. In the south, in the *Pastuso* dialect from the Andean region, the /s/ is never omitted or weakened; in addition, trill /r/ is assibilated as in Chile, Highland Ecuadoran, and Highland Bolivian Spanish. *Pastuso* (or *Andino*) has a strong indigenous influence and is closer to Highland Ecuadoran, Peruvian and Bolivian dialects than its Colombian counterparts. *Santandereano*, also considered an Andean dialect, shows constant sibilance maintenance; occasionally, /s/ is aspirated in preconsonantal position, as in *espejo* [e^h.pé.xo] ‘mirror’, with very few cases of words with *jejeo*, e.g., *pedazo* [pe.ðá.ho] ‘piece’, *cemento* [he.méñ.to] ‘cement’ (Flórez 1965, p. 86). *Tolimense* (or *Opita*) and *Amazónico* are also classified as highland varieties (Mejía 2018).

In the lowlands, the broader *Costeño* dialects include Caribbean coastal regions such as Barranquilla, Cartagena, and La Guajira, where the omission or weakening of final consonants is common, including /s/. The aspiration and deletion of coda /s/ are characteristic, e.g., [fó.fo.ro] < *fósforos* ‘matches’. These traits are shared with Cuban, Dominican, and Puerto Rican Spanish. On the Colombian Pacific coast, *Chocoano* (or *Caucano*), isolated and with a strong African influence, often omits the final /s/ sound, as on the Atlantic coast, e.g., *estos señores* [é.to.se.nó.re]. In the Colombo-Venezuelan plains, where there is a strong indigenous influence, the *Llanero* speakers also reduce /s/ with aspiration or deletion; sometimes, they show stripped plurals (where plural-s tends to be marked only on the first

element) as in *los caballo* < *los caballos* ‘the horses’ (Mejía 2018). See Figure 3 to locate all of these dialects.

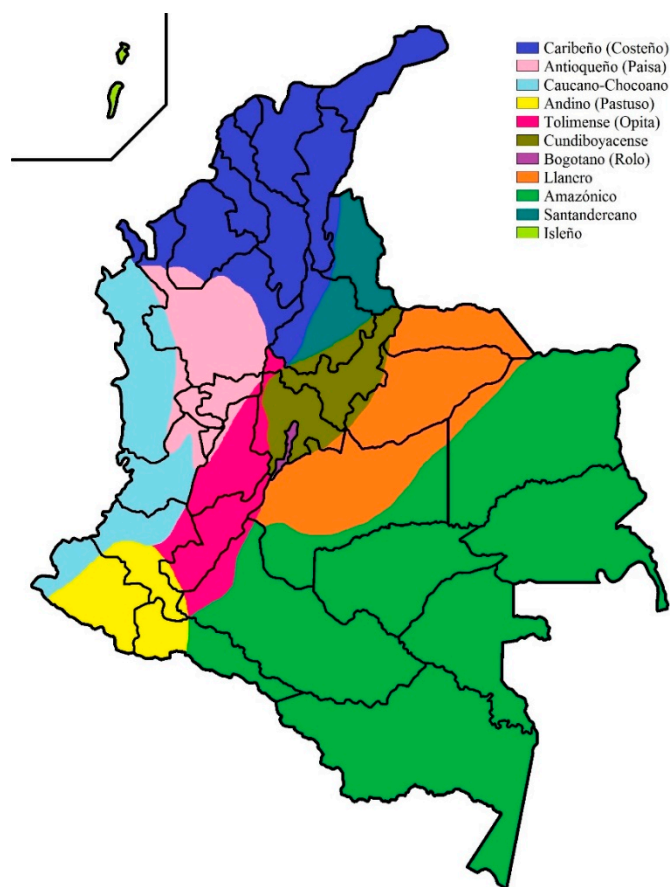


Figure 3. Regions and dialects in Colombian Spanish. Available online: <https://thebogotapost.com/understanding-colombias-different-accents/27454/> (accessed on 20 November 2021).

A great deal of research in the field of dialectology has been conducted in Colombia thanks to the impact of the *Instituto Caro y Cuervo* (ICC), founded in 1942, and the *Atlas lingüístico-etnográfico de Colombia* (ALEC 1954), published in 1983. One of the most productive areas of investigation has been centered on the creole *Palenquero*, (also known locally as *Lengua*), in the Colombian Atlantic coast. Palenque’s local Spanish variety, *kateyano* (<*castellano* ‘Castilian’), belongs to the Caribbean macro-dialect, and has similar features as other coastal Spanish dialects.

Several scholars have provided distinctive insights on the weakening of implosive /s/ in Colombian Spanish from numerous angles. For example, File-Muriel (2009) considers the role of lexical frequency as a predictive factor for /s/ lenition in the Barranquilla dialect; Brown (2009) also analyses the role of lexical frequency in four different /s/-reducing dialects, namely those of Cali, Colombia; San Juan, Puerto Rico; Mérida, Venezuela; and northern New Mexico and southern Colorado in the United States. Brown demonstrates that word frequency significantly conditions syllable- and word-final /s/ reduction and also consonant weakening in general. The more frequently a word is used, the more likely it is to have /s/ or consonant reduction. Correa Ramírez (1990) investigates both the reduction of stops in consonant clusters and syllable-final /s/ lenition in Antioquia rural Spanish. Lafford (1986) studies the role of socioeconomic status, gender, and age in Cartagena.

The Spanish of Cali, although considered a highland variety, has characteristics from the nearby coastal regions and is thus described as a transitional variety. In *Caleño*, /s/ reduction happens in all syllable and word positions (initial, medial, and final environ-

ments). Aspiration and deletion of /s/ is quite widespread in this variety, including a unique reductive process in onset contexts, e.g., [hi] < sí 'yes' (see [Brown and Brown 2012](#)). The Spanish of Barranquilla has also received some attention as an illustrative model that provides insights into the factors that promote coda /s/ weakening, quite common in this Caribbean dialect. [File-Muriel et al. \(2021\)](#) claim that, even though linguistic behavior has been regarded as socially learned, simple physiological differences between females and males influence phonetic production in Colombian-Barranquilla Spanish. In addition, findings have shown that the /s/ lenition production in this dialect is significantly conditioned by speaking rate, surrounding sounds, lexical frequency, gender, and the socioeconomic class of the speaker ([File-Muriel 2012](#)).

- Uruguayan Spanish

There have been few extensive studies of /s/ variations in Uruguayan Spanish (see [Barrios 2002](#)). To date, most of them have investigated Border Uruguayan Spanish, where Portuguese and Spanish coexist and influence each other due to language contact (see [Waltermire 2014, 2021](#)). In the bilingual border town of Rivera, sibilance retention is connected to a Spanish variant influenced by Portuguese. Local speakers prefer to use /s/ aspiration or deletion to associate themselves with the capital Montevideo, where coda /s/ aspiration is the prestige variant. At the same time, there seems to be a need for certain groups to orient away from Portuguese or from Border Uruguayan Portuguese, which lacks /s/ aspiration. Therefore, /s/ aspiration has become a prestige marker in Riveran Spanish ([Carvalho 2006](#)). [Waltermire \(2021\)](#) finds that the rate of aspiration in this area is much lower than in other regions of Latin America (compared to Argentina, Chile, Paraguay, and the rest of Uruguay) as a result of the continued use of Portuguese. This aspiration is most common among young people, especially students. [Carvalho \(2006\)](#) also attests that it is likely to occur among the middle class only and not among lower-middle- or working-class groups. It is to be hoped that, in the future, these two languages will coexist with a unique bilingual identity, without competition or the stigmatization of *Portuñol* (a mixed variety).

The use of /s/ variants in Montevideo is similar to that found in the cities of Rosario and Buenos Aires in Argentina, with /s/ aspiration being most common among young speakers cf. ([Donni de Mirande 1989](#); [Fontanella de Weinberg 1974](#)). In Rosario, nevertheless, it seems that word-final /s/ aspiration happens in the spontaneous speech of the lowest socioeconomic class ([Donni de Mirande 1989](#)), contradicting what [Carvalho \(2006\)](#) found for Rivera. To my knowledge, unfortunately, there is a lack of recent sociolinguistic data on /s/ weakening in River Plate Spanish as a whole.

Continuous massive migrations from rural isolated areas to major cities such as Bogotá (Colombia), Guayaquil (Ecuador), Lima (Peru), Santa Cruz (Bolivia), Caracas (Venezuela), Mérida, and Tijuana (México) have created multi-dialectal mosaic populations in which rapid sociolinguistic changes and outcomes are highly expected. Urban settings offer great conditions for the creation, development, and variability of sociolects, opening the door to stimulate new linguistic studies.

- Spanish in the United States

Prior studies on /s/ variation in Spanish in the United States show evidence of both dialectal leveling for prestige and also, in contrast, the maintenance of dialectal differences for local solidarity or identity preservation. The linguistic behavior of newcomers evolves in a language contact situation. Newcomers' regional differences diminish in contact with those with more experience in the United States, creating dialectal leveling. Patterns of /s/ variation among Spanish speakers in the United States are driven by various dynamics: speaker origin, intergenerational continuity, age of arrival to the United States, language contact interactions, ideologies, and identity traits, in addition to all those linguistic and non-linguistic factors already mentioned for /s/ reduction.

According to the 2020 report by Instituto Cervantes, the United States has the second highest concentration of Spanish speakers in the world. The United States has 62 million Spanish speakers, surpassed in number only by Mexico. More than 41 million are native

Spanish speakers and more than 14 million are bilingual Spanish speakers. According to the [United States Census \(2020\)](#), 18.7% of the total Latino population consider themselves Hispanic and 71.1% of them speak Spanish at home. These numbers exclude approximately 10.5 million unauthorized immigrants from Mexico, Central America, South America, and the Caribbean as of 2020 ([González-Barrera et al. 2020](#)). Most of the Spanish speakers in the United States come from Mexico (61.9% of the total Hispanic population), followed by Puerto Ricans (9.7%), Cubans (4%), Salvadorians (3.9%), and Dominicans (3.5%). Nevertheless, in recent years, this percentage has been decreasing for those of Mexican origin and increasing for those of Caribbean, Central American, and South American origin (see Table 1).

Table 1. Hispanic population origins in the United States (adapted from [González-Barrera et al. 2020](#)).

Origin	2010	2018	Difference
Mexico	64.4%	61.9%	−2.5%
Caribbean	15.7%	17.1%	1.4%
Central America	8.2%	9.4%	1.2%
South America	5.8%	6.4%	0.6%

Mexican and Central-American groups are concentrated mainly in the southwest of the United States, in those states close to Mexico (California, Texas, New Mexico, Arizona), while Caribbean speakers are found mostly in Florida and New York. According to the [United States Census \(2020\)](#), excluding Puerto Rico, the states with the largest populations of Hispanics (over 25%) are: New Mexico (49.3%), Texas (39.7%), California (39.4%), Arizona (31.7%), Nevada (29.2%), and Florida (26.4%). Big urban centers also have large numbers of Latinos due to more employment opportunities (restaurants, hotels, and other service-sector positions). Among the cities with the highest rates of Hispanics (over 50%) are: East Los Angeles, CA (95.16%), Laredo, TX (95.15%), Hialeah, FL (94%), Brownsville, TX (93.88%), Edinburg, TX (88.44%), El Paso, TX (81.25%), Salinas, CA (79.60%), Miami, FL (70.20%), Elizabeth, NJ (65.72%), San Antonio, TX (63.85%), Corpus Christi (60.71%), Las Cruces, NM (60.33%), Sunrise Manor, NV (54.57%), Allentown, PA (54.22%), among many others ([Instituto Cervantes 2020](#)).

According to the Pew Research Center, one-third (36%) of Hispanics are immigrants; another third are second generation (34%), that is to say, they are US born with at least one immigrant parent. The remaining 30% belong to the third or higher generations, which means that they are US born to US-born parents. The ways that Hispanics describe themselves as such vary across immigrant generations. Many say that “speaking Spanish is an essential part of what being Hispanic means to them, with 45% saying so” ([González Barrera 2020](#)). Nevertheless, the importance of speaking Spanish decreases across generations: “54% of foreign-born Hispanics say speaking Spanish is an essential part of what being Hispanic means to them, compared with 44% of second-generation Hispanics and 20% of third- or higher-generation Hispanics” ([González Barrera 2020](#)).

It seems that there is a generic linguistic trend of using less Spanish in generation two and even less in generation three. There is an increasing gradual preference for using English across generations. Children and grandchildren of immigrants learn English as a socioeconomic necessity. [Silva-Corvalán \(2014\)](#) reports that bilingualism is common among second-generation children but English monolingualism tends to be the predominant pattern by the third generation. [Alba \(2005\)](#) also explains that, even though the level of English monolingualism is lower among Hispanics than among other immigrant groups (e.g., Chinese, Koreans, Japanese, Vietnamese), a clear majority speaks only English, such as 68% of third-generation Cubans and 71% of third-generation Mexicans. Considering these findings, and the English monolingualism prevalent by the third generation, studying /s/ variations among these speakers becomes more significant if studied in generations one and two. Generation three has increased US life experience and, therefore, has decreased rates of /s/ reduction ([Erker 2012](#)).

The high numbers of Spanish speakers of Mexican origin indicate that the macro-dialect most extended in the United States is Mexican Spanish, which tends to lack /s/ reductions. That means that the majority of speakers do not routinely weaken /s/ with aspiration or deletion. On the contrary, speakers from the Caribbean (including Mexicans from coastal regions such as Veracruz) and most of the Central American regions present /s/ lenition in varying degrees depending on their regional origins, socio-dialectal leveling processes, and interaction with English in the States. The pressure of English (a language with no /s/ reduction), exposure to other unreduced /s/ Spanish dialects, and increasing life experience in the United States may condition lower rates of /s/ weakening. Prestige-motivated shifts also help to maintain sibilance in these /s/-reducing communities. To assess and study language change among these speakers, they are usually grouped according to their US life experience and Immigration Category, that is to say, they are grouped into one of these three categories: newcomers, established immigrants, and US born (Otheguy and Zentella 2012). The realization of coda /s/ among /s/-reducing speakers appears to be shaped by linguistic and social factors, specifically by increasing US life experience. “Under the pressures of language and dialectal contact, rates of coda /s/ reduction would diminish with increased US life experience” (Erker and Reffel 2021, p. 156).

