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Spanish /s/ Reduction in Cíbola County, New Mexico

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SPANISH /S/ REDUCTION IN CÍBOLA COUNTY, NEW MEXICO

BY

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LAND ACKNOWLEDGEMENT

I would like to acknowledge that this thesis is written about a conquering language in occupied territory, which historically and to this day is inhabited by various indigenous groups. These include Acoma Pueblo, Laguna Pueblo, the Navajo Nation, and Zuni Pueblo, who have been subjected to nearly 500 years of conquest, oppression, forced assimilation, and land theft, by both Spanish and Anglo-American colonizers.

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ABSTRACT

The extent to which /s/ reduces in both onset and coda positions varies greatly across Spanish varieties, with Traditional New Mexican Spanish showing significant reduction rates in past research. However, to-date there has been no in-depth linguistic study of Spanish in Cíbola County. The current work presents an analysis of variable /s/ reduction in Cíbola Spanish, using data from the *New Mexico-Colorado Spanish Survey*. The results demonstrate that reduction in this dialect is conditioned primarily by linguistic rather than extralinguistic factors, which vary based on syllable position. The manuscript also briefly introduces the history of Cíbola, Hispanic identity & language attitudes, and proposes the beneficial application of a joint usage-based and translanguaging theory to the study of bilingual speech data. This thesis sets the stage for a more comprehensive sociolinguistic and ethnographic analysis of Cíbola, laying the groundwork for the creation of a sociolinguistic corpus of the languages spoken there.

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CHAPTER 1

INTRODUCTION

Traditional New Mexican Spanish (TNMS)[1] is an endangered dialect of an otherwise healthy and thriving world language. With roots dating back five centuries, when the first Spanish *conquistadores* passed through this area, it holds a special place in the hearts of the people who speak it. To them, the language is a remnant of the Golden Age of Spanish imperial exploration, which along with our culture speaks to our supposed European heritage and origin (cf. Bills & Vigil 2008; Cobos 2003; Espinosa 1911, 1909; Jaramillo & Milan 2013; Peña 2007a, 2007b). However, New Mexicans are often told that their Spanish is "bad," something that's *poquito mocho* 'a little broken,' as put by one of the speakers in this study (218-1_A: 161-162s).

For a number of socioeconomic, historical, and political reasons beyond the scope of the current work (cf. Bills & Vigil 2008; Nostrand 1992; Among others), this dialect is fading, being subsumed at once by multiple competitors: English, Mexican Spanish, and Standard Spanish. Over several decades, many efforts have been made to document and analyze this dialect, while there are still enough native speakers; Many of these studies will be referenced throughout this work (Bills & Vigil 2008; Brown 2008; Brown 2005a, 2005b, 2004; Cobos 2003; Gutiérrez 1981; Torres Cacoullos & Travis 2018; Among

[1] Throughout this work, I variably refer to this dialect as New Mexican Spanish, Southwestern Spanish, Traditional Spanish, or some combination of these.

others). One location that has consistently been lacking from the literature, however, is Cíbola County.

Located in western New Mexico, Cíbola has for two centuries served as an important point along the route from New Mexico to California, whether on horseback during the Spanish and Mexican colonial periods, migration to the coast during the Great Depression, or for road trips along old Route 66 or Interstate 40. While the Spanish spoken here is considered a part of Traditional Southwestern Spanish, it sits just north of the isogloss boundary with Border Spanish, with another pocket to the northwest, in McKinley County (Bills & Vigil 2008). And given a huge amount of im- and emigration during the 20th century following the uranium boom, we can reasonably imagine that Cíbola Spanish may differ from other nearby subdialects.

Most prior studies of Traditional Southwestern Spanish focus on the northern parts of New Mexico and southern Colorado, the heartland of the colonial subculture (cf. Brown 2008; Brown 2005a, 2005b, 2004; Espinosa 1911, 1909; Torres Cacoullos & Travis 2018). To my knowledge, no analysis of Spanish as it is spoken in Cíbola County has been previously conducted. Detailed linguistic analyses of the region may further illuminate this fascinating dialect, sociolinguistic factors affecting its development, and the effects of long-term contact between three (sub-)varieties of Spanish, as well as between Spanish and English.

This work will focus on a usage-based (cf. Bybee 2015, 2002, 2001; Hooper 1976; Pierrehumbert 2016, 2001) and variationist (cf. Labov 1984, 1966, 1963; Meyerhoff 2011; Tagliamonte 2012, 2006) analysis of /s/ reduction in Cíbola Spanish, utilizing 2241 tokens of speech data taken from ~36,000 words of transcribed speech

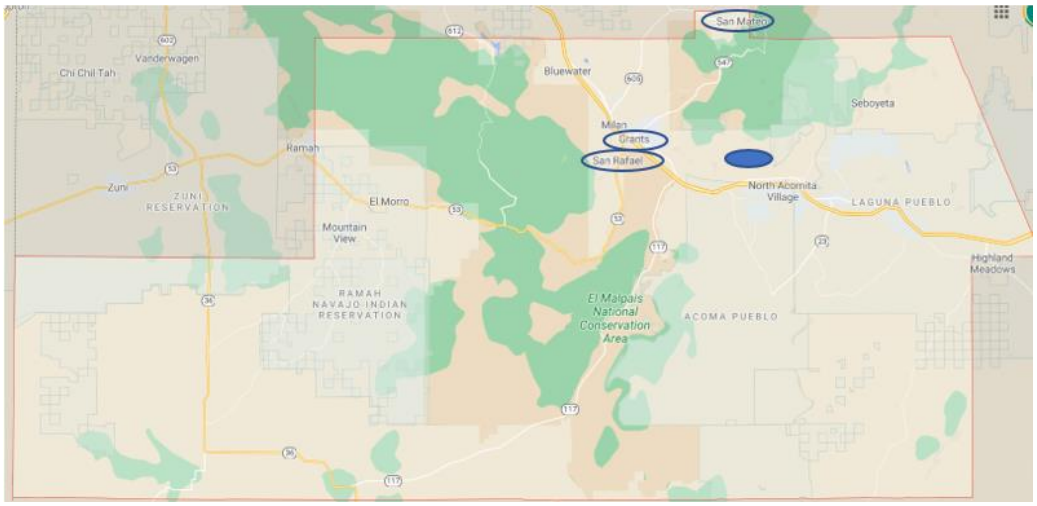
recorded during the early 1990's for the *New Mexico-Colorado Spanish Survey* (NMCOSS; Bills & Vigil 2008). Through both univariate and multivariate analyses, I hope to shed light on some of the linguistic and extralinguistic factors favoring variable reduction of /s/ in this dialect, paving the road for further sociolinguistic and ethnographic study of the people of this region. The organization of the paper will be as follows:

- Chapter 2 reviews Cíbola's history, the Spanish spoken there, the issue of *hispano* identity, an overview of usage-based and variationist theories, and past findings related to /s/ reduction in Borderlands Spanish.
- Chapter 3 looks at the data and methodologies used in this study, reviewing in-detail the variables analyzed here.
- Chapter 4 presents the results from the multi- and univariate analyses.
- Chapter 5 discusses the constraints conditioning /s/ reduction, identity expression for Cíbola *hispanos*, possible explanations for the extraordinary speech behavior of one speaker in particular, and the implications that translanguaging theory has in studies of bilingual behavior.
- Chapter 6 concludes the paper with a general summary of the findings, some noted shortcomings of the project, and maps out future study of the dialect.

CHAPTER 2

LITERATURE REVIEW

2.1 – Cíbola County



Map 1 – Cíbola County, NM. *Note: San Fidel is indicated by the shaded oval. Courtesy of Google Maps (2021).

2.1.1 – A Brief History of the County, 1540s-Today

The *hispano* 'Hispanic' history of Cíbola dates back nearly 500 years,[2] with various sources tracing the name of this region to Spanish imperial forces and their misguided search for the fabled lost cities of gold (Cobos 2003; Jaramillo & Milan 2013; Peña 2007a), or to the Spanish name for the American bison, *cíbolo* (Cobos 2003, 1983; Kessell 2002; Peña 2007a). The earliest signs of Spanish occupation are literally written in stone, with the names of Juan de Oñate (1605) and Diego de Vargas (1692) inscribed on the El Morro cliff face near Zuni Pueblo. However, archaeological and anecdotal

[2] However, various indigenous groups and languages have inhabited northwestern New Mexico for much longer, dating back at least several thousand years (Bills & Vigil 2008; Jaramillo & Milan 2013; Peña 2007a). These linguistic groups include Athabaskan, Keresan, and Zuni languages.

evidence trace Spanish exploration back further, to Francisco Vázquez de Coronado in the early 1540s (Jaramillo & Milan 2013; Kessell 2002).

During this initial occupation, few *hispanos* lived in the Cíbola area, with Catholic missions to the Acoma, Zuni, and Navajo being established during the 1600s and 1700s (Nostrand 1992). In 1800, a Spanish land grant allowed for 30 families from the Albuquerque/Atrisco area to move west and settle permanently in Seboyeta,[3] excepting a brief period in 1804, when over a thousand Navajo warriors besieged the village for four days, nearly causing the villagers to return to Albuquerque (Nostrand 1992; Peña 2007a, 2007b; Sides 2006). Later came the Cubero land grant in 1831, founded by 31 more families from Albuquerque (Nostrand 1992). These villages served as stepping-off points for the *hispano* settlement of Arizona, and were important stops on the road west (Nostrand 1992; Peña 2007a).

Following the American invasion and incorporation of the Southwestern territories, and an increased presence by the US Army due to the ongoing Navajo Wars, in 1862 *seboyetanos* established San Mateo on the north side of the San Mateo Mountains, dangerously close to the Navajo's ancestral lands (Nostrand 1992; Peña 2007a; Sides 2006). In the same year, the original Ft. Wingate was established south of modern-day Grants, which attracted local people to found the village of Ojo de Gallo, reconstituted as San Rafael when the fort was moved farther west a few years later (Jaramillo & Milan 2013; Peña 2007a; Sides 2006).

[3] Originally constituted as 'La Merced de Cevolleta,' later changed to 'Cebolleta,' and then Anglicized to 'Seboyeta,' (Peña 2007a, 2007b).

Two small Mormon communities, Ramah and Bluewater, were occupied by farmers beginning in 1881; One of the first cultural clashes between *hispanos* and Anglos, there was little to no intimate contact between the Mormon and Hispanic populations, with segregated schools being the norm (Nostrand 1992). This also marked the beginning of an economic shift for the *hispanos*; Historically being sheepherders and subsistence farmers, their communally-owned grazing lands were encroached upon first by Mormon farmers, and later by Texas cattlemen (Gonzales-Berry & Maciel 2000; Jaramillo & Milan 2013; Nostrand 1992; Peña 2007a, 2007b). By the early 1900s, the shepherding lifestyle was beginning to fade, with many *hispanos* moving away from their villages and homesteads to urban centers looking for economic opportunity, as more and more Anglos moved to the region following Statehood in 1912 (Nostrand 1992; Peña 2007a, 2007b).

The primary urban center in Cíbola is the city of Grants, founded as Los Alamitos in 1882. Initially a Hispanic settlement of three to four families located between Mt. Taylor and the *malpaís* 'badlands' lava flows, it was later renamed after three Canadian brothers who operated a railroad station in the area around the same time (Jaramillo & Milan 2013; Peña 2007a). This railroad station was critical in shipping out the products of the timber industry in the first half of the 20th century, and allowed for a steady flow of people to and from the area. Along with the adjacent village of Milan founded in the 1950s, Grants has had two big economic booms since its establishment, centering around carrots in the 1930s-1950s, and uranium in the 1950s-1980s, which drew migrants from around the world (Jaramillo & Milan 2013; Peña 2007a).

Up to this point, Cíbola was a part of Valencia County; In 1981, however, the entire area was reconstituted as Cíbola County, with the county seat being Grants, the political and economic center of the region (Jaramillo & Milan 2013; Peña 2007a). With the collapse of the uranium industry in the 80s, the population of the county dropped from ~30,000 people in 1980 to ~25,000 people in 1990 (Data Commons 2019), with a modern estimated population of 26,675 people, 38.25% of whom are Hispanic or Latino (Data Commons 2019; Data USA 2018; US Census Bureau 2019). Other economic endeavors in the last 30 years have included coal mining, a power plant, paper mill, several prisons, and various tourism attractions. With economic opportunities decreasing, the future may seem bleak for this community; However, many retain hope of the "Grants luck," (Peña 2007a), which refers to the tenacity of the local population and economy to recover from every boom & bust. Per Jaramillo & Milan (2013): "Grants always comes back, there is always something in the future for the area," (dedication page). This now begs the question: What does the future hold for Cíbola Spanish?

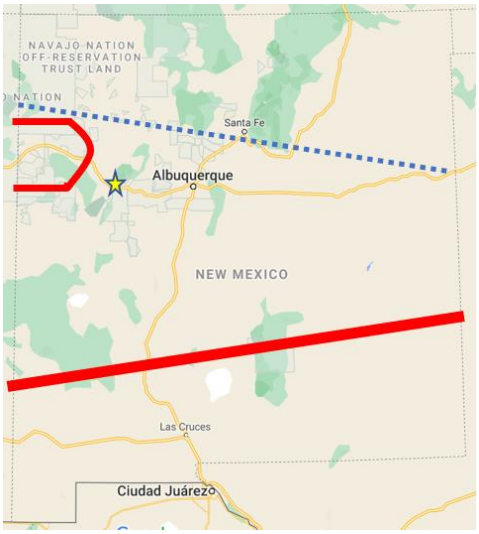
2.1.2 – Cíbola Spanish

Cíbola Spanish reflects its origins as a part of Southwestern Spanish, the oldest European language continually spoken on US soil. It is spoken by a people who were/are primarily *mestizo* in race/ethnicity (mixed European/Native American ancestry), and whose roots lie overwhelmingly in northern Mexico (Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Nostrand 1992; Peña 2007b; Wilson 2015). Traditional Spanish is considered the northernmost part of the Mexican macrodialect (Bills & Vigil 2008; Cárdenas 1975; Cobos 2003; Lozano 1977), classified as such due to "*…la base morfosintáctica [que] nos permite clasificar varios dialectos en un solo*

macrodialecto…que se habla en México y el Suroeste de los Estados Unidos (…the morphosyntactic base [which] permits us to classify various dialects in just one macrodialect…which is spoken in Mexico and the Southwestern United States)" (Lozano 1977: p. 15),[4] with a "pronunciation and usage…akin to that of northern Mexico," (Cobos 2003: p. viii). This section is devoted to a description of Cíbola Spanish as it relates to greater trends within Traditional New Mexican Spanish. For a fuller treatment, refer to such overviews as Bills & Vigil (2008), Espinosa (1911, 1909), and Wilson (2015), among others.

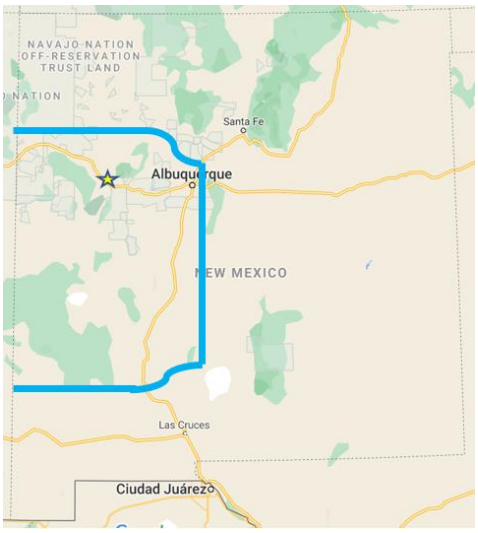
Dialect Grouping: Drawing upon the Spanish lexical survey in the NMCOSS, there are two primary dialects (Bills & Vigil 2008): Border Spanish in the south and some urban areas, and Traditional Spanish in the north of the State. The latter is further split into two subdialects, the Río Arriba and Río Abajo (referencing the dialect's location in relation to the upper and lower Río Grande River). These primary dialectal boundaries can be seen in Map 2 below:

[4] Note: All translations are my own, unless otherwise noted.



Map 2 – Major dialectal (solid red lines) and subdialectal (dashed blue line) boundaries (Bills & Vigil 2008; Reproduced from Maps 16-3 & 16-6). Star indicates approximate location of Cíbola County. Map courtesy of Google Maps (2021).

Within the Río Abajo dialect, where Cíbola County falls, Bills & Vigil (2008) note the possible existence of a West-Central subdialect, postulating that it may be the remnant of an earlier subdialectal boundary within greater Traditional Spanish, which seems to have extended west into Arizona. This can be seen in Map 3 below:



Map 3 – West-Central subdialect, as proposed in Bills & Vigil (2008; Reproduced from Map 16-14). Star indicates approximate location of Cíbola County. Map courtesy of Google Maps (2021).

Linguistic Overview: Traditional Southwestern Spanish contains four general categories of characteristics as described in Bills & Vigil (2008; cf. Wilson 2015), and all

are evident to varying degrees in the current study (refer to Bills & Vigil 2008 and Wilson 2015 for a comprehensive overview). The following characteristics are not in any way unique to New Mexico, however; Instead, all can be found in other Latino and Iberian dialects (Bills & Vigil 2008; Cárdenas 1975; Lozano 1977).

Archaisms: These primarily include lexical retentions (*asina* 'like that,' *dende* 'since, from'), as well as phonological features such as /s/ reduction, which may be traceable back to Andalusian Spanish and southern Spain (Esparza 2017; Penny 2002). Archaisms support the myth of the European origin of Traditional Spanish, having been fueled by such influential studies as those conducted by Espinosa (1911, 1909), as well as in the popular mind. However, all Latino dialects of Spanish contain "archaisms," and it is quite difficult to actually define or classify a specific word or feature as one (Bills & Vigil 2008; Wilson 2015).

Innovations: These 'independent developments' (Bills & Vigil 2008) by the people of New Mexico display local creativity in coining new terms or altering old ones (*ratón volador* 'bat,' *santopié/cientopié* 'centipede,' *cuerpoespín* 'porcupine') or extending previous semantic meanings (*trucha* 'trout' as a general descriptor for 'fish,' alongside *pescado*). There were also a number of structural changes, such as grammatical regularizations (*hamos* vs *hemos* for the 1PL indicative of *haber*) and morphological/grammatical changes (*-mos*→*-nos* for the 1PL of the present subjunctive, past subjunctive, imperfect, and conditional tenses, cf. Bills & Vigil 2008, Espinosa 1911, Wilson 2015; Also, the use of the 1PL clitic pronoun *los* rather than canonical *nos*, cf. Espinosa 1911, 1909). What's more, phonological processes such as syllable-initial /s/ reduction are considered innovations of NM Spanish (Bills & Vigil 2008; Brown 2005b,

2004; Cárdenas 1975; Espinosa 1911, 1909), although other studies find this type of reduction in a sister dialect, Chihuahuan Spanish (cf. Brown & Torres Cacoullos 2003, 2002).[5]

Anglicisms: Due to the invasion, occupation, and forced assimilation of the American Southwest by the US (cf. Bills & Vigil 2008; Gonzales-Berry & Maciel 2000; Lozano 1977; Nieto-Phillips 2000; Nostrand 1992), the people of New Mexico are inherently a "bicultural and bilingual people," (Nostrand 1992: 7). For that reason, anglicisms present themselves either as lexical borrowings incorporated phonologically into Spanish (*espauda* 'baking powder,' *balunes* 'balloons,' *Crismes* 'Christmas'; cf. Bills & Vigil 2008, Cárdenas 1975, Espinosa 1911, 1909), or as alternational and insertional codeswitching between the two languages (cf. Backus 2015; Bills & Vigil 2008; Lozano 1977; Torres Cacoullos & Travis 2018).

Mexican/Standard Spanish Influence: The final major category to be included in any study of Southwestern Spanish is the influence of Mexican and Standard Spanish (oftentimes correlated/interlinked; cf. Bills & Vigil 2008, Wilson 2015). This can be seen in the incorporation of words of Nahuatl or other Mexican origin (*chiche* 'breast, nipple, teat,' *guajolote* 'turkey', *chuparrosa* 'hummingbird'), or increased usage of 'canonical' vs colloquial lexemes, correlated with higher education levels (*puerco* vs *cochino* 'pig', *espalda* vs *espinazo* 'back;' cf. Bills & Vigil 2008).

[5] A highly salient feature of northern NM Spanish, the paragogic *-e/-i*, is not typical within Cíbola. Per one of its speakers: "I can tell where they're from…cause uh, the people from [Northern New Mexico], they have a little uh, different, slang I guess you'd call it…They always, at the end there, like a 'ee'. *Vamos a comeri, vamos a trabajari.* And we say *vamos a comer, vamos a trabajar*," (GRANTS_01, Martínez 2019: 2820-2855s). One instance of paragogic *-i* was exhibited in the current data (*tigreri* 'tiger', 143-1: 1071s), which may indicate that some degree convergence with other NM dialects has occurred, and requires further study.

Sociolinguistic Overview: There are several sociolinguistic trends affecting Traditional Southwestern Spanish which, while contradictory at times, can be categorized into the three thematic groups below (cf. Bills & Vigil 2008; Among others).

Loss of Spanish Skills: This theme is correlated and interconnected with two of the above characteristics of Traditional Spanish ('Anglicisms,' 'Mexican/Standard Spanish Influence'), and Cíbola is no different than the rest of the State. Since the time of the conquest of the Hispanic southwest (Bills & Vigil 2008; Gonzales-Berry & Maciel 2000; Lozano 1977), there has been a steady shift from Spanish to English, due to English being the de facto language of the public domain, and the more viable one (cf. Bills & Vigil 2008; Cobos 2003; Wilson 2015). Results of the US Census (Census Reporter 2019) show that, for Cíbola County, 57% of adults and 78% of children speak only English at home, while 21% of adults and only 6% of children speak Spanish. This is noticeable in the interviews used here, in that many lexical items were forgotten or required prompting for recall (cf. Bills & Vigil 2008), as well as in metalinguistic assertions made by the speakers, in statements such as *No hablamos casi mexicano, ¿yunó?* 'We don't hardly speak Spanish, you know?' (296_1: 3505-3508s), or 'I mean I…rarely speak it, and I've forgotten a lot of the words already,' (292_1: 2096-2101s). Compounding this process is the stigmatization of Spanish within the educational and political systems (Peña 2007b: 194, says: "We were punished [with the stick] if we were caught speaking Spanish at recess, or in the hallway of our small four room school;" cf. Bills & Vigil 2008, Nostrand 1992), as well as by speakers of Mexican Spanish or educated "Standard" Spanish speakers, who may view non-standard features as evidence of poor or deficient knowledge of the language, or an inherent flaw of the non-standard

minority dialect itself (cf. Aaron & Hernández 2007; Bills & Vigil 2008; Brown 2008; Valdés et al 2003; Wilson 2015). This increases language doubt and shame, and adversely impacts acquisition of the home dialect (cf. Bills & Vigil 2008).

Shifting Socioeconomic Makeup: The *hispano* people of New Mexico, being traditionally a rural and agricultural/pastoral society (cf. Bills & Vigil 2008; Espinosa 1911, 1909; Nostrand 1992; Peña 2007a, 2007b), spoke a dialect of Spanish centered around that lifestyle, with a lexicon focused on life in the country. Given the impact of urbanization and the restriction of traditional grazing land (cf. Nostrand 1992), as well as increased economic opportunity in the "cash economy" (Peña 2007a: 122) of the cities, *hispanos* have increasingly migrated away from their traditional villages, *plazas*, and land-grants (cf. Nostrand 1992; Peña 2007a, 2007b). This shift from a rural to urban environment reduces the need for traditional farming-/ranching-oriented words, and limits the opportunity for Spanish to be spoken in general, due to the primary language of most cities being English. A second factor within this theme is the increasing prevalence of education. With more education in general comes increased usage of English (cf. Bills & Vigil 2008), and with *hispanos* being able to attain both higher educational levels and higher standards of living than other Latinos historically (cf. Gonzales-Berry & Maciel 2000; Nostrand 1992), there has been more in- and outside pressure for them to assimilate to an English-speaking mainstream culture (cf. Nieto-Phillips 2000). And despite past research finding little to no correlated socioeconomic effects in Spanish usage by US Latinos (cf. Bills & Vigil 2008), more recent studies (Torres Cacoullos & Berry 2018) have provided evidence to the contrary. Through a Principal Component Analysis (PCA) of four features of New Mexican Spanish (onset /s/ lenition, coda /s/

lenition, intervocalic /d/ lenition, and intervocalic /j/ lenition), for example, possible socioeconomic "candidates for conditioning linguistic variation" (Torres Cacoullos & Berry 2018: 262) may be identified through proxy, including occupation, education, gender, and rural vs urban locality.

Changing Spanish-Speaking Demographics: The final theme explored here is the shifting demographic situation of New Mexican *hispanohablantes* 'Spanish speakers,' driven primarily by immigration and interaction with two different groups: Anglos and Mexicans (Bills & Vigil 2008; Nostrand 1992). Reflecting a long process beginning before the US invasion, Anglo migrants from across the US have moved to New Mexico and intermarried into the local population. As a result, many *hispanos* are classified racially as white, and "ha[ve] the highest rate of outmarriage…a higher incidence of non-Spanish surnames, and…[a] use of English in the home [that is] increasing rapidly," (Nostrand 1992: 130). Adding to this is increased Mexican immigration, with many urban areas (as well as mining areas in the west/northwest) showing trends of shifting to a contemporary Mexican Spanish, due to intermarriage and contact (Bills & Vigil 2008). Even in rural areas, the impact of Mexican immigration and integration contributes to loss of Traditional Spanish, although it creates greater opportunity for use of the language overall (Bills & Vigil 2008). An 'othering' reaction to Mexican immigration, relating to identity distinctions between *hispanos* and *mexicanos*, will be covered in the next section.

2.1.3 – Expressing Hispanic Identity

The issue of *hispano* identity has always been fluid and dynamic, with a wide range of ethnic labels being deployed at any given time period, from *mexicano* to Spanish-American (cf. Gonzales 2005; Gonzales-Berry & Maciel 2000; Nieto-Phillips

2000; Nostrand 1992). However, with the incorporation of New Mexico into the Union following the Mexican-American War, the identity issue came to play a bigger role, when suddenly "…a political border separate[ed] the Mexican people of Mexico from the Mexican people of New Mexico," (Bills & Vigil 2008: 283; Also Nostrand 1992, Toribio 2010). New Mexico experienced many obstacles in seeking full Statehood for a number of reasons, including the Territory's generally *mestizo* origins, Spanish language, farmer/pastoralist lifestyle, and Catholic religion, in a country that was at that time white in race, English-speaking, rapidly industrializing, and primarily Protestant (cf. Nieto-Phillips 2000; Nostrand 1992).

In order to better assimilate into mainstream US society, the local populace (spurred by the capitalist class) sought to distinguish themselves from their Mexican brethren to the south, by choosing instead to "identif[y] with [their] Spanishness," (Nostrand 1992: 24; Also Nieto-Phillips 2000). This has given rise to the European origin myth (Bills & Vigil 2008), illustrated in popular works such as Peña (2007b), and created a sense of Hispanic superiority in relation to the Mexican immigrant (Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Nostrand 1992). A perceived connection to Imperial Spain distances *hispanos* from a *mestizo* and immigrant perception by others (Gonzales-Berry & Maciel 2000); This in turn is exacerbated by historically greater economic success, more political power, higher prestige as US citizens (Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Nostrand 1992), outmarriage with Anglos, and the accompanying 'white' racial category (Nostrand 1992).

However, while *nuevomexicanos* 'New Mexicans' have always utilized a range of identity labels to index different parts of their identities, which shift based on the

situation (cf. Gonzales 2005; Also Edwards 2009), they have historically referred to their language as *mexicano* (Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Peña 2007a). Gonzales (2005) posits that this phenomenon doesn't necessarily index a Mexican or *mestizo* identity, but instead a "'pure' Spanish lineage and US citizenship," (76), and reflects the process of identity formation. Per Edwards (2009), the names by which we call ourselves (or our language) are important in the process of creating a shared group identity, and named languages exist as purely social constructs which serve primarily social purposes (Otheguy et al 2018, 2015; Wei 2018). Therefore, a reference to Traditional Spanish in a more-traditional way likely remains an important cornerstone of these identities for native speakers (cf. Edwards 2009; Toribio 2010).

While it remains to be seen if this *español*/*mexicano* dichotomy is a viable distinction within Cíbola Spanish, I hypothesize in Chapter 3 that those who overwhelmingly use the term *mexicano* (vs *español*) are more likely to see themselves as traditional Hispanics, and are thus more likely to use traditional features of the dialect, such as /s/ reduction.

2.2 – A Brief Overview of Usage-Based & Variationist Theories

In this section, I briefly review some key points from the two theories which underly this work: Usage-Based Theory and Variationist Sociolinguistics. As noted previously (Docherty & Foulkes 2014; Tagliamonte 2012), these can be considered compatible theories within the study of language variation and change, due to a focus on language usage and the encoding of detailed linguistic and extralinguistic information (cf. Tagliamonte 2012).

2.2.1 – Usage-Based Theory

For present use, I adopt a hybrid episodic/prototype usage-based theory (cf. Brown 2004; Docherty & Foulkes 2014; Pierrehumbert 2016, 2001). This begins with a theory of cognitive storage of language data within exemplars, which encode vast amounts of highly-detailed (and highly-redundant) information of linguistic, social, and contextual natures. Exemplars are stored in a cloud or cluster based on phonologic and semantic similarities, which are strengthened with usage and decay with disuse (cf. Bybee 2015, 2002, 2001; Docherty & Foulkes 2014; Pierrehumbert 2016, 2001). Following Pierrehumbert (2016), this approach is combined with prototype theory, where one or several idealized abstractions are formed based on information contained within the exemplar cloud, affecting perception, storage, and production of linguistic material, and which shift or change over time as further exemplars are added to the cloud (cf. Bybee 2015, 2002, 2001; Docherty & Foulkes 2014; Pierrehumbert 2016, 2001).

Per a usage-based worldview, language is stored at the construction level, with further distinctions relating to language structure (clauses, chunks, words, syllables, morphemes, syllables, segments) being emergent from the language which the individual is exposed to (cf. Bybee 2015, 2002, 2001; Docherty & Foulkes 2014; Pierrehumbert 2016, 2001). Because language is viewed within the domain of procedural knowledge, with speech being nothing more than "highly-practiced neuromotor activity" (Bybee 2002: 268; See also Bybee 2015, 2001, Hooper 1976), it is subject to increased efficiency in production through automation of gestural/articulatory movements. Oftentimes, this is due to retiming of overlapping gestures, as well as reduction in the magnitude or duration of gestures, and is found most often in rapid, casual speech (Bybee 2015, 2002, 2001;

Hooper 1976). This gives rise to a large number of sound changes cross-linguistically, important here because the variable in question is analyzed for reduction, one of the most common types of sound change (Bybee 2015, 2002, 2001).

One of the key factors analyzed in this work, and a cornerstone of usage-based theory, is frequency. Over the last fifty years, the role of frequency in accounts of language change and variation has proven critical to our understanding of how languages change over time (cf. Bybee 2015, 2002, 2001; Hooper 1976). In terms of sound variation and change in particular, it has been found time and again that higher frequency items will be affected first by a change in progress, which gives rise to variation synchronically and changing of forms diachronically. If a change in progress stops being productive, however, this may give rise to a situation of stable variation, because the change did not diffuse regularly across the lexicon (Bybee 2015, 2002, 2001; Hooper 1976).

Finally, Bybee (2015, 2002, 2001) stresses that sound variation and change are inherent to linguistic systems, and that this variation in form originates in articulatory gestures, which later come to encode extralinguistic and other contextual information. Hence, its compatibility with variationist theory.

2.2.2 – Variationist Sociolinguistics

Similar to usage-based theory, quantitative variationist sociolinguistics seeks to describe linguistic behavior based on actual linguistic usage, and the linguistic and social variation inherent to it (Labov 1966, 1963; Meyerhoff 2011; Tagliamonte 2012, 2006). It, too, is a relatively new field of study, with some of its earlier works being those conducted by Labov (1966, 1963) relating to sociolinguistic variation in dialects of English. However, its roots are cross-disciplinary, including dialectology, ethnography,

anthropology, historical linguistics, psychology, sociology, and statistics (Tagliamonte 2012, 2006).

Because variation and change are inherent to languages and their development (Tagliamonte 2012, 2006), all phonetic variation and subsequent linguistic change finds its basis in the phonology of the language itself (Labov 1966, 1963; Tagliamonte 2012, 2006). Later, this variation takes on social meanings, as different communities acquire (or don't) sociolinguistic variants at different rates (Labov 1966, 1963; Tagliamonte 2012, 2006). Thus, any given dependent variable is affected and conditioned by various independent variables, either linguistic or extralinguistic (Labov 1966, 1963; Meyerhoff 2011; Tagliamonte 2012, 2006).

Upon being affected by the independent variables within the envelope of variation (any place within the linguistic system where two or more variants can possibly occur), stratification arises across a speech community, in that different groups within the community show different patterning of the variable. Because these features vary in systematic, rule-governed, and quantifiable ways (Labov 1966, 1963; Meyerhoff 2011; Tagliamonte 2012, 2006), these patterns can be modelled using statistics. The use of statistics is extremely important in modern variationist studies, in that it tells us (1) which factors affect the variable in a statistically significant way, (2) what the relative strength/magnitude of effect for each factor group is (allowing us to see which factor group affects the variable the most and least), and (3) what the constraint hierarchy of factors within a factor group are (Tagliamonte 2012, 2006). In this way, a variationist is able to analyze and interpret their data in a systematic, verifiable, and replicable way, providing the best possible explanation of the data.

Some final notes of import on variationist sociolinguistics: (1) Oftentimes, the dichotomy between variants is due to matters of prestige, with one or more variants viewed as being 'non-standard,' and thus stigmatized (Labov 1966, 1963; Meyerhoff 2011; Tagliamonte 2012, 2006); (2) The greatest amount of variation will typically be seen within the vernacular or casual speech register, hence the importance laid on eliciting the vernacular during the sociolinguistic interview (Labov 1984, 1966, 1963; Schilling 2013; Tagliamonte 2012, 2006); And (3) in many past studies, certain sociolinguistic trends can be seen to have a relatively consistent and predictable effect on the variable, such as geographic mobility, age, social setting, and gender (Meyerhoff 2011; Also Labov 2001b, 1990), which will be treated in more detail in section 3.1.2.