In Boston and New York City, Caribbeans show lower rates of /s/ reduction, meaning fewer non-[s] realizations and lower rates of deletion due to the contact setting. Caribbeans that migrate to large and diverse urban centers are likely to interact with other Spanish speakers who do not reduce /s/ or reduce /s/ far less often as they do. Thus, the influence of other types of Spanish and English generates a unique Caribbean variant, which contrasts with that of their home country counterparts, as in Santo Domingo, for instance, who typically reduce /s/. At the same time, there is also a prevailing yet conflicting trend of preserving dialectal differences in the Spanishes in the United States to preserve intergenerational continuity and emphasize identity (see Erker and Reffel 2021).

In Miami, where half of the city population is of Cuban origin, the perception of Cuban Spanish depends on the notion of “exile” and on the time of arrival in relation to the Castro Revolution. Aspiration and deletion of final /s/ is generally observed among Cuban speakers, both among longstanding Miami Cubans and recently arrived Cubans. However, maintenance of final /s/ sibilance has been attested by early exile Miami-Cubans to distinguish themselves from the recent Cuban arrivals (post-1980 Mariel crisis). Those early exile Cubans have now been in Miami for five or six decades. Some of them have children and grandchildren born and fully educated in the United States who are second and third generation bilinguals with English as their dominant language and limited literacy in Spanish. They generally speak English with each other with code-switching, specifically among second-generation speakers, and with discourse markers such as *dale*, *mira*, *tú sabes*, *pero*, *mi amor*, etc., (Lynch and Parera 2021, p. 167). Given the high appreciation of bilingualism in South Florida, the lack of generational continuity of Spanish among Miami Cubans is quite “paradoxical”, as Porcel (2006) describes. With further immigration from other Latin American countries to Miami, Cuban speakers are more exposed to other Spanish dialects (particularly Colombian, Venezuelan, Nicaraguan, and Puerto Rican), which threatens the continuity of Cuban Spanish in Miami. It does not help that Cuban Spanish speakers consider other varieties to be more “correct” or “educated” and even “pleasant” (Alfaraz 2014). They generally associate “correctness” with the realization of final /s/ as sibilant [s]. Carter and Callesano (2018) find that Miami-Cubans attribute greater prestige to Peninsular and Colombian varieties of Spanish. Similarly, Fernández Parera (2017) observes that Miami-Spanish speakers consistently rate Colombian, Venezuelan, and Argentinian varieties more positively than Caribbean dialects, which are considered less correct.

In Philadelphia, Guarín (2020) studies the effects of language contact in Colombian Spanish in relation to /s/ variations and concludes that no linguistic convergence or leveling is observed. The informants in his study preserve their original dialectal variants.

However, they show stylistic /s/ variations depending on the degree of the formality of the speech situation.

In relation to the production of final /s/ by heritage speakers of Spanish in the United States, there have only been a few studies. O'Rourke and Potowski (2016), in their study of Mexican, Puerto Rican, and MexiRican speakers in Chicago, report that speakers of Mexican heritage did not adjust or accommodate their pronunciation of final /s/ when speaking to Puerto Ricans. The Mexican heritage speakers maintained sibilance in coda position even though Puerto Ricans regularly aspirate and delete final /s/. Puerto Ricans and MexiRicans did reduce final /s/ variably within and across speakers. Boomershine and Stevens (2021) note that Mexican Spanish heritage speakers in North Carolina realize coda /s/ in an almost identical manner to monolingual speakers with Spanish as their first language. In contrast, native English speakers who learn Spanish as a second language are influenced by English phonology. They avoid the use of the variable voiced variant [z] before voiced consonants when they speak Spanish, as /s~/z/ contrast phonemically in English and can change the meaning of words (e.g., *sip* vs. *zip*).

Hernández (2009) notes that Salvadorans with longer periods of residence in Houston (Texas) used fewer Salvadoran features and showed greater accommodation to Mexican norms. This dialect contact situation implies more realizations of coda sibilance among Salvadorans living in Houston than those living in Salvador. Hoffman (2004) reports that Salvadoran Spanish speakers in Toronto, Ontario, were less likely to delete /s/ in formal styles (as /s/ deletion is perceived as socially stigmatized in this area). Robert Bayley et al. (2012), in their study of Puerto Rican- and Mexican-origin residents of San Antonio, Texas, suggest that /s/ aspiration and deletion exhibit social stratification and variation, with their use being stigmatized. Speakers experience pressure to alter their rates of sibilance to conform to a local pattern, which in this case is Mexican Spanish for overwhelming demographic reasons. Amastae and Satcher (1993) examine phonological changes in the Spanish of Hondurans in El Paso, Texas, and find evidence that speakers accommodate their pronunciation to prevailing Mexican norms.

The Spanish spoken in the United States presents a wide range of possibilities to explore /s/ variations not only when in contact with English as a minority language but also in the Spanish dialect contact situation. The tendency of second- and third-generation Spanish speakers to assimilate to mainstream English dominant United States culture creates dialect leveling, higher rates of final /s/ articulation, and a language shift. Due to the influence of American English /s/ with greater sibilance than in some Spanish varieties and the exposure to multiple Spanish dialects, the "Spanishes" spoken in the United States tend to present higher sibilance rates. As has been attested, increasing United States life experience correlates to increasing coda sibilance; greater ability in speaking English also leads to higher degrees of coda /s/ realizations among Spanish speakers in the United States (see Erker 2012). The perception of the pronunciation of final /s/ as a marker of prestige, social class, and political ideologies also contributes to this situation. Access to formal education (in both languages, English and Spanish) may also promote higher frequency of coda /s/.

Clearly, the articulation of coda sibilance by Spanish /s/-reducing speakers in the United States is the result of multiple factors. Acculturation in the United States, social differentiation, bilingualism level, professional networks, age of exposure to English, and language proficiency also surely play a role in the pattern observed here. More localized studies are needed in the future to approach coda sibilance variations in the wide and diverse mapping of Spanish speakers in this region. To what extent are Spanish dialects converging in major cities of the United States? What kind of shifts (if any) is a minority Spanish dialect experiencing when in contact with the predominant variety in that area? Does the evidence of dialect convergence suggest a transitory phenomenon (with a consequential shift to English) or the development of more stable varieties?

- Peninsular Spanish

In Spain, coda /s/ variables can be distributed between two clear areas: the north, with elevated rates of /s/ retention, and the south, with considerable rates of aspiration and deletion. The articulation of /s/ in the north differs from that in the south in that /s/ is pronounced as a concave apicoalveolar sound [s̟] (with the tip of the tongue turned upward), almost like a whistling, hissing sound, versus the convex alveolar counterpart in the south. Still, there are two variations for the southern alveolar sibilant /s/: the comparatively more convex /s/ of Granada, Huelva, Córdoba, Jaén, and Almería, and that of Málaga, Seville, and Cádiz, which is less convex and articulated as a dento-alveolar [s̠]. The Castilian apicoalveolar [s̟] has been attested in parts of Mexico, Antilles, Perú, Bolivia (Highlands), and Colombia (in Bogotá), while, in general, the Latin American /s/ resembles the Andalusian alveolar types cf. (Obaid 1973; Navarro Tomás [1918] 2004).

In Peninsular Spanish, coda /s/ reduction is quite widespread and common throughout the south, presenting considerable variations. In diachronic terms, this phonetic lenition originated in the south, in Andalusia, and then extended into other regions such as Extremadura and Murcia, and further north into Castilla la Mancha and Madrid. Nowadays, it has gained terrain in the whole country, although the most northern regions (Galicia, Asturias, Cantabria, Basque Country, Aragon, and Catalunya) still keep sibilance systematically in all environments. The highest rates of /s/ aspiration and deletion are throughout Andalusia, Extremadura, and Murcia, in addition to the Canary Islands and Gibraltar.

In Andalusia, /s/ aspiration has generated two sub-dialects according to whether the resulting vowel system has changed. In western varieties, vowels are not affected by /s/ reduction, while, in eastern varieties, they are (Alvar 1955). Eastern Andalusian speakers produce and notice different vowels depending on which consonant is deleted. Words such as *ves, vez, ver* ‘go, once, to see’, with final consonant deletion, are distinguished among these speakers by vowel articulation. Vowel opening happens in vowels preceding /s/ deletion but also before deleting /θ/ and /r/ (Herrero de Haro 2016b). Navarro Tomás (1939) was the first one to maintain that the omission of coda /s/ opened the previous vowel.

3.2. Impact of /s/ Reduction on Preceding Vowel

Many hypotheses and disagreements have arisen in the literature about whether vowel opening exists before coda /s/ deletion, whether this vowel opening is phonological, and whether another vowel system is needed to reflect vowel variation preceding /s/ deletion. Different approaches apply to vowel interpretations before /s/ reduction; among the most accepted and debated phonotactic strategies are vowel opening, doubling, lengthening, vowel harmony through positional markedness, and no vowel change. López Morales (1984) explains that vowel opening is a phonetic feature, not a phonological one; there is almost always another element that carries the semantic load of the deleted /s/, such as numerals, articles, or subject pronouns. He also explains that coda /s/ is deleted more often when there are other ways of marking plurality. Similar conclusions were reached by Terrell (1978) for Cuban speakers. Nevertheless, Herrero de Haro (2016a) rejects López Morales’ theory and argues that Andalusian speakers can identify underlying /s/ without contextual elements. In the same line of research, Ruch and Peters (2016) confirm that almost all Andalusian listeners can distinguish pairs such as *pata~pasta* ‘paw, pasta’ by the long aspiration of /s/ before stops (*p, t, k, b, d, g*). Their acoustic study shows that velar stops had the longest duration, bilabials the shortest, and dental stops intermediate aspiration durations. They also established that “the preceding vowel was slightly longer when followed by an intervocalic stop [as in *pata*] than when followed by an aspiration-consonant-sequence [as in *pasta*]” (Ruch and Peters 2016, p. 29). In other words, “vowels were slightly shorter when followed by a phonological /s/ + voiceless stop (*p, t, k*) than when preceding intervocalic stops” (Ruch and Peters 2016, p. 20). They also believe that stops after /s/ aspiration are on their way to being phonologized, especially in the dental context (*t, d*), in Andalusian Spanish. Ruch’s and Peter’s findings do not support the

assumption of vowel lengthening as a compensation for /s/ reduction in contrast with previous compensatory vowel lengthening hypotheses cf. (Carlson 2012; Resnick and Hammond 1975; Figueroa 2000).

For plurals, many scholars believe that vowel opening is the distinctive feature, i.e., *boca~bocas* ‘mouth(s)’ (see Mondéjar Cumpián 1979; Gómez Asensio 1977; Contreras Jurado 1975; Alarcos Llorach 1958; Salvador 1957; Alvar 1955; Navarro Tomás 1939); among many others. Herrero de Haro (2016b) believes that all consonants leave a trace of place of articulation on any preceding vowel.

Resnick and Hammond (1975) compare vowel quality in Cuban Spanish in both close and open syllables (when a vowel precedes a final deleted /s/ and when it does not, i.e., *las~la* ‘the pl. sing.’, respectively) and conclude that they did not find measurable differences in the vowels’ formants. Likewise, based on spectro-temporal acoustic data, Corbin claims that “there was no significant difference between the formants of vowels in syllables whose codas had been deleted and those in syllables whose codas had not been deleted” (Corbin 2006, p. 27); nevertheless, he attested a variance in vowel lengthening. Martínez Melgar (1994) describes vowels as shorter before deleted /s/, and Peñalver Castillo (2006) likewise reports that vowels are shorter before aspirated /s/. Jiménez and Lloret (2007) examined the effect of deleted consonants on vowel opening, stating that vowels are more open when they precede /s/ deletion than /l/ or /r/ deletions, and that the latter two (/l/ and /r/ deletions) do not systematically trigger vowel opening. Carlson (2012) found an average increase of 24.2% in the duration of vowels preceding deleted /s/. She concurs that this vowel lengthening allowed participants to distinguish pairs such as *buque~busque* ‘ship, to look for’. Carlson’s results are similar to those presented by Hammond (1978) for Miami-Cuban Spanish and in Figueroa (2000) for Puerto Rican Spanish. Campos-Astorkiza (2003) finds consonant gemination in Andalusian Spanish rather than vowel lengthening. Likewise, other linguists believe that the cue to recognize word-medial /s/ deletion lies in consonant gemination (cf. O’Neill 2010; Bishop 2007; Gerfen 2002). Curiously, in Highland Ecuadoran Spanish, where /s/ retention is common, unstressed vowels in contact with /s/ are elided as in *ustedes* [ustéðs] ‘you pl.’, *presidente* [presðénte] ‘president’ (Lipski 2021, p. 263).

The intense debate about vowel condition before /s/ reduction continues with conflicting explanations. Most linguists agree that the semantic value of the deleted /s/ is transferred to another element in the speech; however, there is no consensus on what that element is: vowel quantity, quality, some other suprasegmental feature or contextual cues. There seems to be agreement that consonants geminate with /s/ deletion, thanks to modern acoustic data; nevertheless, the length, condition, and phonemic impact of that gemination are still contested.

The phonetic phenomenon of /s/ weakening in Andalusian Spanish spread across the Atlantic from the south of the peninsula during the first waves of the territorial colonization, arriving in the Canary Islands and the lowland or coastal American dialects. Catalán (1958) names the weakened coastal varieties of /s/ as *español atlántico*, spread throughout Latin America in island and coastal speech communities. Nevertheless, uniformity was (and is) not characteristic of /s/ reduction, since other influences have had a strong impact on the American linguistic map of final /s/ variants. African and Amerindian communities, substratum influence, and regional and social idiosyncrasies, all added variability to this already variable phenomenon.