2.3 – A Review of /s/ Reduction in Borderlands Spanish Dialects

The literature review wraps up here with an overview of the history of /s/ reduction, its general tendencies, and some past studies of neighboring Borderlands dialects.

2.3.1 – History of /s/ Reduction in Spanish

The phoneme /s/ in most of Latin America is descended historically from the medieval Spanish spoken in Andalusia in southern Spain, and can currently be described as a dentalized voiceless alveolar fricative (Espinosa 1911, 1909; Penny 2002). It can be

found in both onset and coda position within the Spanish syllable,[6,7] has two canonical allophones [s,z], and is represented orthographically using the letters 's,' 'z,' and sometimes 'c' (Schwegler et al 2010).

Reduction of /s/ across Spanish dialects is extremely common, affecting "…well over half of the world's Spanish speakers…making this process perhaps the most robust phonetic differentiator of regional and social dialects," (Lipski 2011: 73). For the same reason, it is also perhaps the most commonly studied feature of Spanish sociophonetics worldwide (cf. Brown 2008; Brown 2005a, 2005b, 2004; Esparza 2017; Lipski 2011). It, too, is generally believed to be descended from Andalusian Spanish, although syllable-initial reduction can perhaps be considered an innovation in the sister dialects of New Mexico and Chihuahua (Bills & Vigil 2008; Brown 2005b, 2004; Brown & Torres Cacoullos 2003, 2002; Cárdenas 1975; Espinosa 1911, 1909; Penny 2002). Furthermore, it has been noted that rates of reduction will generally be lower syllable-initially than -finally (cf. Brown 2008; Lipski 2011; Schwegler et al 2010).

Reduction of /s/ in Spanish from a usage-based point of view can be characterized as instances of gestural overlap and retiming (cf. Bybee 2015, 2002, 2001; See discussion of usage-based theory above), which causes a loss of the place of articulation and other oral features (known as 'debuccalization;' cf. Lipski 2011). In the literature, the most

[6] Although there are differences between syllable-initial and syllable-final consonants in general (cf. Bybee 2001), following previous work (cf. Brown 2005a, 2004), /s/ is here considered as a single phoneme, due to overlap in articulatory and acoustic similarity in both syllable positions. Differing magnitudes of effects & conditioning factors for the two syllable positions, in both Brown's (2005a, 2004) work and my own, however, do suggest different diachronic developments (cf. Brown 2005a, 2005b, 2004; Brown & Torres Cacoullos 2002; Bybee 2001).

[7] Due to a preference for an open CV syllable structure, word-final /s/ has a tendency to resyllabify to a following vowel, which may affect reduction rates (cf. Brown 2008; Lipski 2011; Schwegler et al 2010); However, the ambisyllabicity/resyllabification of /s/ is not accounted for in the present study, and word-final /s/ is considered in the analysis using only its syllable position within its organic "word."

common classification of reduced variants include aspirated [h] and deleted [Ø]; That being said, this reduction exists along an acoustic spectrum, showing "coherent gradient variation in the duration, frication strength, and laryngeal coarticulation of /s/, with aspiration, deletion, and voicing as continuum endpoints," (Ryant & Liberman 2016: 1; cf. Ernestus & Warner 2011, Lipski 2011, Penny 2002, and Schwegler et al 2010). For present purposes, however, I coded variants within the data as either being simply retained [s] or reduced [Ø], regardless of the specific acoustic realization of the variants themselves (cf. Brown 2008; Brown 2005a, 2005b, 2004; Among others).

Generally speaking, reduction of /s/ can be characterized as a stigmatized feature of rural and uneducated speech, especially in dialects where /s/ reduction is not the norm, such as Mexico (cf. Aaron & Hernández 2007; Brown 2008; Espinosa 1911, 1909; García & Tallon 1995; Lipski 2011). Within Mexican dialects, /s/ reduction is most often found along the coasts and in some isolated pockets inland; However, most Mexican dialects (including the 'standard' of DF) tend to retain /s/, as most Mexican Spanish is considered a part of the *Tierras Altas*, whereas /s/ reduction is typically a feature of the *Tierras Bajas* (for a description of these macroregions, see Brown 2008, Moreno de Alba 1994, and Schwegler et al 2010). By extension, due to high amounts of immigration to the US from central Mexico, most Mexican American dialects also tend to retain /s/ (Aaron & Hernández 2007; Brown 2008; Brown 2005b; Penny 2002; Schwegler et al 2010).

Finally, /s/ reduction is subject to both inter- and intraspeaker variation (Schwegler et al 2010), and is conditioned by different factors in different ways,

depending on dialectal norms and specific communities under study (Brown 2008; Brown 2005a, 2005b, 2004; Among others).

2.3.2 – Overall /s/ Reduction Rates in Borderlands Spanish

The remainder of the literature review is devoted to an overview of reduction rates of /s/ in geographically proximate Spanish dialects in the US/Mexico Borderlands, focusing specifically on the States of Chihuahua (Brown & Torres Cacoullos 2003, 2002; Esparza 2017), New Mexico (Brown 2008; Brown 2005a, 2005b, 2004; Gutiérrez 1981), and Texas (Aaron & Hernández 2007; García & Tallon 1995).[8] These studies range in scope from only four speakers (Brown & Torres Cacoullos 2003, 2002) to 31 (Esparza 2017), and from only 600 tokens (Gutiérrez 1981) to over 10,000 (Brown 2005a, 2005b, 2004); As seen later, my dataset is comparable in size and scope to previous work. A summary of the findings from each of the cited studies can be seen in Table 1 below, organized by word and syllable position:

[8] It should be noted here that although the dialects studied in Esparza (2017) and Aaron & Hernández (2007) are not native dialects in each of these States (being focused on immigrants from Veracruz→Ciudad Juárez and El Salvador→Houston, respectively), they are included in this comparison due to their constituting part of the Borderlands region, as well as their consistent patterns of accommodation to the local Mexican dialect. However, their inclusion doesn't assume to reflect familial proximity.

		Speakers / Tokens	Word-Initial / Syllable-Initial	Word-Medial / Syllable-Final	Word-Medial / Syllable-Initial	Word-Final / Syllable-Final
Chihuahua	Brown & TC (2003, 2002)	4 / 3839	*21%*[9]	*22%*	*34%*	*45%*
	Esparza (2017)*[10]	31 / 1921	*3%*	-	-	*27%*
New Mexico	Brown (2008)	24 / 4714	-	*26%*	-	*59%*
	Brown (2005a, 2005b, 2004)	24 / 10770	*16%*	*25%*	*30%*	*57%*
	Gutiérrez (1981)	12 / 600	-	-	-	*26%*
Texas	Aaron & Hernández (2007)*	12 / 1200	-	*7%*	-	*16%*
	García & Tallon (1995)	10 / ~2000	-	-	-	*4%*

Table 1 – /s/ reduction rates by word/syllable position in Borderlands Spanish. *Note: See Footnote 8.

Reviewing Table 1 above, three commonalities can be seen: First, the tendency for syllable-final reduction being higher than syllable-initial reduction is confirmed (cf. Lipski 2011; Schwegler et al 2010). Second, word-final /s/ will reduce at higher rates than word-medial /s/, which in turn reduces at higher rates than word-initial /s/. This progression bears true across the above studies, and is represented visually in Figure 1 below:

WISI → WMSF → WMSI → WFSF
Least Reduction → Most Reduction

Figure 1 – Reduction pattern by word/syllable position. Note: This does not indicate diachronic progression.

Third, of the three geographic areas, New Mexican Spanish generally shows higher rates of reduction than other dialects. This is most notable syllable-finally, where the two most

[9] Note: In the present study, all percentages are rounded to the nearest whole number.
[10] Esparza (2017) only presents results for syllable position, not word position. Therefore, 3% refers to all syllable-initial /s/, and 27% refers to all syllable-final. This is also the case with Gutiérrez (1981) and García & Tallon (1995), both of whom only looked at overall syllable-final position.

recent studies (Brown 2008; Brown 2005a, 2005b, 2004) show an average 58% reduction in word-final position, as well as an average 26% reduction in word-medial position.[11] Both of these rates are higher than rural Chihuahuan Spanish, which shows 45% and 22% reduction, respectively (Brown & Torres Cacoullos 2003, 2002), as well as San Antonio Spanish (García & Tallon 1995), which has an overall syllable-final reduction rate of only 4%. Syllable-initially, however, the roles are reversed, with the Chihuahuan dialect reducing at higher rates (21% word-initially and 34% word-medially) than the New Mexican studies (16% and 30%, respectively); Syllable-initial reduction was not treated in the Texan study.

I briefly note that, as mentioned in Footnote 8 above, two of the reviewed studies were not of native regional dialects. The first (Esparza 2017) analyzed speech accommodation of *veracruzano* migrants to Ciudad Juárez, finding that due to social stigma and other factors, speakers shifted their use of the variable to more reflect the Chihuahuan norm. She illustrates this in comparison to another study of syllable-final /s/ reduction in Veracruz Spanish (Ceballos Domínguez 2006), where *veracruzanos* in Veracruz reduced /s/ 37% of the time, compared to the 27% of the *veracruzanos* in Juárez. What's more, she also found that length of time spent in Juárez allowed for greater accommodation to local norms (with those who had migrated at a younger age or had lived in the city longer showing less reduction of /s/ overall), as well as a syllable-initial reduction rate of only 3%.[12]

[11] Compare, however, Gutiérrez's (1981) 26% reduction rate syllable finally for Albuquerque Spanish.
[12] She also notes that, in general, studies of /s/ reduction in Mexican dialects are pretty rare; This can perhaps be attributed to the fact that Mexican Spanish is a low-reducing dialect overall (Esparza 2017).

The second study (Aaron & Hernández 2007) also looked at speech accommodation and syllable-final /s/ reduction of *salvadoreño* immigrants living in Houston, Texas (Salvadoran Spanish is considered a higher-reducing dialect than most of Mexico; cf. Schwegler & Kempff 2007), with an overall reduction rate of 7% WMSF and 16% WFSF. Paralleling Esparza's (2017) findings, they found that due to stigma and other factors, *salvadoreños* living in Texas tended to accommodate their speech habits to be more in-line with the local Mexican dialect. Also, they see patterns of reduction being lower in those who had migrated younger, as well as in those who had higher degrees of contact with or integration into the local population (17% for high-contact, 21% for low-contact; cf. Aaron & Hernández 2007). While the current study is not one of dialect contact or speech accommodation *per se*, it is still worthwhile to note these findings, in that Cíbola Spanish, like other New Mexican dialects, has undergone a lot of contact with Mexican speakers in the last hundred years, which may have left an imprint on the features of the dialect.

Finally, it should be noted here that many of these past studies relied solely on data taken from casual speech, without regard for stylistic variation. I depart from these earlier works by testing for stylistic effects, which may help to explain differences in my data from prior work.

CHAPTER 3

DATA & METHODOLOGY

3.1 – The Data[13]

3.1.1 – The New Mexico-Colorado Spanish Survey (NMCOSS)

Bills & Vigil's New Mexico-Colorado Spanish Survey (NMCOSS) and the subsequent *Linguistic Atlas* (2008) are the result of decades of research into Traditional Spanish, and includes 357 interviews recorded during the early 1990s across New Mexico and southern Colorado. These interviews vary in length (the Cíbola recordings range from 2h35m to 4h37m), with the number of interviews per locality determined following a sampling ratio of one interview for every 1000 Spanish speakers (Bills & Vigil 2008). Cíbola County was included as a single locality alongside Catron County, and in total contributed five interviews to the corpus. The NMCOSS speakers from Cíbola can be seen in Table 2 below:

[13] This thesis was initially envisioned as a collection and analysis of modern speech data from Cíbola County, based around the sociolinguistic interview (Labov 1984; Schilling 2013). Spring 2020 was spent writing and submitting an IRB ("Language Survey of the Southwest," UNM IRB #07220, approval May 2020). However, given the constraints of COVID19, I was forced to redirect my efforts that summer, as (1) it would have been unethical to put the Cíbola community at risk of infection, and (2) our Resumption of Research application never received a response from UNM. Through the help of UNM's Center for Southwest Research, digital recordings of the five NMCOSS interviews from Cíbola were procured, which formed the basis for the current project.

Interview #	Name	Gender	Age (at time of interview)	Hometown
143	Evangelina Barela	Female	55	San Mateo
217	Carlota Salazar	Female	83	San Fidel*
218	Ross Salazar	Male	53	Grants
292	Gary López	Male	27	Grants
296	Evelyn Leyba	Female	41	San Rafael

Table 2 – Cíbola Spanish Speakers from the NMCOSS. *Note: Carlota Salazar's hometown is mislabeled in the *Atlas* (Bills & Vigil 2008) as San Mateo, where she was born; She was raised in San Fidel (217-1_A: 83-114s).

As in most of the NMCOSS (cf. Bills & Vigil 2008), speakers display a range of Spanish proficiency. The oldest speaker (Carlota Salazar) is subjectively the most proficient, while the youngest (Gary López) is the least; The others display varying degrees of proficiency. To my knowledge, their data has never been used in prior analyses of NM Spanish, excepting the *Atlas*'s lexical dialectology work. There are two interviewers in these recordings: A male (Interviews 143, 292, 296), who perceptually seems to reduce /s/ at a higher rate than his counterpart, a female (Interviews 217, 218). Both spent at least some of their formative years in the area, and seem to know their interviewees quite well.

Upon receiving the data files, I orthographically transcribed (cf. Travis & Torres Cacoullos 2013) the first hour of each interview using the subscription-based service Transcribe (Wreally LLC 2020), for a total of ~36,000 transcribed words across five hours of speech data. These were aligned to the speech files using Praat (Boersma & Weenink 2019), to allow for sociophonetic analysis. As each file was aligned in Praat, I proofread the transcription to ensure accuracy; Any ambiguity in transcription was double-checked by other speakers of Spanish (my wife, who holds a BA in Spanish and has worked as a medical interpreter, and Dr. Wilson), with any ambiguous cases excluded

from the analysis. Tokens with an /s/ segment in any word/syllable position were identified and tabulated in an Excel spreadsheet using the Praat-aligned transcripts, for a total of 2241 tokens. I also followed a recommendation for sociophonetic variables from Tagliamonte (2012, 2006) in attempting to restrict tokens per lexical type to five per speaker per hour, to limit one lexical type skewing the results for, say, phonological context. The following section describes the dependent and independent variables in detail.

3.1.2 – Dependent & Independent Variables

Once all 2241 tokens were identified and located in Praat, I followed previous work (cf. Brown 2008; Esparza 2017; García & Tallon 1995) in coding the dependent variable perceptually/auditorily, with any detected sibilance (voiceless [s] or voiced [z]) being coded as retained, and any weakening of the fricative (aspirated [h] or deleted [Ø]) as being reduced. For ambiguous tokens, I used the spectrogram and waveform to help locate it within Praat, and Praat Scripts were used to extract both timestamps and segment durations. 174 tokens (~8% of the total data) were excluded from the analysis for the following reasons: (1) The presence of a preceding or following /s/ (regardless of retained/reduced realization); (2) Overlapping speech with the interviewer which hindered perception of the segment; (3) The presence of other sounds (for example, laughing, coughing, background noise), which caused it to be unrecognizable; Or (4) the inability to accurately determine what was said. Following the exclusions, 2067 tokens remained.

Regarding the independent variables, I coded for a total of 17; 11 of these were linguistic, and six were extralinguistic, as shown in Table 3:

Type of Variable	**Variable**
Linguistic Variables	Spoken in Isolation
	Frequency
	Word/Syllable Position
	Preceding Phonological Environment
	Following Phonological Environment
	Morpheme Status
	Morpheme Agreement
	Word Length
	Stress
	Grammatical Class
	Language Dominance
Extralinguistic Variables	Gender
	Age
	Overall Education
	Geographic Origin
	Speech Style
	Identity

Table 3 –Variables Favoring Reduction in Past Studies of Spanish

The following pages detail the research questions as they relate to the independent variables, a discussion of pertinent literature, and the coding schema used.

Spoken in Isolation: Will words spoken in isolation be less likely to reduce than words in connected speech?

The NMCOSS (Bills & Vigil 2008) primarily consists of direct lexical elicitation and free conversation, along with a demographic portion and reading task. In the current analysis, a portion of the data was either the demographic portion or direct elicitation, oftentimes allowing for a Q&A dialogue structure, as can be seen in Example 1 below:

(1) Interviewer: ¿Y este insecto, que anda de flor en flor…
217: ¿Avispa?
Interviewer: ¿Cómo?

Interviewer: And this insect, that goes from flower to flower…
217: Bee?
Interviewer: What's that?
(217-1_B: 692-695s)

This format, besides having a possible stylistic effect, may be affected by the words being spoken in isolation, without other linguistic material or context presented with it. This is important because words in isolation are less likely to undergo phonetic alternations, previously described as Connected Speech Processes (Alameen & Levis 2015, a pedagogical perspective). These have been categorized into six classes, with Reduction and Deletion relevant here.