Phonetic variability is characteristic in Spanish dialects with /s/ reduction. Phonetic features vary from town to town, from region to region within the same micro-dialect, from one sociolect to another even within the same speaker. Therefore, it is quite daunting to systematically summarize all the possible variants of /s/ reduction in the Spanish speaking world, considering the extension of this study and the available published research (very vast indeed). We have included here a selection of dialects that have received the most attention, as they offer a rich and evolving source of /s/ variables.

3.3. Reduction of Initial /s/: Jejeo

Another phenomenon derived from /s/ weakening is the aspiration of /s/ as [h] in initial environments (either syllable or word), known as *jejeo*, also written as *heheo* or *gegeo*. This dialectal feature extends to other sporadic fricative initial aspirations such as [h] for [f] or for the grapheme <h> (as letter <h> is silent in standard Spanish, with no sound). Thus, *jejeo* is not exclusive to /s/ lenition. Nevertheless, our main purpose here is to analyze *jejeo* as a variable result of /s/ reduction. See different types of *jejeo* in Example (3) below.

(3) (Prevocalic) word-initial:	<i>sí</i> [hí] ‘yes’, <i>la semana</i> [he.má.na] ‘the week’
Prevocalic syllable-initial:	<i>casi</i> [ká.hi] ‘almost’, <i>cabeza</i> [ka.bé.ha] ‘head’
Postconsonantal word-initial:	<i>un centavo</i> [un.heŋ.tá.βo] ‘a cent’
Postconsonantal syllable-initial:	<i>entonces</i> [eŋ.tón.he] ‘then’
[h] for [f]:	<i>fue</i> [hwé] ‘s/he went’, <i>fueron</i> [hwé.ron] ‘they went’, <i>afuera</i> [ahwéra]
[h] for <h>:	<i>hacha</i> [há.tʃa] ‘axe’, <i>herrumbre</i> [herúmbre] ‘rust’, <i>hondo</i> [hóŋdo] ‘deep’, <i>hoyo</i> [hójo] ‘hole’, <i>humo</i> [húmo] ‘smoke’, <i>moho</i> [mó.ho] ‘mold’

Jejeo is much more limited than the aspiration of coda /s/ and only happens with specific words in particular dialect communities. It has been mostly documented in certain areas in Andalusia, the Caribbean, Central America (El Salvador, Honduras, and Nicaragua), South America (Colombia, Venezuela, and Chile), northern Mexico and, to a lesser degree, New Mexico in the United States (see Figures 4–6). The aspiration of initial /s/ lacks prestige despite its distribution both in transatlantic and southern Peninsular Spanish. Nevertheless, *jejeo* is not widespread or systematic. It happens in regions with *seseo*, with reduction of coda /s/ and is merely sporadic in occurrence. It is usually a feature used by uneducated, rural, and low-class speakers in casual speech; however, educated speakers may use it in informal or colloquial contexts (Rodríguez Prieto 2014). This association with low-class, less educated speakers has resulted in the perception of *jejeo* as a non-standard stigmatized dialectal variation. *Jejeo* only affects certain words and is not consistent, that is to say, the same word can be pronounced with or without *jejeo* by the same speaker in similar registers. According to Lipski, *jejeo* “only occurs in dialects where [word-final prevocalic /s/ reduction] has been generalized” (Lipski 1999, p. 198). *Jejeo* could be interpreted as an embryonic linguistic change unable to evolve and is therefore restricted to limited demographic groups and restricted to a few words (Narbona Jiménez et al. 2003). Consequently, this phenomenon shows multiple variables in terms of how it is perceived socially, geographically, stylistically, and linguistically. Interestingly, a similar process of aspiration in intervocalic position is documented in Ancient Greek and in Irish (Alvar 1955).

In Andalusian Spanish, *jejeo* sporadically occurs in casual familiar speech in all the Andalusian regions. However, it occurs more often in Cádiz, the south of Huelva, Seville and Córdoba, and in Málaga and Granada cities (see Figure 4). The word *jandalia* por *sandalia* [haŋdálja] ‘sandal’ is widely attested in the center of Córdoba province (Narbona Jiménez and Morillo 1987). The aspirated initial /s/ is not as extended as *seseo* or *ceceo*. Indeed, it is constrained to only a few words among speakers living in isolated and dispersed areas of westerncentral Andalusia in the lowest sociocultural strata (Rodríguez Prieto 2014). Harjus explains that, in rural dialects in Cádiz province, especially the varieties from Sierra de Cadiz, the use of [h] instead of [s] stands out even for proper names such as *Puerto Serrano*. Harjus reports that these speakers “pronuncian s como j (*Puerto Jerrano*), they pronounce [s] as [h] (*Puerto [h]errano*)” (Harjus 2021, p. 85).

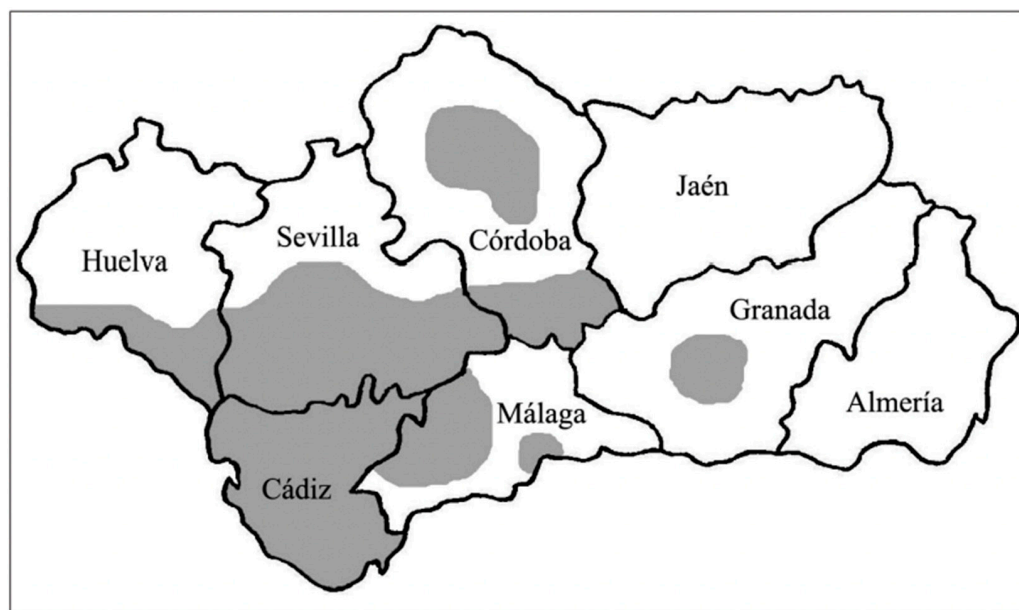


Figure 4. *Jejeo* distribution in Andalusian Spanish (adapted from Rodríguez Prieto 2014).

In the Caribbean, *jejeo* is found in some island dialects in Cuba, the Dominican Republic, and Puerto Rico. In popular Dominican Spanish, aspirated [h] occurs in intervocalic-prenuclear position both in word-medial and between-word positions as in *nosotros* [nohótro] ‘we’, *cinco centavos* [síŋko heŋtáβo] ‘five cents’, *semana pasada* [hemáña paháða] ‘last week’, *ese* [éhe] ‘that’ (Alvar 1996). The same happens sporadically in Puerto Rico and Cuba (see Figure 5).

In Central America, *jejeo* is widespread with the exception of Guatemala. In Costa Rica, *jejeo* is found in the central region in fast and very colloquial speech, especially due to dissimilation, as in *necesario* [nehesárjo] ‘necessary’ (Alvar 1996). In Honduras, this feature is very well documented, especially by Lipski’s studies (Lipski 1987, 1990, 2002). According to Lipski (2002), the aspiration of /s/ happens more often in word-initial than in word-medial environments in Honduran Spanish. It is more frequent in words with two /s/, such as *necesita* [nehesíta] ‘s/he needs’, *decisión* [dehisjón] ‘decision’, and *licenciado* [lihensjáðo] ‘graduate’ due to dissimilation (as in Costa Rica). Among the most frequent words with *jejeo*, Lipski lists *se* ‘self’, *centavo* ‘cent’, *situación* ‘situation’, *cincuenta* ‘fifty’, *sesenta* ‘sixty’, *setenta* ‘seventy’, *San Pedro*, *central* ‘central’, *señor/a* ‘Mr., Mrs.’, and *semana* ‘week’ (Lipski 1987, p. 113). This pronunciation is associated with working class and rural areas. It is unusual among educated people even in their colloquial speech, and it never occurs in the public discourse or in readings.

In El Salvador, as in Honduras, one of the most used words with *jejeo* is *centavos* [heŋtáβo] ‘cents’ combined with numerals such as *cincuenta* ‘50’, *sesenta* ‘60’, *setenta* ‘70’, etc., (Lipski 1990). In Salvadorian Spanish, *jejeo* has extended to other contexts besides (prevocalic) syllable- and word-initial positions. It is attested in postconsonantal syllable- and word-initial environments such as in *El Salvador* [el halβaðór], *entonces* [eŋ.tón.he] ‘then’. It is also found for place names such as in *Santa Ana* [háŋta ána] (Canfield 1981). Recent studies have shown that the weakening of Salvadoran onset /s/ shows variation beyond a tripartite system (/s/ pronounced as [s], [h] and [∅]) with a fourth variant [s^h] between the sibilant [s] and the aspirate [h] (Brogan and Bolyanatz 2018). From a study in the capital San Salvador, Lipski (1984) found that /s/ never deletes entirely in onset position. /s/ is aspirated as [h] most often in word-medial position in atonic syllables, as in *casa* [ká.ha] ‘house’ and least often in word-initial position in tonic syllables, as in *siglo* [hí.ɣlo] ‘century’. In El Salvador, *jejeo* is used by speakers from the lowest socioeconomic groups (Lipski 2002). According to Brogan and Bolyanatz (2018), it is associated with

speakers who are women, older, or come from rural and stigmatized regions of El Salvador, while young men are leading a change toward the standardization of /s/ production.

While there is not much descriptive data about *jejeo* in Nicaragua, linguists nevertheless include this Spanish dialect among the *jejeantes* variants (see Rodríguez Prieto 2014; Frago Gracia and Figueroa 2003; Mántica 1997). Some words from Nicaraguan Spanish that start with initial <f> or <h> are articulated with aspirated [h], as in *fue* 's/he went', *fuieron* 'they went', *fui* 'I went', *fulano* 'so-and-so', *huida* 'escape', pronounced as [hwé], [hwéron], [hwí], [huláno], [hwíða] (Mántica 1997). All of these processes are considered part of *jejeo*, the reduction to aspiration of both initial /s/ and /f/ and the (somewhat distinct) insertion of [h] for <h> (*huida* [hwíða]). On the other hand, Chappell states that "syllable-initial /s/ reduction has not been observed in Nicaraguan Spanish" (Chappell 2021, p. 238). See Figure 5 for its extension in Central America.

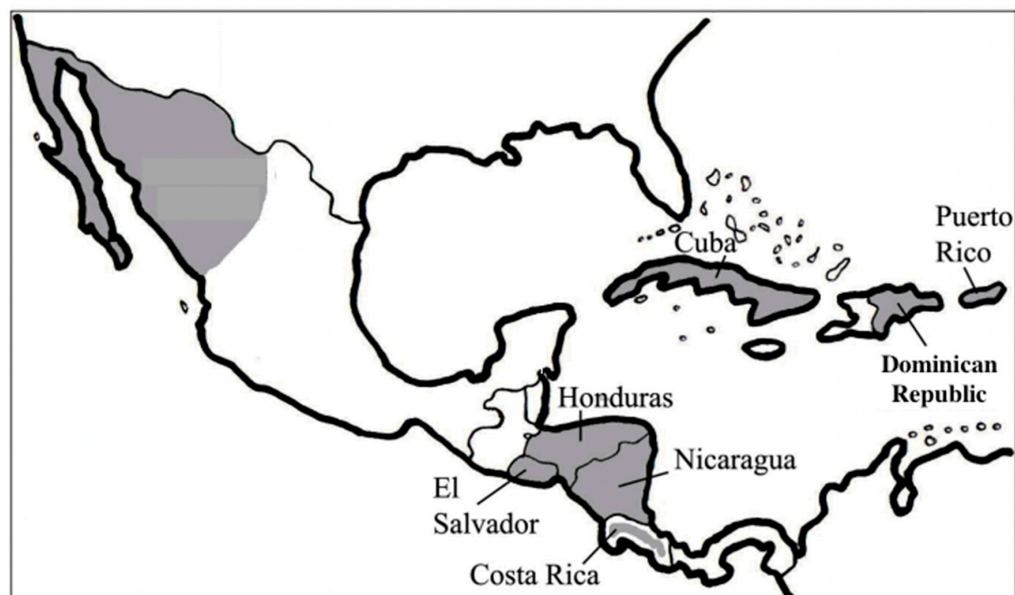


Figure 5. *Jejeo* distribution in Central-American Spanish (adapted from Rodríguez Prieto 2014).

In South America, *jejeo* has been attested in Chile, Venezuela, and Colombia (see Figure 6). Chilean *jejeo* occurs in working class speech with common words such as *casa* 'house', *cosa* 'thing', *mesa* 'table', pronounced as [káha], [kóha], [méha] (Rosenblat 2002; Oroz 1966). In Venezuelan Spanish, it happens occasionally in regions in the interior of the country, especially in the phrase *sí señor* [hí hejól] 'yes, Mr.' (Rodríguez Prieto 2014).