In connected speech, or multiword sequences, these processes are more likely to be present because there is enough phonologic, semantic, and syntactic context to ensure that meaning is not lost as words undergo reduction or deletion (Alameen & Levis 2015; Ernestus et al 2002; Tucker 2011); This is especially likely in casual vs careful speech (Alameen & Levis 2015; Ernestus et al 2002). To that point, prior studies of reduction in isolated words found that without sufficient phonologic, semantic, and/or syntactic context, perception of lexemes is affected, with larger reduction rates impeding recognition (Ernestus & Warner 2011; Ernestus et al 2002; Tucker 2011). Therefore, a speaker may be more likely to retain rather than reduce /s/ in single word responses, to ensure that their interlocutor will understand. What's more, pauses show mixed effects for reduction at word boundaries (see below), and the tendency of Spanish to resyllabify (not analyzed here) may also have an effect on reduction rates in connected speech.

As it relates to coding, if a token appeared without any contiguous linguistic material, it was coded 'yes' as being spoken in isolation; If it was accompanied by other word(s), it was coded as 'no.'

Frequency: Will a gradient effect be seen in the data, with higher frequency items reducing at higher rates than lower frequency items?

As mentioned previously, a higher token frequency is hypothesized to be correlated with greater reduction rates (cf. Bybee 2015, 2002, 2001; Hooper 1976; Also Brown 2004, Ernestus & Warner 2011), and a sound change itself can be simply viewed as changes in the frequency of a particular feature (Labov 1982; Tagliamonte 2012).

Relating to past studies of New Mexican Spanish, the effects of frequency on /s/ reduction have been fairly consistent. For example, in both Brown (2008) and Brown (2005a, 2005b, 2004), higher frequency items show higher reduction rates than mid or low frequency ones, in every word/syllable position (although in both studies WFSF reduction is not statistically significant in a multivariate analysis). In Chihuahuan (Brown & Torres Cacoullos 2003, 2002) and *juarense* Veracruz Spanish (Esparza 2017), a similar patterning can be seen, with higher frequency words reducing at higher rates.

We must also account for lexical effects, typically seen in such high-frequency words as *nosotros*, *asina*, *estar*, *se*, and *hasta*, among others. The high incidence of certain words may skew the data in certain phonological contexts, so at least a basic treatment of lexical effects must be covered here (cf. Brown 2008; Brown 2005a, 2005b, 2004; Brown & Torres Cacoullos 2003, 2002; García & Tallon 1995; Raymond & Brown 2012; Also Tagliamonte 2012). For that reason, reduction was tabulated by headword and type (with 'headword' being the phonologic, semantic, and oftentimes orthographic 'center' of the exemplar cloud, and type here referring to possible manifestations of the headword, each of which has varying numbers of tokens; For example, headword ESTAR with its types, *estás, estábamos, estuve,* etc; cf. Brown 2004, Davies 2006; Also, Footnote 14 below). This allowed for a visualization of lexical effects, providing a total of 499 headwords and 694 types.

I coded my data for frequency using a four-way split: Extreme High (#1-100 most frequent words), High (#101-1000), Mid (#1001-5000), and Low frequency (#5000+).[14]

Position: Will more reduction be seen syllable-finally than syllable-initially, as depicted by Figure 1 (p. 24)?

Refer to section 2.3.1 for a description of the role that word- and syllable-position plays in /s/ reduction. Data was coded for both word (initial, medial, final) and syllable position (initial, final).

Phonological Context: Will a contiguous non-high vowel display a higher rate of /s/ reduction? What effect do contiguous high vowels, consonants, or pauses have?

Phonological environment has consistently been shown to be one of the most significant variables in the literature, although patterns vary based on study, dialect, and preceding vs following context (Aaron & Hernández 2007; Brown 2008; Brown 2005b, 2004; Brown & Harper 2009; Brown & Torres Cacoullos 2003, 2002; Esparza 2017; Espinosa 1911, 1909; Gutiérrez 1981; Moreno de Alba 1994; Raymond & Brown 2012). Brown (2004) sums up the effect of phonological environment in this way: "Syllable initial /s/ is looking back to its previous phonological environment, so to speak, and syllable final /s/ is looking forward to the segments that follow," (149).

[14] Frequency was gathered using Davies's (2006) *A Frequency Dictionary of Spanish*, which presents the 5,000 most frequent Spanish words, using a 20 million word corpus from 11 countries, split across several spoken and written genres, and weighted to ensure no one genre is overrepresented. These were presented as 'headwords,' related semantically, phonologically, and often orthographically, which Brown (2004) would have referred to as the 'basic form:' "All paradigmatically related verbal forms were listed in infinitival form. Token frequency was counted from the lexeme and not each form separately…Adjectives and nouns derived from verbs are listed as separate tokens…Any grammatical category possibly pluralized and/or alternating its form to mark gender, including nouns, adjectives, articles and pronouns, is considered a single lexeme," (48-49).

Regarding preceding context, the specific segments analyzed in each cited study vary widely, with earlier studies specifying only a general vocalic environment (Espinosa 1909; Gutiérrez 1981). Modern studies split this vocalic environment into a simple high vs non-high distinction (Brown 2008), while others include diphthongs (Aaron & Hernández 2007; Brown 2005b, 2004; Brown & Torres Cacoullos 2003, 2002), pauses, and consonants (Brown 2005b, 2004; Brown & Harper 2009; Brown & Torres Cacoullos 2003, 2002; Esparza 2017; Espinosa 1909; Raymond & Brown 2012). In general, their findings can be summarized in this way:

- Non-high Vowels /a,e,o/ tend to favor reduction, due to the lower tongue height associated with articulating these vowels creating a favorable condition for loss of the /s/.
- High Vowels /i,u/, consonants, and pauses all tend towards more retention of the /s/, although exceptions exist based on the level of specificity in coding (cf. Brown 2005b, 2004; Brown & Torres Cacoullos 2003, 2002).
- Diphthongs are seen to sometimes favor reduction (Aaron & Hernández 2007) and other times retention (Brown 2005b, 2004; Brown & Torres Cacoullos 2003, 2002).

For following context, many of the same patterns can be seen, with Non-high Vowels many times conditioning the largest amount of reduction. However, there are some exceptions:

- Espinosa (1909) found that any following consonant in any position will cause increased variable reduction of /-s/→[h/x,Ø]; Also found in Brown & Torres Cacoullos (2003, 2002), Moreno de Alba (1994), and Esparza (2017).

- Brown (2008) and Esparza (2017) found that a following pause tends towards more reduction.
- Brown (2008) and Brown (2005b, 2004) ran individual phonemes in their multivariate analyses, with each segment exhibiting a range of reduction.

Due to differences in methodology and results across studies, it is difficult to pinpoint what the expected direction for following context should be, beyond Consonants, Non-high Vowels, and possibly Pauses conditioning reduction, likely to varying degrees dependent on syllable-position.

For both Preceding and Following Context, I settled on a four-way coding distinction: Consonants (including /j/ and /w/, so considered due to their syllable-initial position and following vowel; cf. Schwegler et al 2010); High Vowels (including semivowels /i̯/ and /u̯/, classified here with vowels because they are never syllable-initial, monosyllabic, or stressed, and are always preceded or followed by a full vowel; cf. Schwegler et al 2010); Non-High Vowels; And Pauses (that is, any noticeable silence). Diphthongs were coded as being High or Non-high Vowels, depending on what the immediate segment next to /s/ was.

Morpheme Status & Agreement: Will morphemic (1PL, 2SG, plural) /s/ be more likely to condition reduction than lexical /s/? Will agreement condition greater reduction?

Reduction of word-final /s/ may create grammatical and semantic ambiguity because it oftentimes carries meaning (García & Tallon 1995; Penny 2002). However, despite the semantic load that morphemic /s/ (plural, 2SG, 1PL) carries, past studies have found that it reduces at higher rates than lexical /s/ (Brown 2008; Brown 2004; García & Tallon 1995; Gutiérrez 1981). What's more, verbal /s/ reduces more than plural /s/

(Brown 2008; Brown 2004), and the 1PL reduces more than the 2SG (Brown 2008; Gutiérrez 1981; Brown 2004 codes 1PL and 2SG together in a single Verbal category).

Due to the nature of agreement in Spanish, lexical items can be marked for person, number, & grammatical gender. Therefore, higher deletion rates can be possibly explained by the likelihood that another word within the discourse will still convey the semantic meaning of morphemic /s/ (García & Tallon 1995). In the case of plural /s/, Brown (2008) notes that "word final /s/ is reduced less often when it is the sole indicator of plurality…However, [it] is rarely the only indicator of plurality," (68). Hochberg (1986) finds a similar effect as it relates to subject pronoun usage in Puerto Rican Spanish, with the result that the 2SG *tú* is expressed at a higher rate than any other pronoun, known as functional compensation, which offsets the ambiguous effects of reducing morphemic *-s*.

In my data, I coded morpheme status as such: 1PL, 2SG, plural, and monomorphemic/lexical (including WMSF tokens, for statistical purposes). If agreement marking was present within two sentences[15] (verbal marking referring to a subject/subject pronoun, multiple verbs showing the same person/number marking, the presence of number marking in nouns and adjectives, or the presence of an article), I coded morphemic /s/ (1PL, 2SG, plural) as showing agreement, and 'no' if it did not.

Word Length: Will polysyllabic words be more likely to condition reduction than monosyllabic words?

[15] Because the interviews were transcribed using standard orthography, working with the idea of a 'sentence,' rather than something like a breath group or intonation unit, was more convenient.

Terrell (1979) finds that word-final /s/ is more likely to reduce in polysyllabic than monosyllabic words. That being said, Brown (2008) excluded word length from his analysis, citing File-Muriel's (2007) finding that an overlap exists between length and word frequency. However, I still wanted to explore the effect that word length might have had on my data, so for this study, I coded the tokens as being either polysyllabic or monosyllabic.

Stress: Will unstressed syllables exhibit a higher rate of reduction than stressed syllables?

Many studies show that /s/ is more likely to reduce in unstressed (including prestress/poststress) than stressed syllables (Brown 2008; Brown 2005b, 2004; Brown & Harper 2009; Raymond & Brown 2012). Others find that this varies based on word/syllable position (Brown & Torres Cacoullos 2003, 2002), or that lack of stress either preceding or following the /s/ will condition reduction, with /s/ between two stressed syllables being the least likely to reduce (Brown 2008).

I used a two-way dichotomy in coding, with tokens as being either unstressed or stressed. For monosyllabics, I followed Schwegler et al (2010) and Brown (2008) in coding content words as stressed and function words as unstressed (See 'Grammatical Class' below; Also Corver & van Riemsdijk 2001).

Grammatical Class: Will function words be more likely to reduce /s/ than content words?

It was expected that Content words (adjectives, nouns, numerals, proper names, and verbs) will reduce at lower rates than Function words (adverbs, articles, auxiliary verbs, clitic pronouns, conjunctions, demonstratives, interjections, possessives,

prepositions, subject/object pronouns, and reflexive *se*). This can be attributed to the need for perceptual clarity, due to the semantic value that content words carry (cf. Corver & van Riemsdijk 2001), and ensures that the core meaning of the utterance is transmitted. In comparison, although function words serve key grammatical functions within a clause/sentence, they can be expected to be more likely to reduce, due to their lack of tangible meaning (cf. Corver & van Riemsdijk 2001; Also Ernestus & Werner 2011, Johnson 2004). Aaron & Hernández (2007) tested for effects of grammatical class on /s/ reduction, finding it not to be significant; I test it here as a comparison, as there is a lack of studies reviewed which look at this.

I initially coded my data for the 16 grammatical categories as presented above, and later recoded the categories into either function or content words for the statistical analysis.

Language Dominance: Will speakers with a Spanish dominance reduce at higher rates than those with a mixed Spanish/English dominance?

In bilingual populations, it is plausible to think that (1) acquiring English first or (2) acquiring both languages simultaneously may have an interlingual influence on /s/ realization. If we conceptualize the mental lexicon of bilingual speakers as being linked across languages, all /s/ realizations would be stored in a single exemplar cloud, regardless of their connection to either named language (more on this later). This entails that there may be an equal or larger amount of experienced /s/-ful (a feature of English) than /s/-less tokens affecting future productions, with a prototype being more likely to exhibit a retained rather than reduced segment.

Brown & Harper (2009) provide some evidence for this sort of interlingual connection, finding that /s/ reduction in New Mexican Spanish is affected by the degree of similarity between Spanish and English, with similar forms reducing at lower rates (46% reduction rate) than dissimilar ones (62%). Notably, this correlation was not found in monolingual Chihuahuan speakers (Brown & Harper 2009). Also, Amengual (2012) found that the voice onset time (VOT) of /t/ for Spanish-English bilinguals was more English-like (i.e. longer in duration) than their monolingual Spanish counterparts, an effect more pronounced in cognates. Therefore, the results of these two experiments are taken here as evidence for the linked exemplar status of English and Spanish within the bilingual lexicon. What's more, within the NMCOSS, the speakers were directly questioned as to which language they were more comfortable with or used more often. A plausible hypothesis would be that speakers who were more comfortable with English than Spanish may exhibit lower reduction rates overall, due to a stronger weighting of English tokens than Spanish ones.

As for coding, within my data four speakers acquired Spanish first, and one acquired both simultaneously (Interview 292, who is mostly a passive bilingual, with a high listening comprehension, but only a limited speaking ability); For language preference, three speakers preferred Spanish, while two preferred English. Taken together, those who acquired Spanish first and expressed a preference for Spanish were coded as Spanish dominant, and those who acquired both languages together or a preference for English were mixed dominant.

Gender: Will males reduce at higher rates than females?

Men tend to exhibit variability favoring nonstandard forms, which index a working class identity (specifically those who are a part of the working class), carry covert prestige (not salient for speakers; cf Meyerhoff 2011, Tagliamonte 2012), and/or are considered the local norm (Tagliamonte 2012). With that in mind, in past studies regarding Spanish /s/ reduction (Brown 2005b, 2004; Esparza 2017; Gutiérrez 1981; Torres Cacoullos & Berry 2018), men overall tended to reduce more than women.

Age: Will older speakers be more likely to reduce /s/ than younger speakers?

Only one study found an effect (or rather, a lack of one) for age, with Brown (2005b, 2004) noting no significant differences between older and younger speakers in usage of the variable. However, I included age as a social factor here for two reasons: (1) Older New Mexicans are generally more likely to have a better grasp of Spanish, and can be expected to reduce at least to some extent; And (2) older Spanish speakers in west-central New Mexico fall within the Traditional Spanish dialect, so are likely to use features traditionally associated with TNMS, such as /s/ reduction (cf. Bills & Vigil 2008).

I coded my speakers into three age groups: Younger speakers (<40 years old), Middle-aged speakers (40-60 years old), and Older speakers (60+ years old).

Overall Education: Will lower education levels be correlated with higher reduction rates, and vice versa?

In New Mexican Spanish, Bills & Vigil (2008) found a correlation between use of standard lexical items and higher education levels, and Espinosa (1911) described the use of /s/ reduction as a feature of "…the rural, uneducated classes," (10). This correlation has also been noted for northern Mexico (Brown & Torres Cacoullos 2002). In reviewing

the literature, those with lower amounts of education tend to reduce /s/ at higher rates (Esparza 2017; Lipski 2011). We can also expect formal Spanish education to correlate with lower reduction rates (cf. Bills & Vigil 2008), as nonstandard features aren't typically accepted in a traditional classroom.

As it relates to education, my data was coded for: Less than high school (numerical value 1), high school (2), and college (3). Furthermore, to account for formal Spanish education, the data was coded with 'yes' if they had taken at least one Spanish class (1), and 'no' if not (0). Together, the highest education value one could receive was a 4, if they had attended college and had taken at least one Spanish course, while the lowest value they could receive is a 1, for less than a high school education and no Spanish courses.

Geographic Origin: Will an urban locality show lower reduction rates than a rural one?

/s/ reduction as a global phenomenon varies not only within speakers, but across communities and nations, with some dialects overall reducing at higher rates than others (cf. Brown 2008; Lipski 2011; Ryant & Liberman 2016). Oftentimes, reduction in general has been seen to be correlated with a rural locality, compared to an urban one (Brown 2005b; Lipski 2011; Torres Cacoullos & Berry 2018). This can perhaps be attributed to the more isolated and self-contained lifestyles of rural people, as well as the leveling effects of urban living (cf. Nostrand 1992; Also Meyerhoff 2011).

In the current study, my speakers had different hometowns in Cíbola County: Grants (the sole urban locality), and the villages of San Fidel, San Mateo, and San Rafael (rural localities). It is conceivable that each of these could be viewed as their own

separate communities of practice within a greater Cíbola Spanish, and at least historically, mobility between communities would have been limited, with social networks being denser and more connected within the confines of each specific town or village (cf. Meyerhoff 2011; Tagliamonte 2012). However, when the NMCOSS was recorded in the 90s, greater mobility existed between communities and beyond, with at least three speakers (218, 292, 296) attending high school in Grants, and one speaker living in Albuquerque in adulthood (218). Therefore, increased mobility and contact may have contributed to a sort of linguistic leveling within the greater Cíbola community, which would prevent an effect of locality from being seen in the results.

Here, each of my speakers were coded by their hometown, and later recoded for an urban vs rural locality.

Speech Style: Will Casual speech styles show a higher incident of /s/ reduction than Careful ones?

While the reasons that people style-shift have been theorized in different ways (cf. Labov 2001a; Meyerhoff 2011; Among others), speech can be generally grouped into two categories: Casual/vernacular/colloquial speech, expected to have more nonstandard features, and Careful speech (cf. Labov 2001a; Lipski 2011). Most studies I sampled did not test for style; The one that did shows no significant effect (Esparza 2017). However, due to the nature of the NMCOSS interviews in particular (with both Q&A and free conversation portions; Bills & Vigil 2008), I expected that style may have had some effect on reduction rates in the data.

During coding, I generally followed Labov (2001) in dividing Casual and Careful speech into four separate subcategories each (Respectively: Narrative, Group, Kids,

Tangents; And Response, Language, Soapbox, Residual). I depart from Labov in adding a fifth subgroup under Casual speech, which I term as Pseudo-Narratives, following a discussion in Gimenez (2010) about the many ways narratives have been defined across linguistic research, and the limitations inherent in only following a componential (i.e. Labovian) style split, without also accounting for a narrative's functional purpose. I categorized Pseudo-Narratives under Casual speech due to their functional similarity to Personal Narrative, including what Labov (2001) distinguishes from individual narratives, namely "…pseudo-narratives (accounts of sequences that are said to habitually occur)…chronicles (undramatized accounts of extended events, all of about the same duration), and narratives of vicarious experience, where the speakers rehearse events that they did not actually witness," (89-90). This leaves us with a total of nine stylistic categories, which were later recoded into Casual and Careful speech.

Identity: Will speakers who index a *mexicano* identity exhibit higher reduction rates than those indexing a Hispanic/*español* identity?

Lastly, due to the issues discussed in section 2.1.3, there is a dichotomy between being Hispanic and being Mexican within the New Mexican *hispanohablante* community. While a question of ethnic identity was supposedly asked during the course of the NMCOSS interviews (Bills & Vigil 2008), after listening to two of the recordings all the way through (~6 hours total), I was unable to locate this portion of the interviews. Therefore, I attempted to measure identity in a quantifiable way, using language names. Remember that the names by which we call ourselves or our languages are important in the process of creating a shared group identity, and named languages exist as purely social constructs which serve primarily social purposes (cf. Edwards 2009; Otheguy et al

2018, 2015). Therefore, how we refer to the language we speak may serve as an indicator of what our group identity would be.

To quantify identity (and thus allowing me to code for it), I took all references to the Spanish language and analyzed them using the concordancing software AntConc (Anthony 2019), counting the number of times they referred to Spanish as either *mexicano* (indicative of a more traditional identity) or *español* (indicative of distance away from a traditional identity). If they used one or the other term more than 2/3 of the time, they were coded as having that identity, with the expectation that usage of *mexicano* and indexation of a traditional identity would be correlated with higher usage of associated variables (i.e. /s/ reduction).

3.2 – Univariate and Multivariate Analyses

The dataset was analyzed in two ways, using distributional analysis (univariate) and the variable rule program Rbrul (multivariate; cf. Johnson 2021a, 2009). Creating distributional analyses allowed me to look at the patterning of the raw data, in correlation with a single independent variable at a time; Statistical significance was tested using a chi-squared calculator (Preacher 2001). Rbrul, on the other hand, allowed me to input all of my data and analyze it with all of the independent variables at the same time (Johnson 2021a, 2009; Also, Koops 2021a, 2021b; RStudio Team 2018). In Rbrul, I ran a total of seven statistical analyses across three categories (All Tokens, Syllable Position, and Word/Syllable Position) using the step-down option. After comparing the multivariate results across the three categories, I decided that the two Syllable Position analyses were the best suited for the purpose of this study, for three reasons: First, this was only intended as an exploratory study using a small number of speakers and tokens, so my

intention was to paint only a general picture of /s/ reduction in the dialect; Second, a comparison combining all tokens together would perhaps be too general, due to differences in syllable-initial and syllable-final consonants (reference Footnote 6); And third, a breakdown by word and syllable position produced results that didn't line up neatly across syllable positions, as seen in, for example Brown (2005a, 2005, 2004; That is, constraints affecting syllable position in Brown were relatively similar for both word positions, but in my data this was not the case, with different constraints affecting all word and syllable positions fairly differently). For these reasons, a breakdown by word/syllable position would perhaps be better suited for an analysis using a larger amount of speakers (however, see counterexample in Brown & Torres Cacoullos 2003, 2002, who only utilized four speakers), or using fewer independent variables (the "kitchen sink effect," which admittedly may affect my results; cf. Tagliamonte 2012). Therefore, using only the syllable position results may prove to be the most informative and useful here, although I also refer to the raw data breakdown by word/syllable position in order to compare global trends with prior works such as Brown (2005a, 2005b, 2004) and Brown & Torres Cacoullos (2003, 2002).

Finally, collinearity was tested through cross-tabulation of two different independent variables with the dependent variable. In the discussion, I will primarily rely upon the results of the multivariate analysis in interpreting the data, although references to the distributional analyses and cross-tabulations checking for collinearity or interactions will be referenced as necessary.

CHAPTER 4

RESULTS

4.1 – General Reduction Trends

After coding the data as outlined above, and following exclusions, 2067 tokens remained, which is broken down by speaker in Table 4 below:

Speaker	**Retained Tokens**		**Reduced Tokens**		**Total Ns**	**%-All Data**
143 – Evangelina	N – 383	88%	N – 54	12%	**N – 437**	**21%**
217 – Carlota	N – 403	82%	N – 89	18%	**N – 492**	**24%**
218 – Ross	N – 562	88%	N – 75	12%	**N – 637**	**31%**
292* – Gary	N – 107	59%	N – 74	41%	**N – 181**	**9%**
296 – Evelyn	N – 274	86%	N – 46	14%	**N – 320**	**15%**
Total	**N – 1729**	**84%**	**N – 338**	**16%**	**N – 2067**	

Table 4 – Total Tokens per Speaker (Global Reduction Rates).

It should be noted that Speaker 292, Gary López, exhibited a much higher reduction rate than the others, despite being the least proficient speaker (he rarely used full Spanish sentences, although he understood what was said to him, responding mostly in English). With an overall reduction rate of 41%, he surpasses the next highest reduction rate by over 23 percentage points (Speaker 217's 18%, subjectively the most proficient speaker). What's more, most of his utterances were simple Q&A style responses, and he exhibited almost no Casual speech (N=1), which allowed for him to also have the smallest number of tokens in the dataset (N=181, 9% of the total data). For the above reasons, he was excluded from further statistical analysis due to his likelihood as an outlier to skew the data, and he will be treated separately in a later section.

With Gary removed, total tokens are 1886 (SI N=791; SF N=1095), with an average reduction rate of 14% for the remaining four speakers. In terms of size, my dataset is comparable in scope to that of previous studies, with an average of 472 tokens per speaker. Of the studies cited below, only Brown & Torres Cacoullos (2003, 2002) had a higher average token count, at 960 tokens per speaker; The remainder of the studies range from 448 average tokens per speaker (Brown 2005a, 2005b, 2004) to only 50 (Gutiérrez 1981).

To compare my data more neatly with the results of past analyses, Table 1 has been broken down into Tables 5 (Syllable Position) and 6 (Word/Syllable Position) below, which include my data for comparison.

	Speakers / Tokens	Average Tokens / Speaker	Syllable-Initial Reduction	Syllable-Final Reduction
Esparza (2017)	31 / 1921	62	*3%*	*27%*
García & Tallon (1995)	10 / ~2000	200	-	*4%*
Gutiérrez (1981)	12 / 600	50	-	*26%*
Martínez (2021)	**4 / 1886**	**472**	***10%***	***17%***

Table 5 – Comparison of Reduction to Past Studies (Syllable Position only)

In comparison to studies which only tested for syllable position, my data shows a higher syllable-initial reduction rate (10% average) than the *veracruzano* Spanish of Juárez (3%; Esparza 2017), and a syllable-final reduction rate that is lower (17% average) than Esparza (2017; 27%) and the *burqueño* dialect of Gutiérrez (1981; 26%), but higher than the San Antonio dialect of García & Tallon (1995; 4%). In terms of numbers, I had the lowest number of speakers, but a comparable token count to Esparza (2017) and García & Tallon (1995).

	Speakers / Tokens	Average Tokens / Speaker	Word-Initial / Syllable-Initial	Word-Medial / Syllable-Final	Word-Medial / Syllable-Initial	Word-Final / Syllable-Final
Aaron & Hernández (2007)	12 / 1200	100	-	*7%*	-	*16%*
Brown (2008)	24 / 4714	196	-	*26%*	-	*59%*
Brown (2005a, 2005b, 2004)	24 / 10770	448	*16%*	*25%*	*30%*	*57%*
Brown & TC (2003, 2002)	4 / 3839	960	*21%*	*22%*	*34%*	*45%*
Martínez (2021)	**4 / 1886**	**472**	***5%***	***7%***	***12%***	***21%***

Table 6 – Comparison of Reduction to Past Studies (Word/Syllable Position only)

Comparing studies which combined word and syllable position in their analyses, my results trend towards a lower rate of reduction, although the general direction of reduction as presented in Figure 1 holds true across both my study and the others (WISI lowest reduction rate→WFSF highest). Specifically: Reduction WISI (only 5%) is lower than both Brown & Torres Cacoullos (2003, 2002; 21%) and Brown (2005a, 2005b, 2004; 16%); WMSF (7%) is lower than Brown (2008; 26%), Brown (2005a, 2005b, 2004; 25%), and Brown & Torres Cacoullos (2003, 2002; 22%), but on par with the Houston *salvadoreño* Spanish of Aaron & Hernández (2007; 7%); WMSI (12%) is much lower than Brown & Torres Cacoullos (2003, 2002; 34%) and Brown (2005a, 2005b, 2004; 30%); Lastly, WFSF, although the highest reduction rate in my data (21%), only out-reduces the accommodating high reduction→low reduction Salvadoran speech (Aaron & Hernández 2007; 16%), and is notably lower than the other three studies (Brown 2008, 59%; Brown 2005a, 2005b, 2004, 57%; Brown & Torres Cacoullos 2003, 2002, 45%). In terms of token and speaker data, my study is tied here for the least amount of speakers (only 4), and has the second-lowest overall token count (only surpassing Aaron & Hernández's 1200 tokens).

To conclude this section, overall reduction rates and segment duration for retained /s/ segments were compared across speakers, with duration across the entire dataset being split into three groups: Short (0.0072-0.0931ms), Medium (0.0933-0.1237ms), and Long (0.1238-0.6505ms). The results of this can be seen in Table 7 below:

	143 - Evangelina	217 - Carlota	218 - Ross	296 - Evelyn
Overall Red. Rate	12%	18%	12%	14%
Short	N = 76 20%	N = 137 34%	N = 163 29%	N = 105 38%
Medium	N = 123 32%	N = 155 38%	N = 213 38%	N = 80 29%
Long	N = 184 48%	N = 111 28%	N = 186 33%	N = 89 32%
Total	**N = 383**	**N = 403**	**N = 562**	**N = 274**

Table 7 – Duration of Retained /s/ Segments

Here, there is a correlation (p=0) between overall reduction rate and length of retained /s/ segments. Generally speaking, those speakers with lower overall reduction rates show higher proportions of long vs short segments (Speakers 143 and 218), while a higher overall reduction rate displays the opposite correlation, with a higher proportion of short vs long segments (Speakers 217 and 296). When it comes to medium-length segments, however, no clear patterning emerges, with two speakers showing the highest proportion of this length segment overall (Speakers 217 and 218), one speaker having a medium proportion of medium length segments (Speaker 143), and one speaker having medium-length segments as the least common length overall (Speaker 296).

4.2 – Multivariate Analyses

4.2.1 – Syllable-Initial

In Rbrul (N=791), the following factor groups were found to be significant predictors of reduction in the syllable-initial position: Spoken in Isolation (p=0.0323), Frequency (p=5.72e-10), Preceding Phonological Class (p=0.0244), Language Dominance (p=1.11e-6), Word Position (p=4.3e-5), Identity (p=0.0103), and Stress

(p=0.000804). The output from Rbrul (organized by magnitude of effect) can be seen in Figure 2 below:

N = 791	**Factor**	**Tokens**	**Reduced / Total**	**Centered Factor Weight**
Isolation	No	742	0.104	>0.999
Range = 0.998	Yes	49	0.000	<0.001
Frequency	Extreme	302	0.192	0.81
Range = 0.562	High	179	0.067	0.608
	Mid	164	0.024	0.315
	Low	146	0.021	0.248
Preceding Class	High Vowel	171	0.164	0.669
	Non-High V	433	0.106	0.662
Range = 0.492	Pause	58	0.034	0.54
	Consonant	129	0.008	0.177
Language Dom	Both	123	0.187	0.741
	Spanish	668	0.081	0.259
Range = 0.482				
Word Position	Medial	528	0.123	0.665
	Initial	263	0.046	0.335
Range = 0.33				
Identity	español	460	0.100	0.619
Range = 0.238	mexicano	331	0.094	0.381
Stress	Stressed	362	0.133	0.613
Range = 0.226	Unstressed	429	0.068	0.387

Figure 2 – Syllable-Initial Results of Multivariate Analysis

In reviewing the results in Figure 2, the following generalizations can be made; In order of the magnitude of effect:

1. **Spoken in Isolation** constrains syllable-initial reduction the most, with words spoken in connected speech favoring reduction at a much higher rate (10% reduction rate) than words spoken in isolation (0%), which favor retention.
2. Next is **Frequency**¸ with Extreme High (19% reduction rate) and High Frequency (7%) favoring reduction, and Mid (2%) and Low Frequency (2%) favoring retention.

3. Third is **Preceding Class**, with High Vowels (16% reduction rate), Non-High Vowels (11%), and Pauses (3%) favoring reduction, and Consonants (1%) favoring retention.
4. Fourth, for **Language Dominance**, a split English/Spanish dominance favors reduction (only one speaker, 19% reduction rate), while a Spanish dominance favors retention (three speakers, 8%).
5. Next, regarding **Word Position**, /s/ reduction is favored word-medially (12% reduction rate), and retention is favored word-initially (5%).
6. For **Identity**, an *español* identity favors reduction, and a *mexicano* identity favors retention, although actual reduction rates are only marginally different (10% vs 9% reduction rate, respectively).
7. Lastly, in terms of **Stress**, syllable-initial /s/ favors reduction in stressed syllables (13%), while unstressed syllables favor retention (7%).

Here, we see that more linguistic than extra-linguistic factors constrain /s/ reduction syllable-initially (6 vs 1 factor groups).

4.2.2 – Syllable-Final

For syllable-final reduction (N=1095), eight independent variables were significant in the multivariate analysis. By magnitude of effect: Preceding Phonological Class (p=1.29e-9), Spoken in Isolation (p=8.8e-5), Morpheme Status (p=4.33e-7), Word Position (2.09e-6), Language Dominance (p=2.44e-8), Identity (p=6.97e-11), Following Phonological Class (p=1.64e-6), and Word Length (p=0.00632). The Rbrul output is presented in Figure 3 below:

N =1095	**Factor**	**Tokens**	**Reduced / Total**	**Centered Factor Weight**
Preceding Class	Deleted V*	18	0.500	0.942
	Non-High V	918	0.181	0.222
Range = 0.764	High Vowel	159	0.075	0.178
Isolation	No	986	0.188	0.754
Range = 0.508	Yes	109	0.018	0.246
Morpheme Status	1PL	60	0.550	0.772
	Plural	436	0.218	0.482
Range = 0.496	2SG	26	0.192	0.421
	Lexical	573	0.094	0.303
Word Position	Final	761	0.214	0.706
	Medial	334	0.072	0.294
Range = .412				
Language Dom	Spanish	898	0.183	0.683
	Both	197	0.117	0.317
Range = 0.366				
Identity	mexicano	481	0.216	0.662
Range = 0.324	español	614	0.135	0.338
Following Class	Consonant	596	0.181	0.632
	Non-High V	143	0.259	0.585
Range = 0.311	High Vowel	63	0.175	0.466
	Pause	293	0.106	0.321
Word Length	Polysyllabic	886	0.177	0.587
Range = 0.174	Monosyllabic	209	0.144	0.413

Figure 3 – Syllable-Final Results of Multivariate Analysis. *Note: See explanation below.

In reviewing the results in Figure 3, the following generalizations can be made; In order of the magnitude of effect:

1. The factor that has the greatest effect on the variable realization of syllable-final /s/ is **Preceding Phonological Class**, with Deleted Vowels (50% reduction rate) favoring reduction, and both Non-High (18%) and High Vowels (8%) favoring retention. Because this is syllable-final reduction, a preceding Deleted Vowel is, for all intents and purposes, a pause. Here, all 18 tokens involved were word-medial and had a preceding vowel sound which was reduced towards zero (i.e. *espérate*→ *'spérate, oscuro*→ *'scuro*, etc). The fact that these tokens skewed the

factor weights to such an extent was an interesting if unexpected result of the analysis.