There is more information about Colombian *jejeo*, thanks to the data from the *Linguistic Ethnographic Atlas of Colombia* (ALEC 1954). In the Colombian Highlands, the word *nosotros* 'we' with *jejeo* [nohótro] is quite popular even among educated speakers. This is the only Spanish dialect where the initial /s/ reduction is more frequent than coda /s/ (Lipski 2002). This region maintains coda /s/ sibilance at high rates. Rosenblat (2002) documents the following expressions with *jejeo* in the Pacific coast: *sí señor*, *no señor* 'yes/no Mr.', *no salió* 's/he did not go out', *no se me quede callado* 'don't be quiet' pronounced as [hí hejól], [no hejól], [no haljól], [no he me kére kaJáo]. He also registered other words like *mazamorra* [mahamóra] 'corn paste', *municipal* [mūnihipál] 'municipal', *nosotros* [nohótro] or [noótro] 'we', *la sal* [la hál] 'the salt', *el sol* [el hól] 'the sun', *la sabaleta* [la haβaléta] 'type of fish', *50 centímetros* [hentímetros] '50 centimeters' in the south of Antioquia. In Santander province, Flórez (1965) registers four words used with *jejeo*: *cemento* [heménto] 'concrete', *hacen* [áhen] 'they do', *nosotros* [nohótro] 'we', and *pedazo* [peđáho] 'piece'. He obtained his data interviewing mostly male and almost illiterate speakers between 30 and 75 years of age from rural areas and low socioeconomic backgrounds. In the north of this region, other expressions are articulated with *jejeo* as *la señorita* [la hejorita] 'the Miss', *se*

me presentó [se me prehen^tó] ‘was introduced to me’, *Dios se lo pague* [djó he lo páye] ‘may God reward you’, in addition to *nosotros* ‘we’ (Flórez et al. 1969). In this region, along with Boyacá, Cundinamarca, and Meta, speakers of rural areas also use past tenses with *jejeo*, such as *quise* [kíhe] ‘I wanted’, **quisistes* [kihístes] ‘you wanted’, *quiso* [kího] ‘s/he wanted’, *quisiera* [kihjéra] ‘s/he would want’ (Flórez 1951).

In Bogotá, in fast and informal colloquial speech, *jejeo* is also documented in expressions such as *nosotros* ‘we’, *no señor* ‘no Mr.’, *sí señor* ‘yes Mr.’, *una señora* ‘a lady’, *mi señora* ‘my lady’, *se lo traje* ‘I brought you this’ (Flórez 1951). In the western part of Colombia, in the province of Chocó (with coastlines on both the Pacific and the Atlantic), Schwegler (1991) reported *jejeo* in these lexical items in some Afro-Caribbean communities: *campesino* [kãmpehíno] ‘farmer’, *cosas* [kóha] ‘things’, *dice así* [díhe] ‘s/he says it like that’, *esa* [éha] ‘that’, *¡es miedoso sí!* [hí] ‘it’s scary yes’, *ni siquiera* [ni hikjéa] ‘not even’, *nosotros* [nohótro] ‘we’, *setenta* ‘70’ [heténta], *se ven* [he βé] ‘they see’, *sí sé que* [sí hé ke] ‘yes I know that’, *solo* [hólo] ‘only’, *un peso* [ũm pého] ‘a cent’. In Caleño Spanish (spoken in Cali, in the southwest province of Cauca, and classified as a transitional variety between highland and coastal dialects), initial aspiration of /s/ is also documented, along with final /s/ reduction (see Brown and Brown 2012).



Figure 6. *Jejeo* distribution in South-American Spanish (adapted from Rodríguez Prieto 2014).

In northern Mexico, in Chihuahua, syllable initial /s/ aspiration occurs in varieties spoken in rural areas by speakers with relatively little schooling, often labeled as *ranchero* talk. It is not clear whether this is a case of stable variation or of ongoing change (see Brown and Cacoullos 2002; López Chávez 1977). In addition to Chihuahuan Spanish, onset /s/ weakening has also been attested in New Mexico and Southern Colorado in the Southwestern United States (Brown 2005).

When describing *jejeo*, social factors such as age, gender, education, and rural origin stand out; particularly, education and socioeconomic status are important predictors of initial /s/ weakening (and also in other positions). Other articulatory patterns have been

identified such as syllable stress and phonological context. Intervocalic position is the most common for onset /s/ weakening, especially when one or both vowels are non-high (*a, e, o*), for example, *eso* [é.ho] ‘that’. Preceding non-high vowels favor weakening significantly more than their counterparts, and /s/ is retained most frequently after a preceding consonant, according to studies from Chihuahua, New Mexico, and Caleño Spanish (see Brown and Cacoullos 2002; Brown 2005; Brown and Brown 2012), respectively.

There is a debate about whether initial and final /s/ reductions are part of the same process. Some linguists argue that the initial /s/ aspiration is independent from final /s/ weakening (Brown and Brown 2012; Brown 2005). Others consider both reductions to be related as part of an /s/-weakening continuum (Penny 2000; Méndez Dosuna 1996). It is widely accepted, however, that both onset and coda /s/ reductions are conditioned by similar social factors. Nevertheless, *jejeo*, or onset /s/ weakening, is socially stigmatized and associated with negative attitudes toward the rural origin, education, and socioeconomic status of the speaker. Consequently, this articulatory process has been considered minor, irregular, and “anomalous” cf. (Hualde 1991, p. 56), only related to uneducated, low class, rural speakers and neglected by linguists, who have focused their efforts on coda /s/ reduction.

4. Rethinking /s/ Variations: Manifestations of Reversing Phenomena

The majority of studies related to Spanish voiceless alveolar fricative /s/ focus primarily on its aspiration and deletion. This is in sync with the vast number of Spanish speakers across the world who belong to an /s/-reducing dialect, especially in coastal regions. However, in contrast, there are other less common and more socially stigmatized phenomena, such as the intrusive coda /s/ (both in word final and word medial positions) as well as some cases of /s/ voicing (outside of the context of a following voiced consonant). In particular, syllable-initial or intervocalic /s/ voicing in Spanish /s/ production is one of the least studied phenomena in sibilant articulation. In my opinion, this is partly due to the scarcity of these phonetic features among Spanish speakers, which, in turn, results in a lack of attention by linguists. This scarcity is the result of diachronic sibilant changes which have favored lenition and devoicing in previous centuries. Therefore, this section will describe “reversing phenomena”, as these two features studied here, intrusive coda /s/ and /s/ voicing, are in contrast to what is evolutionarily expected from consonantal weakening in sibilant articulation.

Many theories have been proposed to answer the question of why the Castilian sibilant system lost voicing, such as value of functionality and balance (Ariza Viguera 2004); economy and simplification (Alarcos Llorach 1951); tension of articulation (Veiga Rodríguez 1988b); pressure to generate turbulence (Ohala and Solé 2010); shorter duration (Martínez Celdrán and Planas 2008); less sonority (Alonso 1955); uncertainty, ambiguity, and surprisal (Zampaulo 2013); instability (Hume and Mailhot 2013); a shift in the phonemic system (Catalán and Reinhardt 1957); the influence of Basque (Martinet 1955) or *Mozárabe* (Alonso 1972), etc. Without a consensus, many scholars vary their explanations for sibilant-devoicing in Spanish, basing them on intralinguistic processes or external factors, or a combination of both. Devoicing has been the evolutionary and articulatory tendency. However, voicing and intrusive-s are not. This section offers a brief overview of these two phenomena along with recent research on the matter to contextualize this phonetic anti-trend with important sociolinguistic associations.

4.1. Intrusive Coda /s/

This phonological and articulatory phenomenon consists of adding a non-etymological or morphological /s/. This process becomes a form of hypercorrection, usually among illiterate speakers attempting to employ a more prestigious style of speaking in different dialects across the Spanish speaking world. The intrusive-s happens at the coda position, that is to say, at the end of a syllable or word. Most theories in Spanish phonology address two main factors to explain the intrusive coda /s/. One is the result of a false analogy with

a correct or prestigious word or paradigm. The second is a marker of sociolinguistic and identity traits (such as level of education, power, prestige, and formality). The intrusive coda /s/ is in opposition to a non-intrusive-s (also called historical-s, etymological-s, or lexical-s) in the speech of individual speakers who vary by literacy. In this section, we provide an overview of the published literature on the topic.

4.1.1. Intrusive Coda /s/. Hypercorrection: Grammatical Analysis

This intrusive coda /s/ occurs at the end of words, specifically at the end of verbs in the second person singular *tú* 'you' in the indefinite preterite, for example in **amastes* instead of the standard grammatical form *amaste*, **hicistes/hiciste*, **supistes/supiste*, **fuistes/fuiste*, **llevastes/llevaste*, **trajistes*, **trujistes/trajiste*, etc. It emerges as a hypercorrection, which goes against standardized and grammatical Spanish. This hypercorrection occurs as an analogy because all other second person singular verb endings of *tú* feature a suffix -s (such as *amas*, *amabas*, *amarás*, *ames*, *amaras*, *amases*, *amarías*). In Latin, the regular verb ending for *tú* in the indefinite preterite was -sti, as in *ama(vi)sti* > *amaste* or *parti(vi)sti* > *partiste* without a word final -s.

According to Cuervo, this practice was common in Andalusia and even occurred in published poetic works by well-known writers. From there, it was extended to the rest of Spain and the Americas, and has been widely documented since the seventeenth century. It was usual to see both endings -ste and -stes together in the same poems by the same authors, as the following examples from (Cuervo 1893, p. 85) clearly illustrate.

- (4) Mis flacos miembros, que rendidos *viste*,
En medio del camino *conculcastes*;
Sin darme tu consuelo, estuve triste;
Enfermo, en mis dolencias me *olvidastes*.
Peregrino, tú, en fin, no me *acogiste*;
Antes el dulce sueño *procurastes*.
(Conde de Torrepalma, 1706–1767, *El juicio final*)
- (5) *Exhalaste* de tu pecho,
Sacrílega maldición.
Que en el cristal trasparente
Contemplastes aterrada. (José Zorrilla, 1817–1893, *Obras*, 1852)
- (6) Tú *apelastes* (José de Cañizares, 1676–1750, *El Dómine Lucas*, date?)
- (7) Tú *salistes* (José de Cañizares, 1676–1750, *El honor da entendimiento*, 1746)
- (8) Tú *echastes* (José de Cañizares, 1676–1750, *La más ilustre fregona*, 1750?)

These examples by popular poets demonstrate that intrusive coda-s was happening in Spanish (at both formal and colloquial levels) when these poems were published. The hypercorrection was extended among speakers until at least the mid-nineteenth century. After that, and thanks to easier access to printing and an increase in literacy, this particular intrusive-s became relegated to illiterate and rural speech communities with little or no access to schooling in Spanish across all dialects both in Peninsular and Atlantic Spanish. Cuervo explains that this tendency was suppressed in literary texts thanks to the diffusion of grammar studies and its prohibition and stigmatization in didactic books. He considered this phenomenon an intolerable corruption "*corruptela intolerable*" (Cuervo 1893, p. 86).

Nowadays, this sibilant phenomenon serves as a social predictor to index rural displacement, education, and stigmatized speech. The process of adding an intrusive coda /s/ to the *tú*-verbs in the indefinite preterite indicates a clear analogy with other *tú*-verb forms ending in -s. It is clearly considered a grammatical variable based on etymological factors. It is also interpreted normatively as a *barbarismo* or *solecismo*, that is to say, an error that infringes grammatical rules.

In the next section, we examine other cases of intrusive-s in extreme /s/ reducer dialects of Spanish as a result of articulatory variations and social motivation. This approach is quite innovative as it goes against the common trend of coda /s/ lenition. Despite the sparse descriptive research published on the matter due to its radical dialectal variation,

there are a few recent studies to explain this unusual process, which Vaux classifies as “unnatural” (Vaux 2008).

4.1.2. Intrusive Coda /s/. Hypercorrection: Articulatory Analysis

Despite high rates of /s/ weakening, aspiration, and deletion in coda position across Spanish dialects (with respect to etymological -s), there are a few rare cases studied where speakers insert an -s into random syllable codas in an attempt to hypercorrect to a more prestigious style. In particular, studies reflect this anomaly in vernacular Dominican Spanish, and, in a similar way, Western Nicaraguan Spanish has intrusive aspiration, opting for [h] instead of [s]. The intrusive-s is represented in straight brackets as [s] in the following examples.

In Dominican Spanish, the inserted /s/ can occur within a word (*cu[s]tro hijas* < *cuatro hijas* ‘four daughters’) and at a pause or between words (*ya[s] tenía* > *ya tenía* ‘already had’). While it can appear in words from any grammatical category, the intrusive-s arises relatively rarely. When it does, it primarily occurs as an external sandhi process, that is to say, between words when used in a connective speech. The intrusive-s usually happens between words, as in *la[s] cara* > *la cara* ‘the face’, in a context distinct from that of its lexical-s counterpart. What causes this innovative feature in an /s/ deleting dialect? For decades, phonologists have attributed this s-hypercorrection solely to the speech of illiterate (or semiliterate) speakers, who do not know where /s/ is distributed in a lexical item. This hypothesis is owed to the observation that speakers that categorically delete coda /s/ are semiliterate, and that these same speakers also insert an intrusive-s (see previous studies by Alba 2004; Bradley 2006; López Morales 1990; Núñez Cedeño 1980; Terrell 1986). Nevertheless, recent descriptive studies show that this phenomenon also obeys other factors related to sociolinguistic and structural patterning. Although it has social and communicative functions, it does not appear to be gendered. Some Dominicans may use an intrusive-s as a redundant phrase-final marker. It also tends to emerge in more formal situations (Morgan 1998). Additionally, voiceless stops (*p*, *t*, *k*) act as attractors for intrusive-s across word boundaries (Bullock et al. 2014). Although semiliterate Dominican speakers seem to know where the /s/ belongs, they choose to express s-insertion for reasons of identity, social prestige, and discursive functions. The expression *hablar fi[s]no* instead of *hablar fino* ‘to talk finely’ in colloquial Dominican Spanish clearly refers to this process.

According to Chappell (2021), in Nicaraguan Spanish, the intrusive sibilant parallels the hypercorrection process that has been observed in Dominican speakers (Bullock and Toribio 2009, 2010; Bullock et al. 2014; Morgan 1998). [s] is usually inserted between words rather than word-internally and tends to occur in more formal speech, for example, *yo observo[s]* < *yo observo* ‘I observe’. Chappell’s (2013) findings indicate that Nicaraguan speakers associate sibilance with higher registers of formality, choosing to insert [s] for social prestige. With high rates of deletion and low rates of sibilance of coda /s/, Nicaraguans have developed fortition strategies to indicate prosodic marking and formal style now associated with the presence of sibilance. Coda [s] is “more socially driven than linguistically driven” and has become both “a social strategy [. . .] and a phrase-marking strategy” (Chappell 2014, p. 37).

In addition to the insertion of [s] in innovative environments, Nicaraguans also use glottal constriction [ʔ] in unexpected contexts to mark an underlying segment or no segment at all. Some speakers may operate with an underlying [h] while others operate with an underlying [s]. Chappell (2021) explains that this is a result of individual differences in the region according to age and grade of exposure to s-variants over a lifetime. Older and less educated speakers have less experience with coda sibilance and tend to reanalyze coda [s] as coda [h]. Younger and more educated speakers, given their higher rates of sibilance, are less likely to reanalyze and aspirate coda /s/. Educated speakers are more exposed to formal Spanish and other varieties of Spanish, therefore they tend to hypercorrect less. Figure 7 provides a distribution of coda [s] variants based on an age-education pattern, where younger and more educated speakers have more experience with coda [s]. On the

other hand, less educated speakers are more connected to glottal variants [ʔ] and deletion [∅]. Both groups reduce [s] as [h].



Figure 7. Coda [s] lenition continuum in Nicaraguan Spanish. More educated younger speaker (**left**) and less educated or older speaker (**right**) adapted from (Chappell 2015).

Chappell (2021) infers that the cause of high rates of insertion of glottal constriction to replace coda sibilance is “a formality strategy”. Her example below (9) illustrates that glottal constriction is considered an appropriate variant, in this case for an underlying form reanalyzed as [h]. It shows parents correcting their children’s pronunciation with glottal constriction.

- (9) Child: *los otros* ‘the others’ pronounced as [lo.xó.troh]
 Adult: *No se dice* [lo.xó.troh], *se dice* [lo.ʔó.troh]
 ‘You don’t say [lo.xó.troh], you say [lo.ʔó.troh]’ (Chappell 2021)
 Pronunciation with coda [s]: *los otros* [lo.só.tros]
 Dialectal pronunciation with coda [s] aspiration: *los otros* [lo^h.ó.troh] or [lo.hó.troh]

Chappell’s proposal on the intrusive glottal constriction [ʔ] as in *las olas* ‘the waves’ [la.ʔó.la] underlines how an individual’s differential exposure to prestige variants and local attitudes toward formal speech may influence linguistic change and, in this particular case, coda /s/ change. The use of glottal articulation as a fortition strategy and as a hypercorrection to formal speech in Nicaraguan Spanish deviates from other hypotheses in coda /s/-reducing dialects. In Puerto Rican or Cuban Spanish, glottal articulation from /s/ lenition is explained due to the articulatory economy being limited to pre-pausal position, either in pre-consonantic position, as in *pista* ‘clue’ [píh.ta], or pre-vocalic, as in *es uno* [é.hú.no] ‘it is one’ (see Lynch 2009; Lipski 1999; Terrell 1979; Guitart 1976), or as a result of linguistic analogy (Ferguson 1990). Chappell’s approach to Nicaraguans’ hyperarticulated speech using glottal constriction as a social motive to index age, education, and formality presents a new theoretical lens.

More studies are needed to understand social and intralinguistic factors that motivate intrusive-s outside of the analogy context. Attributing /s/ hypercorrection solely to the speech of illiterate speakers ignores external factors, social identity markers, and discursive patterns. Descriptive research on intrusive-s is sparse, highlighting what an unusual linguistic feature it is. A lot of work has yet to be done to determine the analysis of intrusive coda /s/ as a sociolinguistic index. How does this socially motivated /s/ affect Spanish phonological structure? Does the socially motivated intrusive /s/ occur in other /s/-reducing dialects besides Dominican and Nicaraguan varieties? Is there a common pattern in the minds of intrusive-s speakers? How is this phenomenon perceived by Spanish speakers that are not familiar with intrusive-s?

4.2. /s/ Voicing in Intervocalic Contexts

Diachronic accounts show that sibilants underwent devoicing as the Spanish language evolved. Positional markedness has played an important role in tracing this devoicing process, where syllable initial sibilants have maintained standard articulatory faithfulness to be voiceless and voiced sibilants rarely occur outside the intervocalic pattern. That has been the trend not only in (Old) Spanish, but also in other Romance languages, such as Portuguese, Catalan, Italian, or French, languages that still keep a contrast between /s/ and /z/ in intervocalic position (i.e., *poisson* ‘fish’ with /s/ versus *poison* ‘venom’ with /z/ in French; *caça* ‘hunting’ and *casa* ‘house’ with /s/ and /z/ in Catalan), but not in initial position.

As a result of articulatory evolution, modern Spanish does not phonemically distinguish voiced and voiceless sibilants. It has a single phoneme /s/ described as fricative, alveolar, and voiceless with no voiced counterpart and no contrastive function. In all dialects of standard Spanish, modern /s/ presents phonetically gradient and variable voicing in syllable final position when it precedes a voiced consonant. Therefore /s/ can be pronounced as voiceless [s] and as voiced [z] sounds according to the phonetic context. See example (10).

- (10) /s/ { [s] e.g., *sí* ‘yes’, *casa* ‘house’, *costa* ‘coast’, *es una* ‘it’s one’
 [z] + **voiced consonant** e.g., *asma* ‘asma’, *desde* ‘from’, *riesgo* ‘risk’, *Israel*

Voicing of coda /s/ is common before voiced consonants in varieties of Spanish that maintain the sibilance of coda /s/ at high rates (such as central Mexican Spanish or North-Central Peninsular Spanish). This articulatory assimilation has been attested by many linguists and phoneticians (see Schwegler et al. 2010; Martínez Celdrán and Planas 2008; Hualde 2005; Guitart 2004; Quilis 1993, 1981; Penny 1993; Alarcos Llorach [1950] 1991; Navarro Tomás [1918] 2004; Harris 1969, among others).

La s sonora aparece únicamente [. . .] en posición final de sílaba, precediendo inmediatamente a otra consonante sonora; en cualquier otra posición su presencia es anormal y esporádica.

[Voiced /s/ appears solely in syllable-final position immediately preceding another voiced consonant; in any other position, its presence is abnormal and sporadic.] (Navarro Tomás [1918] 2004, p. 83)

Following the evolutionary devoicing trend in Spanish, further studies have proven that even the voicing of /s/ before voiced consonants is not categorical but rather variable, as the /s/ may present partial or incomplete voicing. Using phonetics software such as Praat and spectrogram data, some recent studies have emerged to show that the voicing process before voiced consonants is gradient and variable (see Campos-Astorkiza 2019; Sedó et al. 2020; Sedó del Campo 2017; Schmidt and Willis 2011; Muñiz Cachón and Cuevas-Alonso 2003; Romero 1999). Outside of this context, voicing is rare and prescriptively prohibited. Accordingly, it is the least studied phenomenon related to /s/ variation. Nevertheless, there are a few recent studies focusing on /s/ voicing in intervocalic environments, whether /s/ is in word initial, medial, or final position; see Example (11).

- (11) Intervocalic word-initial /s/: *la sal* [la.sál] > [la.zál] ‘the salt’
 Intervocalic word-medial /s/: *asa* [á.sa] > [á.za] ‘handle’
 Intervocalic word-final /s/: *los años* [lo.sá.ɲos] > [lo.zá.ɲos] ‘the years’

Despite the articulatory and evolutionary tendency for /s/ devoicing in Spanish, some intervocalic /s/ voicing has been attested in several dialects, surfacing with great variability. Voicing has been analyzed mostly in Highland Ecuador and, to a much lesser degree, in Costa Rica, Colombia, Catalanian Spanish, and in a few Central-Spain dialects. Among the conditioning factors that explain this occurrence, linguists include social meaning, surrounding phonological context, lexical frequency, and contextual predictability (Brown 2020). In addition, other studies consider position within the word, stress, speech rate, word class, surrounding vowels, and social factors such as speech styles. Social predictors conditioning voicing include gender, age, level of bilingualism, speaker, and regional dialect (García 2020). It seems quite conclusive that intervocalic /s/ voicing across varieties of Spanish has a variety of distinct motivations.

It is relevant to consider whether /s/ voicing represents a regionalized innovation or an archaic remnant of early colonial Spanish, especially in the aforementioned Latin-American dialects. Although sibilant devoicing was complete by the end of the 16th century (see Penny 2000; Lloyd 1987; Catalán and Reinhardt 1957; Alarcos Llorach [1950]

1991; Menéndez Pidal 1940a), its expansion did not develop simultaneously, at the same rate, or even with the same origin. While devoicing was considered widespread in the mid-16th century, it was not yet general in all areas of the Spanish-speaking territories (Núñez-Méndez 2021).

Latin American Spanish kept pace with both Castile and Andalusia in devoicing sibilants at approximately the same time (Lipski 2021). This is inferred by early Spanish borrowings into Nahuatl, Quechua, and Guarani, which verify that, in the first stages of colonization, Spanish colonists still maintained the contrast in voicing (Canfield 1981). In rural Andean communities, Spanish words such as *casa* pronounced [káza] ‘house’, *cocina* [kuzína] ‘kitchen’, and **haci, hace* [ázi] ‘s/he does’ are pronounced with a fossilized intervocalic [z]. This archaic Spanish pronunciation indicates that speakers are not simply inserting modern Spanish sounds as they go along (Muysken 1988). [z] survived in rural Ecuadorian Spanish until relatively recently, along with other elements considered lost in mainstream varieties (Lipski 2016). Consequently, it is possible that latent awareness of earlier Spanish intervocalic [z] has contributed to maintain intervocalic /s/ voicing in this dialect. As a resulting hypothesis, intervocalic sibilant voicing from Old Spanish-derived words would prove the perseverance of this sound in these Andean groups, while it has been non-existent in other Latin American dialects since the 16th century.

In addition to this theory of intervocalic voicing as an archaism, it is possible to consider the occurrence of [z] as a result of language-contact-induced change, as Quechua has a word-medial voiced sibilant [z] as in the words *puzu* ‘gray, overcast’ or *puzun* ‘intestine, gut’ (Davidson 2019). Despite Davidson’s affirmation of a word-medial contrastive intervocalic opposition between /s/ and /z/ in Quechua, we have not found attested documentation of a minimal pair. On the contrary, Quechua [z] realization in word-medial position is rare and mostly occurs as an allophone of /s/, therefore words such as *puzu* and *puzun* can be pronounced as both [pusu] [puzu] and [pusun] [puzun], with free alternation of [s] and [z], based on Imbabura Quechua pronunciation (Gualapuro Gualapuro 2011, p. 135). Perhaps Quechua [s]~[z] allophony among bilinguals could have contributed to a reanalysis of old Spanish distinctions of intervocalic /s/. Voiced [z] is not common in Quechua (Gualapuro Gualapuro 2017, p. 20). This sound is seldom found in initial position, such as in *zalan* ‘a type of tree’, *zambu* ‘pumpkin’; [z] can be articulated in contact with a nasal as in *amsa* ‘dark, dusk’ and *kimsa* ‘three’ as a result of assimilation (Gualapuro Gualapuro 2017, p. 24). The sound [z] is never found in prevocalic word-final position in Quechua, according to Lipski (1989). Nevertheless, there are a few studies that attest that [z] occurs in that position in Highland Ecuadoran Spanish (see Strycharczuk et al. 2014; Chappell 2011; Robinson 1979; Toscano Mateus 1953).

On the other hand, in Spanish-Aymara bilingual communities in much of Highland Bolivia, speakers often articulate the trill /r/ as a voiced [z], creating minimal pairs such as *carro* [ká.zo] ‘cart’ and *caso* [ká.so] ‘case’ (Mendoza 2008, p. 221). Similarly, among Quechua speakers, there is a free variation between alveolar tap [ɾ] and the voiced retroflex [z] in word initial, word medial, and word final environments, i.e., *runa* ‘man, human’ can be pronounced as [ɾuna] or [zuna] (Gualapuro Gualapuro 2017, p. 30). The retroflex [z] is very emblematic of Quechua, popular in daily speech and widely distributed in the Andean regions of Ecuador, Peru, and Bolivia. It is also considered a social status marker, and Quechua-speakers tend to avoid it in conversational Spanish because of a “silent social pressure” (Gualapuro Gualapuro 2017, p. 30). These voiced sibilant articulations are considered a variation of vibrant consonants (including taps /ɾ/ and trills /r/), not of /s/ production.

In summary, is /s/ voicing an archaic remnant or an innovation due to language contact or other factors? Currently, most researchers consider this phenomenon to be an innovation, while some describe it as an archaism or a combination of both. As an innovation, this process is explained by the intralinguistic feature of phonetic lenition (constrained by word position, sound environment, stress, and lexical frequency); in addition to language-external factors such as contact-induced changes, social conditioning

(depending on age, gender, level of education, prestige, casual speech style, regional origin, and the effect of bilingualism), as well as physiology. The latest research finds the most voicing in intervocalic word-final position, as in *las olas* [la.zó.las] ‘the waves’, and confirms that intervocalic /s/ voicing is a lenition or weakening phenomenon, occurring more frequently between unstressed vowels and at higher speech rates (García 2015).

Most of the few published studies on intervocalic /s/ voicing refer to Highland Ecuadorian Spanish or Andean Spanish, which is considered one of the three major sub-dialects, along with coastal and Amazonian Spanish (see Figure 8). The Spanish spoken in Quito, Cuenca, and Loja belong to this dialect. The Spanish–Quechua interface, the *Afro-Choteño* ethnolects, and many rural and new urban sociolects make this area very attractive to linguists and phoneticians. Among all the resulting dialectal variations, intervocalic /s/ voicing has received special attention. The nature of this voicing differs significantly between Ecuadorian Spanish sub-varieties, as do the conditioning factors. While several studies seem to disagree on explaining the cause and behavior of this variable feature, most recent studies tend to investigate the social meaning of voicing /s/, diverging from previous research more oriented towards dialect and sound classification.



Figure 8. Map of Ecuador with the Andean region of Highland Ecuadorian Spanish where /s/ voicing occurs. Available online: <https://www.premiumtimesng.com/foreign/world-foreign/280123-23-die-in-bus-accident-in-ecuador.html> (accessed on 20 November 2021).