2. The second most important factor group is **Spoken in Isolation**, with words in connected speech reducing at higher rates (19% reduction rate) than words spoken in isolation (2%).
3. Third is **Morpheme Status**, with the 1PL (55% reduction rate) favoring reduction, and the Plural (22%), 2SG (19%), and Lexical /s/ (9%; including WMSF /s/ tokens) favoring retention. A separate Rbrul analysis run excluding the WMSF tokens (N = 761; p=9.833e-10) replicates the initial run in that only 1PL favors reduction (factor weight 0.788), while Plural, 2SG, and WFSF Lexical /s/ favor retention (factor weights 0.459, 0.42, 0.304, respectively).
4. Fourth is **Word Position**, with Word-Final tokens (21% reduction rate) favoring reduction, and Word-Medial tokens (7%) favoring retention.
5. Fifth is **Language Dominance**, with the three Spanish-dominant speakers (18% reduction rate) favoring reduction, while the split-dominance speaker (12%) favors retention.
6. Sixth is **Identity**, with speakers who index a *mexicano* identity (22% reduction rate) favoring reduction, while those who favor an *español* identity (14%) favor retention.
7. The seventh factor is **Following Class**, with Consonants (18% reduction rate) and Non-High Vowels (26%) favoring reduction, while High Vowels (18%) and Pauses (11%) favor retention. However, the disconnect between percentage of reduction and the constraint order by factor weight (Non-High Vowels should

theoretically carry the heaviest factor weight) indicates that an overlap and/or interaction may be occurring here (cf. Tagliamonte 2012).

8. The last factor group is **Word Length**, with Polysyllabics (18% reduction rate) slightly favoring reduction, and Monosyllabics (14%) slightly favoring retention.

Again, although some of the factor groups selected as significant were different between syllable-initial and syllable-final position, we see here a 7/1 split, with more linguistic than extralinguistic factors playing a significant role in /s/ reduction in this position.

4.3 – Univariate Analysis

This section will briefly review the results of the univariate analyses, for only those factor groups found significant using a chi-squared test (Preacher 2001) but not Rbrul. I also review cases when the direction of effect was as expected, but neither the multi- nor univariate analyses found the factor group significant. The results of the distributional analyses are:

- **Frequency**: In the syllable-final position, Frequency had a significant effect in conditioning reduction (p=0.00065485), with the direction of effect showing items of Extreme High frequency reducing at the highest rate (23%), followed by Mid (16%), High (15%), and Low frequency (11%).
- **Following Context**: In the syllable-initial position, Following Context was found to be significant (Yates p=0.00227904), with a direction of effect being Consonants (where a following vowel reduced towards zero or was rhotacized, total N=13; 23%) → High Vowel (14%) → Non-High Vowel (7%).
- **Morpheme Agreement**: Although by itself not significant in multivariate analysis, when /-s/ is morphemic (1PL, 2SG, Plural), if there is another source of

agreement in nearby discourse (number, person, verbal), reduction is conditioned more (30%), whereas lack of any sort of agreement reduces at a lower rate (17%) (p=0.00142049).

- **Word Length**: Not significant in the syllable-initial position using either multi- or univariate analyses; However, the direction of effect is as expected, with polysyllabics reducing at higher rates than monosyllabics (11% vs 5% in SI).
- **Grammatical Class**: The only variable that is not significant in any syllable position or using either analysis; However, direction of effect is still as expected, with Function words reducing at higher rates than Content words (11% vs 10% SI, 21% vs 16% SF).
- **Stress**: In syllable-final position, stress was found to be significant (p=0.00051709), with the expected direction of effect being Unstressed syllables conditioning /s/ reduction at higher rates than Stressed syllables (19% vs 10%).
- **Gender**: Only significant in syllable-final position (p=0.02667074); However, direction of effect was unexpected, with Females reducing at higher rates than Males, in both syllable positions (10% vs 9% SI, 19% vs 13% SF).
- **Age**: Although not significant in the multivariate analysis, Age was significant in the univariate analysis for both syllable positions (p=0.00084668 SI, p=0 SF), with two different directions of effect: In the syllable-initial position, the Middle age group reduced at higher rates than the Older age group (12% vs 4%), while syllable-finally, the Older age group reduces more than the Middle age group (29% vs 13%).

- **Overall Education**: Also not significant in multivariate analysis, but significant here for both syllable positions (p=0.00019633 SI, p=8e-8 SF), with different directions of effect. Where "1" denotes the least and "4" denotes the most education: In syllable-initial position, 3 (19%) → 2 (11%) → 4 (9%) → 1 (4%); In syllable-final position, 1 (29%) → 2 (14%) → 4 (13%) → 3 (12%).
- **Geographic Origin**: Only significant syllable-finally (p=0.02667074), although the direction of effect was as expected for both positions, with Rural localities reducing at higher rates (10% SI, 19% SF) than Urban ones (9% SI, 13% SF).
- **Style**: Also only significant in the syllable-final position (p=0.0020181), but with a direction of effect as expected, where Casual speech reduces at higher rates (13% SI, 24% SF) than Careful speech (9% SI, 15% SF).

CHAPTER 5

DISCUSSION

5.1 – Factors Affecting /s/ Reduction in Cíbola County Spanish

5.1.1 – General Trends

Comparing my data to previous studies, although the overall reduction rate is higher than or on par with both Texan dialects (Aaron & Hernández 2007; García & Tallon 1995) and one of the Mexican dialects (although Esparza 2017 shows a higher syllable-final reduction rate), my speakers reduce at lower rates across all positions than any of the New Mexican studies (Brown 2008; Brown 2005a, 2005b, 2004; Gutiérrez 1981) or the remaining Chihuahuan study (Brown & Torres Cacoullos 2003, 2002). These results are preliminary and multifaceted, and warrant further study. Generally speaking, these lower rates may be explained by taking into account the following factors.

First, as it relates to the other New Mexican studies, Cíbola Spanish is distinct from the Río Arriba Dialect, which makes up a majority of speakers for both Brown (2008) and Brown (2004; Table 2.1), as well as other parts of the Río Abajo Dialect, including the *burqueño* dialects of Albuquerque (Gutiérrez 1981; Also, Brown 2008, Brown 2004). Given that Cíbola Spanish once was a part of a separate subdialect (the West-Central Dialect of Bills & Vigil 2008), it is possible that it reduced /s/ at different rates historically, due to its relative distance from the center of Hispanic colonial society along the Río Grande corridor.

Second, bear in mind that Cíbola Spanish is sandwiched between two contemporary Mexican dialects, whose major isogloss is located directly south, with an inland pocket of contemporary Mexican Spanish to the northwest, centered around Gallup. It has been previously noted that extensive /s/ reduction is not the norm for Chihuahua and most of northern Mexico (cf. Moreno de Alba 1994; Schwegler et al 2010), except in some rural areas such as that in Brown & Torres Cacoullos (2003, 2002). Furthermore, it is important to remember that Cíbola experienced a high influx of migrants to the region in the decades prior to the NMCOSS recordings, as people flooded the region to work in the uranium mines (Jaramillo & Milan 2013; Nostrand 1992; Peña 2007a). These included Anglo Americans, whose English is non-/s/ reducing, and Mexican migrants from the *altiplano* region, whose Spanish typically retains /s/ (cf. Aaron & Hernández 2007; Brown 2008; Brown 2005b; Moreno de Alba 1994; Penny 2002; Schwegler et al 2010).

A third factor possibly affecting reduction rates is the high degree of bilingualism with English exhibited in Cíbola and the New Mexican population at large, especially in the last several decades, as usage of NM Spanish has decreased rapidly (cf. Bills & Vigil 2008). The interlingual influence of English will be covered in a later section.

Last, the lower overall rates can also be explained given the structure of the NMCOSS interview; Referring back to the univariate findings relating to Style, there is noticeably more reduction in Casual than Careful styles (13% SI, 24% SF vs 9% SI, 15% SF, respectively). While the Casual reduction rate is still lower than previous studies, this may indicate that an interview structure based more heavily in sociolinguistic principles

(i.e. the sociolinguistic interview) could exhibit higher reduction rates than that seen in this portion of the NMCOSS.

5.1.2 – Duration

Findings relating to duration of the /s/ segment are here extremely preliminary, and require a more detailed phonetic analysis using a larger speaker sample to determine whether or not the direction of results holds true. However, the current data demonstrates that the speaker with the highest overall reduction rate (18%) tends to favor short- and medium-length segments (34% & 38%, respectively), while the next highest rate (14%) also favors short segments over medium and long ones (38% vs 29% and 32%). The speakers with the lowest reduction rate (12%) favor either long (143, 48%) or medium segments (218, 38%), with both having the lowest incidence of short segments (20% & 29%, respectively). From a usage-based perspective, these findings can be explained through a proposition that, as more /s/ segments are affected by on-line processes which favor reduction (that is, gestural and timing overlap), shorter segments become more common and thus more prototypical in the exemplar cloud. As global reduction rates rise, /s/ comes to be represented as having a shorter duration moving towards aspiration or deletion (bear in mind that /s/ reduction, although grouped here into binary categories, is actually a gradient process, beginning with simple reduction in gestural magnitude or duration, through aspiration, to complete deletion; cf. Ernestus & Warner 2011; Lipski 2011; Penny 2002; Ryant & Liberman 2016; Schwegler et al 2010).

5.1.3 – Linguistic Trends

Relying primarily on the multivariate analysis, linguistic factors are found to constrain /s/ reduction the most in this dialect. Across both syllable positions, nine total

linguistic variables were found to condition reduction: Spoken in Isolation, Frequency, Word Position, Phonological Environment (Preceding & Following), Morphemic Status, Word Length, Stress, and Language Dominance.

Spoken in Isolation: The presence of accompanying linguistic material (or rather, the lack thereof) has a substantial effect on reduction of /s/; In fact, Spoken in Isolation was one of the most important factor groups. Words spoken in isolation are much more likely to retain the sibilant than those in connected speech, with isolated words being reduced 0% of the time syllable-initially and 2% of the time syllable-finally, compared to reduction rates of 10% and 19% in connected speech. One of the most important reasons for this is that words in isolation cannot rely on context to convey their semantic meaning; With greater rates of reduction, the less likely it is that an isolated word will be recognized by one's interlocutor (cf. Alameen & Levis 2015; Ernestus & Warner 2011; Ernestus et al 2002; Tucker 2011).

With the above information in mind, this result may be interpreted as collinearity/overlap between (1) style and (2) phonological environment. That is, these isolated words are typically single word responses in a Q&A dialogue structure, and thus are considered Careful speech, which are less likely to reduce across all word/syllable positions (cf. Alameen & Levis 2015; Ernestus et al 2002; Labov 2001a, 1984). And for phonological environment, past studies have demonstrated that a preceding pause tends to have a retention effect (cf. Brown 2005b, 2004; Brown & Torres Cacoullos 2003, 2002), whereas a following pause tends towards relatively greater reduction (cf. Brown 2008; Esparza 2017). In my results, a preceding pause word-initially only reduces 3% of the time, and a following pause word-finally reduces 11% of the time (still the lowest rate for

any phonological environment). Therefore, the results here, conceived of as being caused by a so-called 'isolation' effect, may instead be a masked effect for style alone, or an overlap between speech style and phonological environment.

Frequency: As predicted by usage-based theory (cf. Bybee 2015, 2002, 2001; Hooper 1976; Also Brown 2004, Ernestus & Warner 2011), the greater the frequency, the more a sound change can progress. Here, regardless of syllable position, the highest frequency words ("Extreme," or #1-100; cf. Davies 2006) reduce /s/ at the highest rate, and Low frequency words (#5000+) reduce at the lowest rates. How High (#101-1000) and Mid (#1001-5000) Frequency items pattern is dependent on syllable position (although syllable-finally the difference is almost negligible, at only 1%), as seen in Figure 4 below:

Syllable-Initial: Extreme (19% Reduction Rate) → High (7%) → Mid/Low (2% each)
Syllable-Final: Extreme (23%) → Mid (16%) → High (15%) → Low (11%)

Figure 4 – Frequency Results by Syllable Position

The direction of effect seen in the data replicates prior studies (cf. Brown 2008; Brown 2004; Brown & Torres Cacoullos 2003, 2002): Higher frequency is correlated with higher reduction rate, followed by Mid and Low items. However, in the multivariate analysis, only the syllable-initial position is found to be significant, while the syllable-final results were only significant in the univariate analysis. This, however, has been seen to some degree in past studies (Brown 2008; Brown 2004), where frequency is not significant in the word-final/syllable-final position; In separate multivariate analyses here, Frequency was found to be significant in all positions except WFSF, with items of Extreme High Frequency always reducing at the highest rate.

When looking at specific headwords, removing all tokens which were either categorical (100% or 0% reduction rate) or had a low local frequency (1-2 tokens), patterning by frequency is visible. Out of 499 total headwords used in the data, once categorical and low-occurrence items were removed, 90 headwords remained, ranging from 5% (GUSTAR) to 83% (TODO) reduction. Of these 90 headwords (1020 tokens, 49% of all tokens for all speakers), 33% were Extreme High Frequency, 23% were High Frequency, 23% were Mid Frequency, and 20% were Low Frequency. The 26 items with the highest reduction rates can be seen in Table 8 below:

Headword	**Freq.**	**Red. Rate**	**Headword**	**Freq.**	**Red. Rate**
TODO	Extreme	N=6 83%	ANTES	High	N=4 50%
CABALLO	High	N=5 80%	CUMPLEAÑOS	Mid	N=4 50%
ESPERAR	High	N=5 80%	HORA	High	N=4 50%
HABLAR	Extreme	N=8 75%	MISMO	Extreme	N=14 50%
RATÓN	Mid	N=7 71%	MOSCA	Mid	N=4 50%
CABRA	Mid	N=3 67%	NOSOTROS	High	N=10 50%
CASI	High	N=9 67%	TIJERAS	Low	N=6 50%
COL	Low	N=3 67%	NOMÁS	Low	N=21 48%
IR	Extreme	N=12 67%	ASÍ	Extreme	N=9 44%
SALERITO	Low	N=3 67%	ÉSA	High	N=5 40%
TOPE	Low	N=3 67%	PÁJARO	Mid	N=5 40%
ÉL	Extreme	N=5 60%	PARECER	Extreme	N=8 38%
DECIR	Extreme	N=64 56%	TENER	Extreme	N=16 38%

Table 8 – Lexical Headwords with Highest Reduction Rates. Note: The forms here are considered lemmas, with various plural forms or conjugations being linked to their associated headword.

To conclude Frequency, we need to (briefly) account for lexical effects, in that words with extremely high amounts of tokens may skew results for a specific

phonological environment. Table 9 below shows the 26 headwords with the largest token counts and their reduction rates:

Headword	**Token #**	**Red. Rate**	**Headword**	**Token #**	**Red. Rate**
ESTAR	75	20%	PUES	16	19%
DECIR	64	56%	ESE	16	6%
HACER	47	19%	MOSQUITO	16	6%
SABER	46	20%	MUCHO	15	27%
EL/LA	45	34%	MISMO	14	50%
NOMÁS	41	48%	NOS	14	21%
ESO	21	14%	COSA	13	23%
DOS	21	10%	CASA	13	15%
SE	21	10%	DIECISÉIS	13	8%
GUSTAR	21	5%	IR	12	67%
MÁS	20	20%	LE	12	25%
INGLÉS	18	11%	CRISMES	12	17%
TENER	16	38%	SALIR	12	17%

Table 9 – Lexical Headwords with the Highest Token Count

Reviewing Table 9, the above 26 headwords account for almost 31% of the total data (N=635). Because they display relatively high amounts of reduction (5-67%), it is worth bearing in mind that these words and their variants (for example, verbal conjugations) constitute a relatively large proportion of all instances for Preceding and Following Contexts. While these sorts of lexical effects are perhaps more suited for studies that look at the interaction between phonological environment and frequency (Frequency in a Favorable Context, FFC; cf. Brown 2008; Brown 2004; Raymond & Brown 2012), I include this finding here as an illustration again of the significant effect frequency has on conditioning sound change. It also serves as a stepping-off point for an in-depth study of

alternating vs non-alternating phonological environments in Cíbola Spanish, and the effect that favorability has on actual reduction.

Finally, referring again to Table 9, in comparing several lexical items which have traditionally been cited as having high rates of reduction (*nosotros*, *asina, estar*, *se*, and *hasta*, for example) only *estar* and *se* make it into the most frequent words in the corpus. The other three are found further down the list, but still relatively high (*nosotros* N=10, 50% reduction rate; *asina* N=9, 33%; *hasta* N=8, 25%) (cf. Brown 2008; Brown 2004; Brown & Torres Cacoullos 2003, 2002; García & Tallon 1995; Raymond & Brown 2012).

The results for frequency, using raw percentages, multivariate analyses, and an analysis of reduction rates by headword, confirm the conditioning effect of simple frequency on sound change and variation (cf. Bybee 2015, 2002, 2001; Hooper 1976), paralleling the findings of past studies of Borderlands Spanish (cf. Brown 2008; Brown 2004; Brown & Torres Cacoullos 2003, 2002; Esparza 2017).