Thanks to acoustic analysis, recent research has shown that /s/ voicing is less categorical than previously analyzed. For instance, Davidson (2019) and Schmidt (2016) show non-categorical voicing for Quito and Latacunga Spanish. However, Robinson (1979) and Toscano Toscano Mateus (1953) explain that the Quiteño (from Quito) and Cuencano (from Cuenca) dialects have categorical voicing of intervocalic word-final /s/, and Cuencano has intervocalic word-medial /s/ voicing as in *bisabuelo* ‘great-grandfather’. Robinson (1979) also claims that /s/ voicing does not occur in the Carchi or Loja dialects (so do Lipski 1989; Calle 2010; Aguirre 2000); nevertheless, García (2020) examines social factors for conditioning this voicing among Loja natives. In Quiteño Spanish, Chappell (2011) finds fully voiced variants in 91% of intervocalic word-final /s/; while Strycharczuk et al. (2014)

show different patterns of voicing: some Quiteño speakers voice /s/ gradiently, others optionally in word-final contexts.

The conditioning factors to explain /s/ voicing in this region also diverge among linguists. Word position seem to be the most consistent factor. Most studies find higher rates of voicing in word-final position (i.e., as in *es una* [e.zú.na] ‘it’s one’) although other findings show the most voicing in both word-final and word-initial contexts (García 2015; Hualde and Prieto 2014). Studies on other factors such as lexical class and frequency differ; some results show an effect on voicing (Davidson 2014; Chappell 2011) but others no effect (Torreira and Ernestus 2012). Findings for preceding and following items are inconclusive: García (2015) shows more voicing before non-high vowels while Chappell (2011) finds more occurs before a low vowel. Social factors can also condition voicing, but there are also discrepancies among authors. Considering gender, some studies find more voicing in male speech (Chappell and García 2017; Schmidt 2016; García 2015) while McKinnon (2012) shows the opposite. When age is considered, García (2015) claims that younger speakers voice more, contrasting with Calle (2010) who indicates that older speakers have the highest rates. Finally, Davidson (2019) finds more voicing in Spanish-Quechua bilinguals than in Spanish monolinguals from Quito, considering the effect of bilingualism as a trigger for voicing. He also provides similar results for Catalan-Spanish bilinguals (Davidson 2014), which conflicts with other analyses of whether Spanish-dominant speakers or bilinguals in Catalonia voice the most (McKinnon 2012). It has also been observed that most Spanish-dominant Catalan-Spanish bilinguals have difficulty in perceiving Catalan contrasts (e.g., /s/~z/) that do not exist in Spanish (Pallier et al. 1997, 2001; Sebastián-Gallés and Soto-Faraco 1999).

Most authors concur that intervocalic /s/ voicing is a reduction process, favored at higher speech rates, between unstressed syllables and in semi-spontaneous speech (García 2015, 2020; Chappell and García 2017; Torreira and Ernestus 2012). While no difference in social perceptions have been found in Ecuador, the /s/ voicing seems to be a marker of regional identity within the highlands. “Employing intervocalic [z] makes one sound more Quiteño or Cuencano” (García 2019, p. 148). This variable phenomenon continues to evolve in the highland region, generating a constant need for frequent study. It is assumed that in Coastal Ecuadorian Spanish /s/ voicing does not occur as intervocalic word-final /s/ is variably aspirated. There is no data for Amazonian Ecuadorian Spanish, which according to Lipski (2021) is more heterogeneous due to recent immigration from various parts of adjacent provinces and the language contact situation of indigenous groups with Spanish as a second language (see Figure 9). This region merits further investigation because of its high variability.

In agreement with previous research on /s/ voicing in other Spanish dialects, /s/ voicing in Costa Rica is considered a lenition process, most likely to occur in faster speech before an unstressed vowel and word-finally. Intervocalic /s/ voicing in Costa Rican Spanish has been mentioned briefly in the literature, mostly in dialectal surveys. Lipski (1994) has observed voiced /s/ only in word-final prevocalic environments, while Chappell (2016a) has also noticed it word initially and word medially, as in *la sala* ‘the hall’ [la.zá.la] and *piso* ‘floor’ [pí.zo]. To date, only Chappell and García have broadly explored this phenomenon in Costa Rican Spanish. Both authors have analyzed this phonetic phenomenon under the lens of sociolinguistic meaning, as a variable production conditioned by both gender and physiological factors. According to Chappell and García (2017), there is more voicing in men’s speech. Men produce higher rates of voicing while women tend to voice more gradiently. Only men receive higher evaluations of niceness, confidence, and local identity when they use [z]. Intervocalic [z] appears to grant covert prestige for men but not for women, which provides men with a social incentive to use this variant. This finding shows that using [z] may be a social target rather than the involuntary result of physiology. Consequently, this approach “does not support the argument that physiological factors are more predictive of voicing than gender” (Chappell and García 2017, p. 32). Chappell (2016a) also associates intervocalic [z] with lower status for all speakers and with solidarity measures

for male speakers. Social motivation associated with [z] in Costa Rica as just described provides interesting new lines of research with which to understand this phonetic variant.

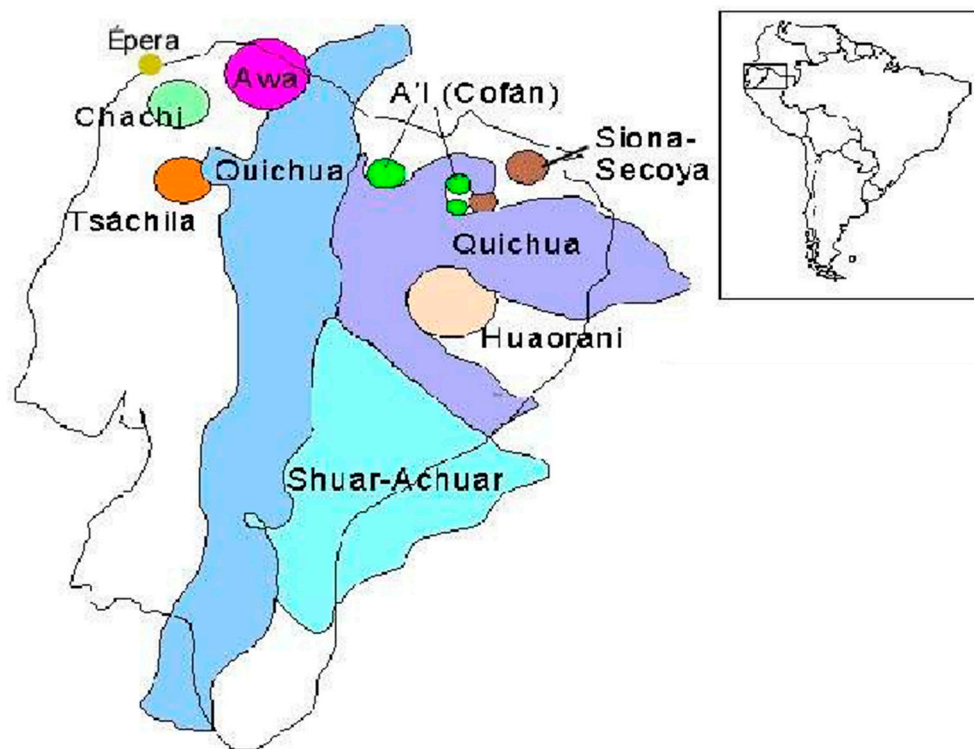


Figure 9. Map of indigenous languages in Ecuador. Available online: <https://blogs.covchurch.org/delp/?p=1822> (accessed on 20 November 2021).

In Colombian Spanish, /s/ voicing has been also documented; however, contrary to other studies, voicing occurs more often in word-medial position. García's (2013) results show overall low rates of voicing in this dialect, leading to the conclusion that voicing is not a feature of Highland Colombian Spanish. Montes attested word internal sonorization in words such as *desayuno* 'breakfast' and *conversar* 'to chat' in many regions in Colombia and believes that voicing is a phonetic innovation and not an archaism (Montes Giraldo 1984, p. 5). Flórez also compares voicing in words such as *Asunción*, *casa* 'house', *países* 'countries', *posición* 'position' in Bogota Spanish (Flórez 1973, p. 85). These two studies date back to the 1970s and 1980s, so it is realistic to question whether intervocalic voicing has faded away in this dialect. More research is needed in order to update the status of voicing in Colombian Spanish.

Intervocalic voicing of /s/ to [z] also happens in Catalanian Spanish and is considered a regional marker of this Spanish variety. In Catalan, the contrast between /s/ and /z/ is active word-initially and word-medially (i.e., *cel* [séɫ] 'sky, Span. *cielo*' and *zel* [zéɫ] 'zeal, Span. *celo*'; *passar* [pəsár] 'to pass, Span. *pasar*' and *pesar* [pəzár] 'to weigh, Span. *pesar*'; in Spanish, these pairs contrast by vowels not sibilants). However, Catalanian speakers neutralize this contrast word-finally (when speaking Catalan). Davidson explains that most Catalan-dominant bilingual speakers showed the greatest favoring of voicing in word final contexts when speaking Spanish, which he attributes to contact effects with Catalan, since Catalan /s/ systematically neutralizes in favor of voicing in world final intervocalic contexts (Davidson 2015, p. 138). He also reveals that intervocalic word final [z] is in fact the majority variant for all younger bilinguals in casual speech, especially among young females. However, no older bilingual groups favor word final [z]. No language profile nor age group produced fully voiced [z] as a majority variant in careful speech. This indicates the status of word final [z] as a less standard and prescriptive variant than [s]. Davidson's data support the idea that intervocalic word final /s/ voicing in Barcelonan Spanish is a

developing sociolinguistic regional marker with a strong degree of voicing and “positive associations of a bilingual identity and solidarity” (Davidson 2021, p. 116). Contrary to Arnal’s (2011) framework that this word final voicing is no longer present in the Spanish of the newest generation of Barcelonan bilinguals (based on the massive influx of L1-Spanish speakers to Barcelona since the mid-20th century), Davidson examines this phenomenon as a vital contact feature of Catalanian Spanish. Pieras (1999) and Serrano Vázquez (1996) describe [z] production as frequent and unlinked to social factors (age, social class, or gender) in the Spanish-spoken population of Palma de Mallorca and Sóller (both regions in Majorca, Balearic Islands). It would be interesting to compare intervocalic word final /s/ voicing in different Spanish-Catalan bilingual communities (such as Valencia or other areas in the Balearic Islands) and determine if the data shows similar sociolinguistic outcomes in recent times.

For other dialects in Peninsular Spanish, some voicing has been found in all positions, with a preference for word-final position. In Torreira and Ernestus (2012) corpus of Madrid Spanish, they classify intervocalic /s/ voicing as a consonantal weakening highly sensitive to speech rate but less so to prosodic factors such as word position and stress in conversational urban Spanish. For Central Spain, Torreblanca (1986) argues that some spontaneous voicing of intervocalic /s/ is due to articulatory relaxation in Toledo, Ávila, and Cáceres. Torreblanca explains that voicing occurs more often in fast, casual speech among young speakers, therefore he thinks it is a modern phenomenon, unrelated to the voiced medieval sibilants (Torreblanca 1986, p. 63). These results should be interpreted with caution, given the small number of participants in the corpus and considering that the results are from the late nineteen-eighties. More updated phonetic studies are needed to attest intervocalic voicing in these peninsular dialects in modern Spanish.

With new acoustic analysis and laboratory data since the late 20th century, more studies have emerged around /s/ variation and voicing. It appears that, when voicing occurs, this phenomenon presents variable realizations; in other words, there is a degree of variability across and within speakers and dialects. The results presented here open up a new set of questions for future research. Do native speakers of Spanish really notice (and hear) the difference between [s] and [z] in intervocalic position? And, if so, to what degree? If listeners perceive allophonic differences between [s] and [z] in intervocalic environments, what social, geographic, stylistic, and linguistic information do they infer from this speech? How do Spanish speakers from varieties in which /s/ voicing is standard (before voiced consonants) perceive the non-standard dialectal /s/ voicing variable? Further phonetic research is needed to better explain and update this minority dialectal phenomenon.

5. Socially Motivated Variations of /s/

After Labov’s publication of “The social motivation of a sound change” (Labov 1963), it became more important to linguists to consider speaker specific social characteristics as linguistic variables in order to explain language change. Age, gender, socioeconomic status, origin, ethnicity, and professional network are the most salient of these variables. In addition to geographical and regional factors with a demographic point of reference, complex sociocultural interactions mediated by ideologies help to trigger variation. Dialectology has traditionally studied language variation as a result of the regional origin of the speaker. Nevertheless, speakers operate in a social sphere where many linguistic realizations are mapped, intimately linked to local ideologies. Some of these local ideologies are externally imposed, while others have grown internally through spontaneous practice in a speech community. An example of an ideology is the linguistic stereotype, based on attitudes towards certain speech forms which are considered right or wrong, stigmatized or prestigious, and characteristic of a category of speaker. Below, we examine /s/ variations using this sociolinguistic perspective, focusing on prestige, stigmatization, gender, speech styles, literacy, and age.

The use of /s/ reduction across Spanish dialects is socially and stylistically marked; in other words, aspirating or deleting /s/ could index the speaker’s socioeconomic class, in

addition to the region of origin and the education level. Social perceptions can vary widely according to the dialectal area. What is linguistically stigmatized in Peninsular Spanish might not be so in Chilean Spanish, for example. Social factors condition /s/ weakening, yet they are part of a complex variation system where other variables take part as well (stylistic factors, regional differences, and language internal processes). Retention of /s/ is associated with formal speech and a prestigious official version of the language, while /s/ reductions tend to be connected to the speech of men, lower social groups, and younger speakers (Mason 1994). The perception of prestige turns out to be essential for understanding /s/ production in all its variations, especially in regions where /s/ reduction is common. Gender, age, and education become pivotal in the interpretation of social prestige in a specific speech community. Next, we include some dialectal analyses, taking into account that /s/ variations carry social meaning and may influence speech perceptions.