Position: In regards to syllable- and word-position, my results replicate past studies and generalizations about the Spanish language, in that (1) syllable-final reduction is generally higher than syllable-initial reduction, (2) syllable-initial reduction is greater word-medially than -initially, and (3) syllable-final reduction is greater word-finally than -medially (cf. Brown 2008; Brown 2004; Brown & Torres Cacoullos 2002; Lipski 2011; Schwegler et al 2010). The breakdown by word/syllable position occurred in the expected direction of WFSF (21% reduction rate) → WMSI (12%) → WMSF (7%) → WISI (5%), as predicted by Figure 1. Also, differences in reduction rates syllable-initially vs -finally provide further support for the hypothesis that consonants in different syllable positions

likely developed along different diachronic pathways (Brown 2004; Brown & Torres Cacoullos 2002; Bybee 2015, 2002, 2001).

Phonological Environment: Phonological Environment has consistently been shown in past studies of Spanish to be one of the most important factors in conditioning /s/ reduction, although the direction of effect varies based on dialect, methodology, coding, etc (cf. Aaron & Hernández 2007; Brown 2008; Brown 2004; Brown & Harper 2009; Brown & Torres Cacoullos 2003, 2002; Esparza 2017; Espinosa 1911, 1909; Gutiérrez 1981; Moreno de Alba 1994; Raymond & Brown 2012). I find here that Preceding Context is typically more important in both syllable positions, contrary to Brown's (2004) maxim that "Syllable-initial /s/ is looking back to its [preceding] environment…and syllable-final /s/ is looking forward to the [following] segments," (p. 149).

Preceding Context: Past studies demonstrate that /s/ segments with neighboring Non-high Vowels reduce at higher rates than High Vowels, Consonants, or Pauses, although this is dependent on study and dialect (cf. Aaron & Hernández 2007; Brown 2008; Brown 2004; Brown & Harper 2009; Brown & Torres Cacoullos 2003, 2002; Esparza 2017; Espinosa 1909; Gutiérrez 1981; Raymond & Brown 2012). While my results generally follow this prediction, there are some variations. Syllable-initially, Preceding Context is the 3rd most important factor group, with a direction of effect of High Vowels (16% reduction rate) → Non-high Vowels (11%) → Pauses (3%) → Consonants (1%). Therefore, vowels in general favor reduction, pauses only slightly favor reduction (albeit at low rates), and consonants do not favor reduction. This is compared to the finding syllable-finally (Preceding Context 1st most important factor

group), where Deleted Vowels condition reduction the most (50% reduction rate), and Non-high Vowels (18%) are more likely to condition reduction than High Vowels (8%).

While the syllable-final results are consistent with past findings, syllable-initially it may appear unclear why High Vowels reduce at higher rates than Non-high Vowels, given the expected role of tongue height in conditioning reduction. However, in many of the past studies the high vs non-high distinction was only a general trend, with results being variable across studies. Therefore, it may be the case that tongue height plays less of a role in Cíbola Spanish than in related dialects. However, it is interesting to note that my speakers exhibited a great amount of vowel variation, for example raising (/e/→[i]), laxing (V→[ə], /i/→[ɪ]), presence of English vowels ([æ]), etc, which warrant further exploration of their role in the current results.

Following Context: Prior studies generally display mixed results for following context (cf. Brown 2008; Brown 2004; Brown & Torres Cacoullos 2003, 2002; Esparza 2017; Espinosa 1909; Moreno de Alba 1994), showing Non-high Vowels oftentimes conditioning greater reduction, and Consonants, High Vowels, and Pauses being variable based on the study. In my study, Following Context was only significant in the multivariate analysis syllable-finally (7th most important factor group), showing a direction of effect of Consonants (18% reduction rate) → Non-high Vowels (26%) → High Vowels (18%) → Pause (11%). Syllable-initially, only significant in the univariate analysis, showed a direction of effect of Consonants (23%; Following vowel reduced towards zero or rhotacized) → High Vowels (14%) → Non-high Vowels (7%). While difficult to compare to past research, in conjunction with Preceding Context, it seems that Consonants and Vowels generally condition reduction at greater (if variable) rates.

However, a following Pause does not condition reduction as much in this dataset (compare Brown 2008, Esparza 2017, where following pauses tend more towards reduction).

As mentioned in the Results, the output from Rbrul indicates that there is collinearity for Following Context syllable-finally. While Non-high Vowels (26% reduction rate) have a higher overall reduction rate than Consonants (18%), Consonants carry a greater factor weight, even though the expected direction should have Non-high Vowels carrying a higher factor weight than Consonants. Through a cross-tabulation of Following Context with Word Position, we see that word-medially, there are only two following contexts: Consonants (8% reduction rate, N=320) and Non-High Vowels (0%, N=14; Where a following consonant reduced towards zero). In comparison, word-finally, the direction of effect shows a constraint hierarchy of Consonants (30%) → Non-high Vowels (29%) → High Vowels (17%) → Pause (10%). Given the fact that Consonants contribute a much larger number of Ns in the medial position, that Non-high Vowels pattern categorically in this position, and the difference between the medial and final position for Consonants vs Non-high Vowels, may provide us with an explanation for why the output from Rbrul is not as expected, in that the total number of following Consonants is much higher than total following Non-high Vowels (600 vs 143 Ns, respectively).

To summarize, the results for phonological environment presented here must be reckoned with based on context.[16] For Preceding Context, it was found that Non-high and

[16] It is interesting to note that, generally speaking, the syllable-initial position is most constrained by High Vowels, while the syllable-final position is most constrained by Non-high Vowels, a finding which warrants further study.

High Vowels vary based on syllable position as to which conditions greater reduction, while both still condition reduction at higher rates than Consonants or Pauses. For Following Context, Non-high Vowels condition reduction at higher rates than Consonants, High Vowels, or Pauses, but only in the syllable-final position, while syllable-initially, High Vowels and Consonants condition reduction at greater rates than Non-high Vowels. Overall, the results here contrast somewhat with past studies, in that tongue height seems to play a variable or lesser role in conditioning /s/ reduction than previously thought, with Vowels in general showing a reducing effect.

Morphemic Status: Past studies of /s/ reduction have found that morphemic /s/ reduces at a higher rate than lexical /s/ (cf. Brown 2008; Brown 2004; Gutiérrez 1981), with a hierarchy of verbal /s/ (1PL, 2SG) reducing more than the plural (Brown 2008; Brown 2004), and with the 1PL reducing more than the 2SG (Brown 2008; Gutiérrez 1981). This is despite the fact that reduction of the phoneme can create grammatical or semantic ambiguity, thus impeding communication of meaning (cf. García & Tallon 1995; Penny 2002). My study replicates these findings, in that all morphemic /s/ tokens reduce at higher rates than lexical ones, and that the 1PL reduces at a higher rate than the 2SG; My results differ in that I found that the plural marker reduces at a higher rate than the 2SG. The direction of effect in my study was 1PL (55% reduction rate) → Plural (22%) → 2SG (19%) → Lexical (9%), with Morpheme Status being the 3rd most important factor group syllable-finally.

What's more, there is collinearity/overlap here with Agreement. Although by itself Agreement is not a significant factor, if any sort of number, person, or verbal agreement is present within the discourse, morphemic /s/ reduces at a much higher rate

(30%) than if there is no agreement at all (17%). A second possible overlap is between Morpheme Status and Length, in that lexical /s/ tokens make up a greater proportion of the monosyllabic token set (62%) than morphemic /s/ (38%; Total N=209). For polysyllabics, morphemic /s/ tokens make up a much greater proportion (80%) than lexical /s/ (20%; Total N=552). This indicates that lexical /s/ tokens tend towards being monosyllabic rather than polysyllabic (N=130, N=109 respectively), which inherently reduce at a much lower rate (more on this in the next section).

Word Length: For Word Length, none of the Borderlands studies I reviewed explicitly tested the effect that it has on /s/ reduction, although Terrell (1979) shows that polysyllabic words were more likely to reduce than monosyllabics. My findings are in line with this prediction, in that polysyllabic words in my dataset tend to reduce at higher rates than monosyllabic words (SI 11% vs 5%; SF 18% vs 14%). This finding was only significant in the syllable-final position, although it was the least important (8^{th}) factor group in the multivariate analysis; Syllable-initially, it is not significant in either the multivariate nor the univariate analyses, although the data patterns in the expected direction.

Brown (2008) excluded an explicit analysis of word length from his study, because there is a likely interaction with frequency (cf. File-Muriel 2007), in that the shorter a word is, the more likely it is to be of higher frequency, while the longer a word is, the more likely it is to be of a lower frequency. A cross-tabulation of these two factor groups bears this out, showing that regardless of syllable position, items of Extreme High and High frequency make up a vast majority of monosyllabic tokens (76% and 17%, respectively, vs 0% Mid and 7% Low; Total N=326), whereas polysyllabic words are

split more evenly across each of the four frequency groups (Extreme 29%, High 25%, Mid 22%, Low 24%; Total N=1560). This finding reinforces the importance of usage-based variables to studies of sound change & variation (cf. Bybee 2015, 2002, 2001). Nevertheless, it also demonstrates that on-line processes and other factors may override simple frequency effects, in that even though monosyllabic tokens tend to be of a higher frequency, they still reduce at lower rates than their lower frequency, polysyllabic counterparts.

Stress: Past studies have generally found that unstressed syllables condition reduction at higher rates (cf. Brown 2008; Brown 2004; Brown & Harper 2009; Raymond & Brown 2012), although this is dependent on level of specificity in coding the data, and may vary across syllable and word positions (Brown & Torres Cacoullos 2003). My results were mixed, showing that syllable-initially (least important factor group), stressed syllables encourage reduction (13%) at higher rates than unstressed ones (7%); Syllable-finally it is the opposite (only significant in the univariate analysis), with the expected direction being Unstressed (19%) → Stressed (10%).

However, it is not as simple as this, and a further breakdown by word position shows that, generally, the effects of stress vary dependent on the position of /s/ in regards to word edges. Both word-initial and -final /s/ reduce at higher rates when part of an unstressed syllable (6% and 24%, respectively, compared to 3% and 11% stressed), whereas word-medially, /s/ tends to reduce more when part of stressed than unstressed syllables (19% WMSI and 10% WMSF, compared to 7% WMSI and 5% WMSF). Furthermore, one previous study (Brown 2008) found that the presence of any nearby stress, regardless of whether or not /s/ is a part of that organic syllable, will be correlated

with lower rates of reduction, with an /s/ between two stressed syllables showing the highest overall retention rate, followed by /s/ with stress on either side, and /s/ between two unstressed syllables showing the highest reduction rate.

My findings can be explained in two different ways: First, Stress, while significant, may not play as big of a role in reduction as previously thought, and can be overridden *per se* by other factors. For example, perhaps stressed syllables tend to reduce at higher rates word-medially due to the fact that it is a typically non-alternating phonological environment, which, as with frequency (cf. Brown 2008; Brown 2004), has a greater effect on reduction, whereas stressed /s/ segments on word-edges tend to reduce at lower rates due to the alternating context (cf. Brown 2008; Brown 2004). Another possible explanation may be similar to Brown's (2008) analysis, where analyzing stress on both sides of the /s/ segment perhaps better accounts for Spanish resyllabification/ambisyllabicity rules (Brown 2008; Lipski 2011; Schwegler et al 2010).

Language Dominance: These results were significant in both multivariate analyses (4^{th} SI, 5^{rd} SF), but with opposite effects per syllable position. Syllable-initially, participants displaying a mixed English/Spanish dominance were more likely to reduce /s/ (19% reduction rate) than those of a Spanish dominance (8%), whereas syllable-finally it is reversed, with Spanish-dominant speakers reducing at higher rates (18%) than mixed dominance ones (12%). The finding for syllable-final /s/ reduction is consistent with expectations, and consistent with a general usage-based theory. The more dominant one is in English, a non-reducing language for /s/, the more likely it is that they will reduce /s/ at lower rates than those dominant in Spanish, as bilinguals have more retained exemplars of /s/ overall. The English tokens may also be more heavily weighted, exercising a

stronger influence on the cloud in the generation of a prototype, which in turn will affect future production of this phoneme in either named language.

However, the fact that a mixed dominance shows a higher syllable-initial reduction rate is perplexing, and cannot be explained using this reasoning. There is a strong possibility that the findings here are influenced by the fact that only one speaker, 296, showed a mixed dominance, in that while her first language was Spanish, she still showed a preference for English; The other three speakers were all Spanish dominant, in that their first language and preferred language were both Spanish. The split here may be at least tentatively attributed to her being an outlier or anomaly, and further research will need to be done in order to see if this is a community-wide trend, or individual speaker behavior.

Other Linguistic Factors: Here, we will briefly review the only linguistic variable not covered so far.

Grammatical Class: Replicating Aaron & Hernández's (2007) findings, Grammatical Class was not found to be significant in any of the analyses done here, regardless of supposed semantic load (cf. Corver & van Riemsdijk 2001; Ernestus & Warner 2011; Johnson 2004). That being said, the direction of effect was still as expected, with Function words reducing at higher rates than Content words in both the syllable-initial (11% vs 10%) and syllable-final (21% vs 16%) position. However, the lack of statistical significance here serves as a caution in interpreting these findings.

5.1.4 – Extralinguistic Trends

In one of the only extensive works on New Mexican Spanish, Bills & Vigil (2008) found that sociolinguistic factors don't greatly contribute to variation in this

dialect; My results support that assertion, in that only one extralinguistic factor, Identity, was significant in multivariate analysis. However, Torres Cacoullos & Berry (2018) found that, through a principal component analysis (PCA) of four different features of NM Spanish, sociolinguistic trends start to appear which may be useful in defining speaker groups. That is, rather than placing speakers into prefabricated groups *a priori*, we should instead "…use the *linguistic* behavior of speakers…to cluster them…and then interpret the resultant configurations in terms of our extralinguistic knowledge of the speakers to identify the *social* characteristics that individuals within those clusters have in common," (Torres Cacoullos & Berry 2018: 260, emphasis in original). However, this would likely require a larger speaker count (they used 38 total speakers, versus my five), in order to paint a more accurate picture of community rather than individual speaker norms. I also briefly note that a consistent issue for extralinguistic factors in my dataset is that there were many times only one speaker per category, and thus all of these findings should be taken with a grain of salt, awaiting further study with a larger sample.

Identity: Although the issue of Identity will be touched upon again briefly later (cf. Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Nieto-Phillips 2000; Nostrand 1992; Peña 2007a, 2007b; Toribio 2010), the results of the multivariate analyses here produced mixed results between a Traditional *mexicano* and a more contemporary Hispanic (quantified using the language name *español*) identity. I expected that speakers who index a more traditional *mexicano* identity in Spanish would have higher reduction rates, due to the fact that /s/ reduction is a traditional feature of this dialect (cf. Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Peña 2007a). However, the opposite effect is seen in the syllable-initial position (6th most

important factor group), with a direction of effect of *español* (10% reduction rate) → *mexicano* (9%). In syllable-final position (6th factor group), however, the direction of effect was as predicted, showing a greater difference in reduction rates, with *mexicano* (22%) → *español* (14%). The split here is difficult, but again can perhaps be explained using individual speaker behavior, especially regarding Speaker 296 (interestingly also the only mixed-dominance speaker). Table 10 below breaks down the reduction rate per speaker, per syllable position:

Total N=1886	**Syllable-Initial**			**Syllable-Final**		
	Retained	**Reduced**	**Total**	**Retained**	**Reduced**	**Total**
143 *español	N=166 89%	N=20 11%	**N=186 24%**	N=217 86%	N=34 14%	**N=251 23%**
217 mexicano	N=200 96%	N=8 4%	**N=208 26%**	N=203 71%	N=81 29%	**N=284 26%**
218 español	N=248 91%	N=26 9%	**N=274 35%**	N=314 87%	N=49 13%	**N=363 33%**
296 mexicano	N=100 81%	N=23 19%	**N=123 16%**	N=174 88%	N=23 12%	**N=197 18%**
Totals	**N=714 90%**	**N=77 10%**	**N=791**	**N=908 83%**	**N=187 17%**	**N=1095**

Table 10 – Speaker Reduction Rate by Syllable Position. *Note: Identity markers included for illustrative purposes.

As can be seen above, the first three speakers (143, 217, 218) all consistently have higher reduction rates syllable-finally than -initially, with some more drastic than others in the difference. However, the fourth speaker (296) was the only speaker who had a higher syllable-initial than syllable-final rate, showing 19% and 12%, respectively, although she had syllable-final rates on-par with the other speakers her age (143, 218). This may be due to the fact that she had the smallest overall number of tokens (N=320); Because syllable-initial reduction will never be more than syllable-final reduction (cf. Brown

2008; Lipski 2011; Schwegler et al 2010), we could expect that with a larger sample of tokens the proportion would level out, getting her more in-line with normal trends for reduction rates by syllable position.

Furthermore, combining her exceptionally high syllable-initial reduction rate with that of the other *mexicano* speaker, who had the lowest reduction rate in this position (only 4%), may provide insight into why speakers with an *español* identity were selected as being more likely to reduce. Given a greater speaker count, and a larger token count for speaker 296, I hypothesize that the expected direction of *mexicano* identity reducing at higher rates would occur. However, there are two alternate explanations which must be taken into consideration: (1) I mistakenly measured my speakers' ethnic identity *a priori*, with other ways of establishing ethnic identity being preferable (cf. Torres Cacoullos & Berry 2018); Or (2) Cíbola Spanish may historically display lower syllable-initial reduction rates compared to other dialects, for various reasons. More research would be required to further explore this finding.