- Prestige perception and social class

Speakers can value or disdain some speech variants based on the social prestige or stigma associated with them, which can easily change over time. In general terms, coda /s/ aspiration or deletion tends to be perceived as negative among the most educated and upper-class speakers in dialects with regular retention of sibilance, such as in Northern Spain, for example, and even in *s*-deleting dialects such as Puerto Rican or among Cuban-Miami speakers. Final /s/ reduction is associated with the less educated, lowest economic groups and rural areas. Even in dialects with common coda /s/ aspiration and deletion, this perception is still in place.

While different methods were used in the following studies, we can make some comparisons of deletion rates. In Panama, for example, Cedergren (1978) shows /s/ deletion rates of 59% overall, rising to 68% in the lowest socioeconomic class. In Chile, Cepeda (1995) reports lower rates of deletion in the highest social groups (32%) and middle social groups (35%) when contrasted with the lowest social strata (50%). Similar results have been obtained for Dominican Spanish by Alba (1982); for Puerto Rico by López Morales (1983); and for Mexico by Lipski (1994). For Argentinean Spanish, Fontanella de Weinberg (1974) finds a much lower rate of deletion (13%) in the highest social class than in the lowest social groups (68%). She also emphasizes the effect of educational level in addition to social class, with a 6% deletion rate among speakers in both the highest educational groups and highest social class compared to 73% for those in both the lowest educational groups and lowest social class. For Cuba and Puerto Rico, Terrell (1977) indicates that, although there is more lenition in the lower classes, social class does not have a large impact in these two dialects. It seems like social status can predict syllable-final /s/ reduction, with speakers of lower socioeconomic classes generally demonstrating more advanced levels of /s/ reduction.

When aspiration is widely used throughout all social classes, then deletion acquires the stigma once carried by aspiration (Lafford 1986). In radical dialects where sibilant deletion has become common across sociolects and urban centers, /s/ elision loses its stigma. Deletion becomes the rule rather than the exception, as has been attested in recent decades in Dominican and Chilean Spanish. Keeping coda /s/ has become a social mark of prestige, particularly in dialects with regular /s/ lenition. Among /s/-reducing Nicaraguan speakers, for example, coda sibilance has become socially motivated as “sibilance serves to enhance social prestige” (Chappell 2021, p. 234). On the contrary, in Dominican Spanish, the socially marked choice is to not delete. The presence of /s/ is the salient sociolinguistic marker in a dialect with high rates of /s/ deletion. Thus, /s/ retention can be perceived as a stigma attached to identification: speakers articulating too many sibilants are perceived as pretentious, fake, effeminate, “and above their station” (see Bullock et al. 2014). In her sociophonetic analysis of /s/ aspiration among Mexicans and Puerto Ricans, Chappell (2019) finds that Mexicans evaluate Spanish more highly when presented with [s], while Puerto Ricans evaluate more highly when presented with [h]. These findings show how regional differences and local perceptions filter linguistic variation appropriateness and prestige.

/s/ aspiration is now prestigious in Rosario and Buenos Aires and has entered mainstream Argentinian speech thanks to young people. In the same way, in Uruguayan Riveran Spanish, this process has emerged with prestige, whereas before /s/ aspiration was neither common nor seen as prestigious by older generations of speakers (Waltermire 2021). In Chilean Spanish, in the last few decades, rates of sibilant coda deletion have continued to increase in urban centers such as Concepción, Santiago, and Valparaíso, where it has become quite common. As a result, /s/ deletion is now the norm, not the exception. Rogers (2020) reports that elision was the principal variant for every social group analyzed in Concepción. The overwhelming trend toward elision over aspiration and sibilance in this Chilean city has exceeded those levels reported by Cedergren (1978) and Alba (1990) for the Spanish of Panama City and the Dominican Republic, respectively. Elision rates were also elevated among Concepción's older speakers, which supports the idea that /s/ elision has been popular and regular in this dialect for a long time.

Spanish *ceceo* is another illustrative case of sociolinguistic stigmatization. In many rural areas and small towns of Andalusia, speakers neutralize the opposition of /s/~/θ/ in favor of just /θ/ (i.e., [báθo] < *bazo~vaso* 'spleen, glass'). This articulation, known as *ceceo*, is stigmatized by speakers from urban centers and even by *ceceo*-speakers themselves. It is parodied and exaggerated by comedians and in literature to mock and ridicule this way of speaking. In the popular imagination, Andalusian *ceceo* indicates cultural poverty, a lack of education and backwardness, and, consequently, is disdained and negatively stereotyped to mock Andalusians. *Ceceo* is strongly associated with males, while females gravitate more towards *seseo* (Armstrong and Mackenzie 2018).

Likewise, *jejeo* or elision of syllable initial /s/ has been socially perceived as negative due to its connection to speakers of low socioeconomic status. It has been generally associated with illiterate rural groups with little or no instruction in the language and, therefore, has not received a lot of attention from linguists. For example, in Salvadoran Spanish, the San Miguel dialect is stigmatized due to the presence of onset /s/ reduction. Speakers throughout this region are considered by themselves and by other Salvadorans to be uneducated and low class (Brogan and Bolyanatz 2018).

The stigmatization of the assibilated pronunciation of trilled-*r* in Highland Bolivian Spanish is another clear example of stereotyping and of negatively perceiving the sociophonic variations of a speech community. This distinctive feature appears to be found only among low-class speakers and has not been detected among upper-middle class informants. Therefore, negative attitudes are associated with pronouncing the voiced apical sibilant [z] for trilled /r/ and tap /r/ in a dialect where the non-trilling production is the most frequent articulation. The sibilant [z] is considered *de clase baja* 'belonging to the low class', and its presence or absence therefore indicates the speaker's social class: "the lower the social status, the more likely the presence of [z] in one's speech (as an allophone of /r/)" (Morgan and Sessarego 2016, p. 207). In addition to the pronunciation of [z] for rhotics, we also find another stigmatized linguistic feature, unstressed vowel reduction, characteristic of this area and associated with lower-class Andean speech among Spanish-Quechua speakers. Stigmatization and negative approaches to a linguistic variable are very much conditioned by socioeconomic and ethnocultural patterns. In the Bolivian Highlands, most communities are indigenous: 89% of La Paz province and 74% in the Sub-Andean valleys (in Cochabamba and Chuquisaca). In the lowlands, by contrast, indigenous groups are relatively small, estimated to be between 16% and 23% (in Tarija and Santa Cruz, respectively) (Gigler 2009).

Based on the aforementioned studies, it is pertinent to consider whether the current prestige or stigmatization of these variants will continue changing over time. Nowadays, people have more access to education, linguistic diversity, and social media. Speakers are more exposed to standardized linguistic forms. The association of /s/ reduction with lower socioeconomic and educational groups in some dialects may decline in the future, as /s/ reduction is becoming more and more diffused in the Spanish-speaking world.

- Gender

The effects of gender and class are important predictors to analyze a speaker's language orientation in a localized speech practice. Among speaker variables, gender appears to be ambiguous, as women speakers sometimes promote more standard features, while others militate against them. The class factor is more reliable in predicting linguistic behavior than gender, as the standard language is by definition the language used by the middle and upper classes. Nevertheless, for that very reason, clear definitions of class are difficult to formulate (Armstrong and Mackenzie 2018). Still, there is a general consensus among linguists that there is a link between women and the use of standard linguistic features. Recent findings have shown that males, in particular young urban males, "appear to resist the introduction of non-localized innovative linguistic variants, while females promote them" (Armstrong and Mackenzie 2018, p. 181).

Recent studies have shown the influence of the speaker's gender on the maintenance or omission of final /s/, with gender appearing to be a regular predictor of the sociolinguistic variation of this coda /s/ in some Spanish varieties. Women tend to articulate the sibilant [s] more frequently, while men use its weakened variants (cf. Dohataru 2004; Terrell 1981). It is to be expected that, when aspiration of /s/ is associated with a prestige variant (i.e., in Montevideo, Rivera, Buenos Aires, etc.), women will use it more often and consistently than men. Across multiple cultures, it has been noted that women "show a lower rate of stigmatized variants and a higher rate of prestige variants than men" (Labov 2001, p. 266). Nevertheless, although women are perceived to follow prestige linguistic practices, at the same time, they also "are in the vanguard of the change" (Armstrong and Mackenzie 2018, p. 184).

Fontanella de Weinberg (1974) explains that men of all socioeconomic groups reduce /s/ in final position more frequently than women in three styles: spontaneous speech, formal speech, and reading. Weinberg concludes that "the more careful articulation of -/s/ on the part of women seems to coincide with a general preference [. . .] toward the use of forms of greater prestige, which is particularly notable in the speech of females of the lower-middle socioeconomic class and which contrasts with the greater use of stigmatized forms on the part of men" (Fontanella de Weinberg 1974, p. 58). Cepeda (1995) reports that adult Chilean males delete coda /s/ more often than females do (44% versus 36%). For Concepción-Chilean Spanish, Valdivieso and Magaña (1991) show that both men and women reduce final /s/, but males have more advanced lenition: women have 80% [h] and 11% deletion, while men have 64% [h] and 24% deletion. Rogers (2020) suggests that, in Concepción, the strongest factors to predict sibilance reduction are age and gender, with male and older speakers weakening /s/ more often than female and younger speakers. He also notes that education was significant in his overall analysis, "the likelihood of weakening /s/ increased among male speakers with less formal education" (Rogers 2020, p. 147). For Dominican Spanish, Bullock et al. (2014) show that women retain coda /s/ about 36% of the time, while males do so only about 15%. Alba (1990) finds 71% deletion among Dominican men but 51% deletion for women. For Puerto Rican and Cuban varieties, Terrell (1977) reports that /s/ reduction generally happens more often among men, although he does not provide quantitative numbers, indicating that the contrast due to gender is not substantial.

Recent research shows that men tend to exhibit more intervocalic /s/ voicing than women (i.e., *la sala* [la.zá.la] 'sitting room', *piso* [pí.zo] 'floor'), which opens up the question of whether this may be due to physiological differences (such as oral and laryngeal tract configurations). Further analyses add that more voicing happens in males' speech and, particularly, among younger speakers, which seems to be stable among dialects with this kind of voicing (cf. studies in Barranquilla, Colombia, (File-Muriel et al. 2021); in Costa Rica, (Chappell and García 2017); in Quito, Ecuador, (Schmidt 2016); in Mexico City, (Schmidt and Willis 2011; Nadeu and Hualde 2015)). Variationist studies show women leading this change in progress. Nevertheless, García (2020) shows that young men are the ones leading the voicing tendency in Ecuadoran-Lojano Spanish. In accordance with the aforementioned

stable trend, male Lojanos voice more than females and younger Lojanos voice more than older Lojanos.

- Speech perception

Sociolinguistic research looking at language prestige and gender cannot be isolated from other factors. Exposure to other dialects (local or non-local) and other languages also has an effect on speech perception and stigmatization. In Atlantic Nicaragua, Spanish has displaced English as the prestige language as a political consequence of the expansion of Mestizo control. Learning Spanish in this Miskitu-Spanish bilingual region is perceived as a means of opening doors to all that the rest of society has to offer, including access to the cultural achievements of all humanity through a more universal language, “el español representa una lengua más universal que les otorga acceso a los logros culturales” (Lau 1983, p. 194). In the Colombian-Palenquero bilingual setting, embracing Spanish monolingualism, especially for the younger population, means facilitating integration into the modern world and freeing themselves of the sense of shame when speaking creole. Speaking Palenquero (or *Lengua* as they call it) becomes a paradoxical conflict of both being true to one’s cultural roots and “a symbol of degeneracy [. . .], backwardness, ignorance due to lack of education” (Schwegler and Correa 2019, p. 163). Likewise, when they speak, their local *kateyano* (a type of *español costeño*), they feel that this variety is less prestigious and subject to ridicule and negative attitudes. Palenqueros believe that their *kateyano* is inferior to Colombian Highland Spanish, which is tied to the prestige culture and popular trends. As a result, this *kateyano* is also shunned so much so that it is used sparingly, especially among older Palenqueros. This may be a hopeless situation, as Palenquero bilingualism unfortunately appears doomed, and socially dominant Spanish monolingualism is the most likely outcome.

Western Nicaraguans view their own dialect of Spanish more positively than the Spanish spoken on the Atlantic coast but experience linguistic insecurity and linguistic discrimination (Drevdal 2009). Nicaraguans are well known for cutting off coda /s/ regularly; consequently, other Central-American Spanish speakers have called them *mucos*, a dialectal term referring to a “cow with one or both horns missing” (Lipski 1994, p. 291). Costa Ricans call Nicaraguans *nicas*, sometimes in a derogatory way, to denote this group with shared origins, appearance, ethnicity, language, status, and class, among other properties (Sandoval García 2004). In Dominican Spanish, *hablar fisno* ‘speak in a refined way’ is used to mock speakers that use too many sibilants in their speech in this extreme /s/-reducing macro-dialect. On the other hand, most Spanish speaking listeners’ perception of /s/ reduction is popularly described as *comerse las eses*, ‘eating ones’ s’s’, as in *los sevillanos se comen las eses*, ‘Sevillians do not pronounce s’s’.

In Miami Cuban Spanish, some groups who do not pronounce /s/ are perceived as uneducated, therefore speakers make an effort to pronounce /s/ clearly as a reaction to avoid sounding like a *ref* (meaning refugee, a recently arrived Cuban) or a *guajiro* (a rural person with little or no formal education). According to Lynch and Fernández, greater frequency of sibilance in this community is possibly because Miami-born Cubans “may seek to differentiate themselves linguistically from later waves of Cuban immigrants” (Lynch and Parera 2021, p. 171). In addition, the Mariel crisis has shaped the linguistic perception of recent arrivals from Cuba to the present day. The Spanish spoken by the so-called *Marielitos* (those Cuban immigrants that arrived post-Mariel after 1980) is perceived as less “correct” and “pleasant” than the Spanish spoken by those who arrived during the 1960s (Lynch and Parera 2021, p. 167). Social and linguistic stigma derives from political ideologies of the Cuban diaspora. In Miami Cuban Spanish, “the homeland variety is perceived as a highly stigmatized, corrupt version of the diaspora variety, which is accorded a high degree of prestige” (Alfaraz 2018, p. 67).

In Madrid-Spanish, the *ejque madrileño*, a variant of coda /s/ articulated as a velar sound [x] (from *es que* ‘it’s that’ pronounced as [éx.ke]), prompts negative judgments and language attitudes towards velarized /s/ speakers. Since Madrid-Spanish is a variety with sibilance maintenance (90.1% of the cases versus 4.1% of aspirated /s/ and 0.4% of elided

/s/), this velarized variant is often perceived negatively among *Madrileños* themselves (and also by speakers of other regions such as Catalonia and the Balearic Islands). Although velarized /s/ is fairly low (5.4% of the cases), its use is not well regarded. Wright finds that a “speaker’s status, pleasantness and confidence were all negatively affected by the velarized variant” (Wright 2021, p. 105). Furthermore, her study found that a velarized /s/ speaker will be perceived by the listener as less likely to be considered as a friend and judged less apt to carry out a given task. Wright also indicates that those not from Madrid “do not show as severe of judgements as those seen by in-group members (*Madrileños* themselves)” (Wright 2021, p. 103).

Speakers’ stereotypes and regional prejudices greatly condition how /s/ variations are perceived socially and locally. Multiple associations with status, education, origin, and ideological perceptions such as political views and snobbishness are implied by the use of just this single sound /s/. Maintenance or reduction of sibilance plays a large role in social identification and evaluation.

- Speech style, literacy, and age

Other social constraints that affect coda /s/ production and variations are related to speech style and the literacy of the speaker. Regarding speech style, research has shown that more formal contexts are associated with more prestige variants and informal or conversational speech with more changes and omissions. Broadcast speech is the closest to formal prestige style, especially in the news, where broadcasters try to avoid regional pronunciation or intonation, articulating all the words with no reductions. They tend to “strive for a maximally clear and precise diction, as free as possible from regionalisms of pronunciation” (Lipski 1985b, p. 221). In most dialects, broadcast news style shows higher sibilant retention in comparison with conversational speech, even in syllable-final preconsonantal position. Only in Cuban Spanish do we find a certain variability, as some broadcasters may show a low rate of coda /s/ deletion and aspiration, while others present a much higher rate. According to Lipski (1985b), this variation in Cuban broadcasters is to avoid social class distancing, making them sound more like their audience.

Fontanella de Weinberg (1974) finds that Argentinian speakers increased their level of final /s/ omissions as the task became less formal, regardless of social status or educational level. Speakers produced speech in four different styles with coda maintenance regression in this order: word list > reading > formal speech > and spontaneous speech. Similar results have been attested for Chilean speakers (Miller 2007; Fox 2006; Cepeda 1995). Nevertheless, in radical dialects with advanced levels of deletion, speech style may not have so much of an impact on /s/ reduction. In Caribbean Spanish, where coda /s/ omission is present in almost all speech styles, sibilance is retained only in the most formal settings, such as in readings and formal speeches (Fox 2006; Lipski 1985a; Terrell 1977).

With respect to literacy, in Dominican Spanish, Bullock et al. (2014) indicate that the level of education significantly impacted sibilance retention, with educated speakers retaining [s] about 35% of the time and semiliterate speakers only maintaining coda [s] about 15% of the time. They also show that literate children retained /s/ more often than semiliterate children, and that girls maintained /s/ more often than boys. Likewise, Miller (2013) reports that 4–5-year-old Chilean Spanish speaking girls retained /s/ (either as an aspiration or full sibilance) more often than boys did. Miller and Cárdenas (2020) explain that speech style can also affect young children’s articulation of /s/ and that it more often affects girls than boys. In the school setting, among young Dominicans, “the increase in [s] is much more substantial for young girls, who produced the full variant [s] 74% of the time” (Miller and Cárdenas 2020, p. 270).

The age factor has been considered as a conditioning predictor for coda /s/ variation and reduction, although results have not been consistent among linguists. Scholars work under the general notion that young groups are inclined to embrace change and innovation, while older speakers tend to use more conservative prestige variants or more traditional, local speech. The underlying idea is that individuals are more capable of changing earlier in life than later, as new changes rarely commence in an idiolect later in life (Palander 2005).

It is assumed that individuals attain a level of constancy in their grammar and phonology in early adulthood, at least with respect to language variation (see [Tagliamonte and D'Arcy 2009](#)). According to these authors, the frequency of innovative forms is “highest among adolescents” ([Tagliamonte and D'Arcy 2009](#), p. 59). Older speakers have become “linguistic adults, with a stabilized phonology, [whereas the younger speaker] is still advancing” ([Labov 2001](#), p. 463). In her studies of Panamanian Spanish, [Cedergren \(1988\)](#) shows that, in the thirteen years between her initial and follow-up investigations, the frequency of [tʃ] lenition increased among speakers between the ages of forty and seventy years. By the time of her second study, [Cedergren \(1988\)](#) reports that lenition became the object of social awareness, which was not observed at the time of her first analysis. Her results prove that, although the progression of language change slows down considerably in early adulthood, contextualizing language within recent sociohistorical changes is essential to explain variations both from internal and external linguistic approaches.

For Valdivian-Chilean Spanish, [Cepeda \(1995\)](#) describes slightly more /s/ deletion in the youngest age group (14–19 years old), with a rate of 43%, than in the middle and oldest age groups (24–48 and 54–78 years old), with 37% and 38%, respectively. A later study reports similar results for Limeño Spanish. [Klee et al. \(2018\)](#) show that aspiration and deletion occur more frequently in the speech of younger generations in Lima, Peru. Nevertheless, it is not always the case that older members show resistance to losing sibilance (or resistance to other changes) in a speech community. On the contrary, a few other investigations prove the opposite, such as [Lynch's \(2009\)](#) study on young Miami-Cuban speakers, and [Rogers's \(2020\)](#) results regarding Concepción-Chilean Spanish. The latter shows that /s/ elision was higher among the older age-group (85%) than in the younger age-group (77.5%). Likewise, [Cedergren \(1978\)](#) indicates that younger speakers exhibit less deletion than older speakers in Panama. In addition to these contradictory outcomes for the effect of age on final /s/ reduction, and other studies have shown little or no effect (see [Poplack 1980](#); [Valdivieso and Magaña \(1991\)](#) for Concepción-Chile).

The linguistic evolution of coda /s/ is very much dependent on local perceptions toward this variant's social prestige or lack of it. In a way, sibilance has become a “social strategy” to index education, socioeconomic status, and urban or rural origins, among other factors. Individual and local attitudes towards a dialect's social prestige or stigmatization continue to change (like language itself), therefore we cannot predict that the above results will be stable over time. Dialects and sociolects are not static. It would be wrong to assume that these trends in linguistic stereotypes and ideologies would remain unchanged in the years to come.

6. Discussion

In this article, we have provided the most frequently documented factors for /s/ variations in Spanish from both linguistic and social angles. Syllable position, phonetic environment, speech rate, stress, lexical frequency, word length, and grammatical functionality are among the most studied and important linguistic factors. Individual traits, gender, age, regional origin, socioeconomic class, literacy, and speech style summarize the social ones. The dual pressures of language and dialectal contact also promote /s/ variation among Spanish dialects. Linguistic and internal variables that distinguish Spanish dialects are largely syllable and consonant based. In Spanish, most of the phonetic consonantal variations happen at the coda position, which is evolutionarily the weakest position in terms of articulation and, consequently, the most prone to change. The syllable final environment has historically permitted multiple alterations, which have generated variations of /s/ pronunciation according to multiple linguistic and extralinguistic causations. Therefore, the majority of the present findings circle around this phonetic environment, with a few studies extrapolating variations in onset positions (*jejeo*).

This study offers an overview of sibilant instability across Spanish-speaking regions from both diachronic and synchronic perspectives. Several dialects from both coastal and highland areas have been selected to illustrate /s/-reducing variations: Caribbean,

Nicaraguan, Ecuadoran, Colombian, Uruguayan, Peninsular, and United States Spanish. In addition, a descriptive comparison of those regions that also feature onset /s/ lenition is included. The impact of /s/ reduction on the phonetic environment (preceding vowel and following consonant) is explored, specifically in those radical variants with a lack of /s/ retention. We also examine intrusive coda /s/ phenomena (including hypercorrection) as well as some cases of intervocalic voicing. Both phonetic processes, hypercorrection and intervocalic voicing, are presented as indicators of reversing phenomena, as anti-trends of the expected regular /s/ evolution. Finally, the social motivations for /s/ variables are underlined to evidence speech perceptions and sociolectal and dialectal trends. We explore indexers such as prestige views, socioeconomic class, education, gender, speech style, literacy, and age.

New software and laboratory analysis have shone a new light on socio-dialectal phonetic features. It has also forced authors to narrow down their research themes, limiting their access to spontaneous speech. Therefore, modern results are sometimes based on analyzing read passages or phrases far from innovative natural speech and authentic local settings. Still, the temporal and spectral properties of /s/ reductions can be calibrated in a more reliable scientific way, corroborating or disregarding old hypotheses about /s/ lenition and its consequences on the immediate phonetic environment. More than ever before, acoustic measurements and spectral information are helping to establish new premises about sibilance. Discussions about /s/ production and variations continue, as scholars do not always agree on their results. As a gradient articulatory phenomenon with high levels of variability across dialects, methods and outcomes, /s/ weakening investigations reflect polyvalent views. It would be interesting to continue exploring Spanish speakers' sibilant variations in /s/-maintaining and /s/-reducing regions, taking into account sociolinguistic network structures over time.

7. Conclusions

This study has attempted to offer an overview of Spanish /s/ sibilant variation, adding new perspectives and recent data for illustration. Linguistic reality is a complex interplay of situational variables with social factors and regional differences, resulting in fluid linguistic acts of identity within a culture. Along with presenting an analysis of /s/ variables from diachronic, synchronic, and sociolinguistic angles, this overview also identifies several future lines of research, mainly dealing with questions not previously identified by authors.

The scope here has been to provide a glimpse into the vast world of /s/ variation across Spanish dialects. The descriptions are representative snapshots of current research and must be considered within a framework of a constantly changing linguistic map. Demographic mobility, globalization, technical innovation, and access to mass media will allow us to witness rapid shifts in dialects and social communication tendencies. Isolated speech communities are more connected now than ever before. Greater exposure to prestige norms can result in the attenuation of local dialect traits and, therefore, in potential dialect leveling. On the other hand, and as a reaction to social proximity, the retention of dialectal features may fully develop as prospective identity markers. Increased interconnectivity appears to have reinforced awareness and pride in previously stigmatized dialects.

To continue answering questions about /s/ variations across sociolects and regions, more updated research is needed. Some of the common findings are based on studies published in the 1970s and 1980s. Considering that variability is constant, it is expected that other non-traditional perceptions and insights have been evolving in recent years and will continue to develop in the future. The scope here has been to try to showcase those new recent findings and connect them with the more traditional ones to present a general exploration of sibilant variants in Spanish. The general reader will find this article helpful as a preview to approach the quite daunting study of /s/ lenition, a field with a great deal of literature and controversy. Scholars in the field will benefit from the comprehensive synthesis of diverse conclusions and approaches.

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Abbreviations

*	agrammatical, not standard Spanish; undocumented.
<	from, derives from, comes from
< s >	letter <i>s</i> , grapheme <i>s</i> .
[:]	semicolon indicates a long sound.
[]	sounds, allophones: variations of a phoneme with no contrastive value. e.g., [s] and [z] in modern Spanish are allophones of the phoneme /s/, e.g., hasta [ásta] and asma [ázma].
//	indicates phonemic transcription, a broader transcription than phonetic transcription. Symbols contained within have contrastive value, e.g., /s/, /z/ as in <i>sip</i> /sip/ and <i>zip</i> /zip/ in English.
Ø	deletion, null, no results.
[ʔ]	consonantal sound due to glottal constriction or stop. The air vibration either stops with full cessation of vocal fold vibration (glottal stop) or becomes irregular with a low rate and sudden drop (creaky voice); as in American English <i>button</i> [ˈbʌʔn̩]. It is a voiceless glottal occlusive non sibilant sound. In Spanish, [ʔ] could be caused by syllable fortition processes.
[h]	consonantal sound due to glottal aspiration; as in English <i>he, his</i> . It is a voiceless aspirated glottal non-sibilant sound.
[s]	unvoiced alveolar fricative sibilant, IPA.
[s̺]	unvoiced apicoalveolar fricative sibilant, IPA; [s̺] in RFE. Dialectal in the north of Spain.
[z]	voiced apicoalveolar fricative sibilant, IPA; [z̺] in RFE.
[z̺]	voiced retroflex fricative sibilant, IPA. Dialectal in Andean Spanish.
[s̺]/[z̺]	unvoiced and voiced dental fricative sibilants, IPA; [s̺]/[z̺] in RFE.

Glossary

Aspiration	the realization of a sound such as [s] as a simple expulsion of air [h] as in English <i>he</i> .
Coda position	the syllable-final consonant or consonants. Also called “auslaut”. In the English word <i>cats</i> , the coda is <i>ts</i> .
Glottal articulation	the airstream passes through the glottis (the space between the vocal cords) and stops the vibration of the vocal cords. Upon release there is a cough like explosive sound. The air can be released as an aspiration [h] as in English <i>her</i> or as a constriction [ʔ] as in American English <i>button</i> [ˈbʌʔn̩].
Hypercorrection	the use of a prestigious variant in contexts where it is unattested in standard varieties. It indicates a shift towards a more prestigious variant (see Labov 1966). Also known as <i>ultracorrection</i> (Alba 2004 ; Morgan 2000).
Lenition	in phonetics it refers to sound softening or weakening. From Latin <i>lenis</i> ‘weak’. In Spanish, lenition weakens consonant articulation making it become spirantized, deleted or voiced. The opposite is fortition.

Onset position	the syllable-initial consonant or consonants before the nucleus. In the English word <i>cats</i> , the onset is <i>c</i> .
Underlying segment or representation	a speaker's mental representation of a sound before applying any rules of articulation or re-syllabification.

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