Other Extralinguistic Factors: Here we briefly review the factors not yet covered:

Gender: Although males are expected to use stigmatized variants more (cf. Meyerhoff 2011; Tagliamonte 2012), and in past studies were found to reduce /s/ at higher rates (cf. Brown 2005b, 2004; Esparza 2017; Gutiérrez 1981; Torres Cacoullos & Berry 2018), in this case females reduced more than males (10% vs 9% SI, 19% vs 13% SF). What's more, gender was only found to be significant in the syllable-final position, and only for the univariate analysis. However, the single male speaker in this dataset is also the highest educated speaker in the sample, holding the equivalent of an Associates' degree, and is the only speaker to have moved away from Cíbola, living in the

Albuquerque metro area in adulthood. His greater educational attainment and more urban environment may have contributed to the results here. With a larger speaker sample, it may be the case that a different direction of effect would be seen, more in-line with expectations.

Age: While older speakers are expected to use non-standard features at higher rates (Meyerhoff 2011), prior studies of New Mexican Spanish have found no significant difference in /s/ reduction based on age (Brown 2005b, 2004). Although my results weren't significant in the multivariate analysis, they were in the univariate analysis for both syllable positions. Speakers in the Middle age group (40-60 yo) reduce at higher rates syllable-initially (12%) compared to the Older age group (60+yo, 4%), whereas it is the opposite syllable-finally, with the Older speaker reducing at higher rates (29%) than the Middle age group (13%). However, it is hard to say if this is a community-wide or individual pattern, as there was only one Older speaker.

Overall Education: The use of non-standard variants such as /s/ reduction is expected to be correlated with lower education levels (cf. Bills & Vigil 2008; Brown & Torres Cacoullos 2002; Esparza 2017; Espinosa 1911; Lipski 2011); However, my results were mixed, and both were only significant in the univariate analysis. Syllable-initially, speakers with middle ranges of education (3, 2) reduce at higher rates (19%, 11% reduction rates, respectively), followed by the speaker with the highest educational attainment (9%), and the speaker with the lowest amount of education surprisingly reduced the least (only 4%). Syllable-finally, the results were more as expected, with the two speakers with the lowest education rates (1, 2) reducing the most (29%, 14%), followed by the highest educated (4; 13%), with the second-highest education (3)

reducing the least (12%). However, these findings must be taken with a grain of salt, as each of the speakers categorically fell into each of the four education levels; Therefore, a larger speaker count will be necessary to see how these patterns bear out.

Geographic Locality: In past studies, rural localities have been seen to be correlated with greater reduction rates (cf. Brown 2005b; Espinosa 1909; Lipski 2011; Torres Cacoullos & Berry 2018), a result corroborated here, with the three Rural speakers reducing at higher rates than the one Urban speaker (10% vs 9% SI, 19% vs 13% SF). However, the fact that there is only one Urban speaker may also call this finding into question, and deserves further exploration.

Speech Style: Casual speech styles are expected to have more non-standard features than Careful ones (Labov 2001a, 1984; Lipski 2011; Meyerhoff 2011; Tagliamonte 2012, 2006). My study replicates Esparza's (2017) finding that style is not significant in multivariate analysis, but with a direction of effect as expected, with Casual speech reducing at higher rates than Careful speech in both syllable-initial (13% vs 9%, not significant) and syllable-final (24% vs 15%, significant in univariate) positions. Therefore, it might be the case that, as in Esparza (2017), Style does not play as big of a role in constraining sociolinguistic variables in this dialect. However, as reviewed in section 5.1.3, there is a possible interaction and/or overlap between Style, Phonological Environment, and Spoken in Isolation.

5.2 – Interview 292: Gary López

As mentioned previously, due to his unusually high reduction rates (SI 22% reduction, SF 59%; Overall reduction rate 41%), low token counts (N=181), almost exclusive preference for English, and near categorical patterning for several independent

variables, speaker 292 was removed from the primary analysis, as he can without a doubt be described as an outlier. Separate Rbrul analyses of this speaker produced largely mixed results, with almost no ordering in terms of magnitude of effect (only SI Word Class showed a range of effect that wasn't 0.998), with overlap or interactions in the data for several factor groups. Below is a summary of the significant factor groups by syllable position, along with the direction of effect from the Rbrul output:

- Syllable-Initial: **Frequency** (Extreme 52% → High 36% → Low 8% → Mid 0%); **Word Position** (Medial 27% → Initial 15%; vif >20); **Word Length** (Monosyllabic 36% → Polysyllabic 20%; vif >20); **Word Class** (Content 24% → Function 11%).
- Syllable-Final: **Frequency** (Extreme 83% → Low 56% → High 47% → Mid 43%); **Word Position** (Final 75% → Medial 31%); **Following Phonological Context** (Consonant 58% → Pause 74% → Non-high Vowel 50% → High Vowel 0%; Collinearity); **Morpheme Status** (Plural 100% → Lexical 61%); **Word Length** (Polysyllabic 56% → Monosyllabic 68%; Collinearity); **Word Class** (Function 82% → Content 56%); **Stress** (Stressed 62% → Unstressed 57%).

These findings overlap very minimally with the rest of the data, and where there is overlap, 292's reduction rates are markedly higher. Syllable-initially, the only significant factor groups which constrain all five speakers are Frequency (slightly different directions of effect) and Word Position; Syllable-finally, the overlapping factor groups are Following Phonological Context (slightly different direction of effect), Morpheme Status, and Word Length (Monosyllabics at 68% reduction have a lower magnitude than polysyllabics at 56%, indicative of an overlap).

It is difficult to determine with any degree of certainty why speaker 292 differs so much from the others. However, there seems to be a lack of systematicity in his behavior regarding /s/ reduction, which may be attributed to two interconnected factors.

First, 292 is the most passive Spanish speaker in the sample. He has a high level of comprehension, and a native-like pronunciation when he does speak; However, he grew up speaking primarily English and has no formal experience studying Spanish, nor does he use it regularly. He is familiar with the majority of the Spanish words prompted during the interview, although they are likely less-heavily weighted than their English counterparts within the exemplar cloud. What's more, as his interlocutor displays a higher reduction rate of /s/ in general, I posit that there was some degree of the interviewer's speech patterns affecting 292 in his own production, which can be further explored and refined in the future. This prompting effect could perhaps be viewed as either a priming effect (Brown 2008), or a type of linguistic accommodation (cf. Aaron & Hernández 2007; Esparza 2017), especially given the fact that the two interlocutors are old friends, and thus likely to align themselves.

Second, 292's extraordinarily high reduction rates can be viewed through a lens of identity expression. Similar to what was seen in Labov's (1963) Martha's Vineyard study, where some speakers tended to over-use traditional islander variables to index that identity, I hypothesize that speaker 292 is here overusing /s/ reduction in order to index and emphasize his *hispanidad*. This is because he is being interviewed by an old friend, a Spanish graduate student with a strong control of the language, who noticeably reduces /s/ in his speech. To posture himself as an *hispano*, speaker 292 (consciously or unconsciously) follows his friend's lead in reducing /s/ as much as possible, albeit less

systematically, to show his belonging within the Hispanic community, his ownership of the Spanish language, and his traditional "Spanish" identity.

This begs the question, is he truly an outlier within the Cíbola community, or a new norm for that time? He is the youngest speaker in the dataset, at 27 years old in the early 90s. Given the complex intersectional issues and changes that affected the community in the decades prior, it is possible that many young Cíbola Hispanics would pattern similarly in their usage of Spanish and associated sociolinguistic variables. Being a *cibolero* myself, I see many similarities between his use of Spanish and that of my own family of that generation. His uniqueness as a passive/heritage speaker of Traditional Spanish, representing a shift in demographics and social life for the *hispano* community, deserves further exploration and study, in order to establish the future of Spanish within this community in western New Mexico.

5.3 – Expressing Hispanic Identity & Language Attitudes

When I first envisioned this project, I wanted to explore the dichotomy between being "Hispanic" and being "Mexican," the negative connotations associated with being "Mexican," and the contradictory view that Mexicans speak "good" Spanish, while New Mexicans speak "bad" Spanish. Since I touched on the history of the identity conflict here in New Mexico already, and the racist, classist, & nationalist origins of the identifiers *hispano*/Hispanic/Spanish vs Mexican (as well as the contradictory nature of the usage of the word *mexicano* as an ingroup identifier), I will not go into it again here (cf. Bills & Vigil 2008; Gonzales 2005; Gonzales-Berry & Maciel 2000; Nieto-Phillips 2000; Nostrand 1992; Toribio 2010). However, it is worthwhile to remember the key role

names play in delimiting social structure and identity (Edwards 2009), and how the way we name things others ourselves from those groups, or those groups from us.

Unsurprisingly, given the lexical focus of the NMCOSS, there are very few mentions of Mexicans (not New Mexican *mexicanos*) in the section of the interviews that I analyzed. Generally speaking, if other cultures or groups were mentioned, as parts of stories or to make comparisons, the group most likely to be talked about are Anglo-Americans. However, a sense of otherness between the two groups can be gleaned from qualitative analysis of the discourse; For example, only one speaker mentioned the word 'Mexican' explicitly, in all cases in reference to linguistic differences:

(2) "…there's that kind of Spanish [on the radio], I can't relate to it, cause that's more like Mexican…muy different."
(292_1: 267-274s)

(3) "I know the Mexican [word], I know is café…but I know my parents do it different."
(292_1: 306-314s)

(4) "That [word] sounds Mexican to the max, to me I don't know."
(292_1: 2728-2730s)

Although perhaps not initially apparent, the examples here establish two things. First, there are two distinct Spanish-speaking groups in the area, the "Mexicans" and the group that 292 and his parents belong to, the unnamed "Hispanics/Spanish." Second, there is something perceptibly different in the way the two groups speak and their usage of the language that they share, which I would posit point to perceived social differences between the two groups themselves. This perception was the whole basis for my inspiration to start this project in Cíbola; Unfortunately, there was no other mention of the otherness of Mexicans within the interviews used here, so a more in-depth analysis of

linguistic differences and social distancing between the two groups will have to wait for another day.

With that in mind, some other generalities can be drawn here regarding more local language attitudes towards Spanish, which can be summed up into three areas: (1) The role of schools and other social institutions in restricting Spanish use; (2) The subsequent loss of Spanish language skills for all speakers and following generations; And (3) the will of the speakers to preserve their heritage language to the greatest extent possible.

First, most of the speakers learned Spanish as a first language, acquiring English later on when they entered the public school system. When talking about school, however, there is a theme that this was the first place where they experienced discrimination and ridicule for using their native tongue or in their acquisition of a second, as noted previously for New Mexico in general (cf. Bills & Vigil 2008; Nostrand 1992; Peña 2007b). For example, speaker 218 was the victim of shaming and bullying by other children for his pronunciation while trying to learn English, and underwent the all-too-common heritage situation where he was outperformed by an Anglo in a Spanish language contest at school, saying:

(5) "…le perdí a una gabacha que no sabía hablarlo, pero sabía lo que estaba en el libro."

"…I lost to a white girl who didn't know how to speak [Spanish], but knew what was in the book."
(218-1_A: 624-634s)

Although none of the speakers cite any overtly abusive treatment from schools for their use of Spanish, some talk about the primary usage of English in the workplace. Speaker

218 again speaks to the outlawing of Spanish at a past job, and discriminatory remarks when he was older:

(6) "…en un tiempo no te dejaban hablar en español en el trabajo. Y ese era muy dificultoso. Ahora cambiado, y puedes hablar, y no te pueden requerir de, que no hables tu idioma…Y todavía ahora muchos te dicen, pues, no sé lo que estás hablando. Y les dices tú, pues no estaba hablando contigo, estaba hablando…con esta persona."

"…there was a time where they didn't let you speak Spanish at work. And that was very difficult. Now it's changed, and you can talk, and they can't require that you don't speak your language…And still now many will tell you, well, I don't know what you're saying. And you tell them, well, I wasn't talking to you, I was talking…to this person."

(218-1_A: 508-549s)

Others simply didn't have the opportunity to try to speak Spanish in the public domain, because few people spoke Spanish within this area of their lives. For example:

(7)
Interviewer: "¿Y en el trabajo?
292: "Pure English. Puro inglés.
Interviewer: "¿No hablas poquito español, o como…?"
292: "No…Yo como siempre ha hablado con puro, con puro gabacho."

Interviewer: "And at work?"
292: "Pure English. Pure English."
Interviewer: "You don't speak a little Spanish [there], or…?"
292: "No…I've almost always spoken with only, only white folk."

(292_1: 219-230s)

Examples such as these set the stage for increased language loss; With fewer safe spaces where they can speak their language, more proficient speakers speak less Spanish, and less proficient speakers have fewer opportunities to learn it.

For this reason, many of the speakers only spoke Spanish in the home, and oftentimes only with their parents. This caused a noticeable generational shift which contributed to the loss of Spanish in the area (nowadays, only 21% of adults and 6% of

children speak Spanish at home; cf. Census Reporter 2019). When it came to the children and grandchildren of the speakers, they didn't speak Spanish, nor had the inclination to attempt to speak it during childhood:

(8) "Entienden, pero no lo habla [sic]…los responden en inglés."

"They understand, but they don't speak it…they respond to us in English."
(217-1_A: 558-565s)

This was spoken by an 82 year old woman about her children's and grandchildren's use of Spanish. From the point of view of people the same age as her children and grandchildren:

(9) "No, no hablamos casi mexicano, ¿yunó?"

"We don't hardly speak Spanish, you know?"
(296_1: 3505-3508s; 41yo)

(10) "The thing is nowadays no one speaks Spanish…I've just heard it from my parents and that's it, you know…I rarely speak it, and I've forgotten a lot of the words already."
(292_1: 1049-1053s, 2096-2101s; 27yo)

A loss of lexical items and general Spanish ability is a common theme for these interviews. Each of the speakers exercises varying degrees of bilingualism, although all but speaker 292 are very high functioning in both of their spoken languages. They use both in their daily lives, with English seeming to be more common in the public domain, and Spanish used mostly in the home. However, the trials that they had to go through in order to assimilate to mainstream society, among other social factors, allowed for a gradual descent of Cíbola Spanish into a moribund status; Not yet extinct, but not growing.

That being said, there is still some hope, in that most of the speakers made a conscious effort to use Spanish in their daily lives, even given a view of their language as being lesser or broken:

(11) "[Yo hablo] español, como lo hablan aquí en Nuevo México…[un] poquito mocho…lo aprendí como lo hablaban mis padres."

"I speak Spanish the way that they speak it here in New Mexico…a little broken…I learned it the way my parents would speak it."
(218-1_A: 153-176s)

What's more, many expressed a love and vitality of the language that belies the sentiment that New Mexican Spanish is a broken dialect. Even though speaker 218 thinks his Spanish is broken, and despite the fact that he chose not to teach his children Spanish, he says:

(12) "Yo quiero hablar español lo más que puedo, para seguir platicando mi idioma. Y no es más bonito que el español [sic]…Te puedes, explicar, más bonito, se me hace a mí, en español."

"I want to speak Spanish as much as I can, to continue speaking my language. There's nothing more beautiful than Spanish…You can, explain yourself more beautifully, it seems to me, in Spanish."
(218-1_A: 563-576s, 731-744s)

This sentiment, and a resolve to continue fighting for their language, is repeated by other speakers:

(13) "Yo no dejo mi, mi lengua, por…inglés…por nada."

"I won't abandon my, my language for…English…for nothing."
(217-1_A: 337-344s)

(14) "No lo uso hace tanto, tanto asina, no…Desde de comencé a trabajar…se me está rodeando más y más y más [el inglés]…[Pero] yo digo, éste es mi idioma…tengo que hablarlo."

"I don't use it as much anymore, no…Since I started working…I'm surrounded more and more and more [by English]…[But] I say, this is my language…I have to speak it."
(296_1: 289-305s)

The above two examples indicate a desire to preserve and pass on their language, and at least one speaker (218) has children who actively learned to speak some Spanish as adults. However, these conversations happened almost 30 years ago, and as can be seen by the results of the census, they were mostly unsuccessful in passing the language along. That being said, so long as there are speakers still alive who speak TNMS, there is still hope for this dialect; It would require greater amounts of documentation, and the joint effort of community members, linguists, applied linguists, educators, and activists, but it can be done.

5.4 – Interlingual Effects & Translanguaging Theory

Given the long-standing and relatively stable bilingual environment in New Mexico (cf. Bills & Vigil 2008; Torres Cacoullos & Travis 2018), I propose that a general usage-based interpretation of the linguistic situation here can be enriched through the application of the pedagogical Translanguaging Theory (cf. Otheguy et al 2018, 2015; Wei 2018). Translanguaging is defined in the literature as "…the deployment of a speaker's full linguistic repertoire without watchful adherence to the socially and politically defined boundaries of named (and usually national and state) languages…" (Otheguy et al 2015: 281), which "…reconceptualizes language as a multilingual, multisemiotic, multisensory, and multimodal resource for sense- and meaning-making,

[where] the multilingual [is] someone who is aware of the existence of the political entities of named languages and has an ability to make use the structural features [sic] of some of them that they have acquired," (Wei 2018: 22).

The theory of translanguaging treats the linguistic system as unitary in nature, contrary to the more mainstream ideology of there being two separate (but possibly linked) linguistic systems within the brain (cf. Otheguy et al 2018, 2015; Wei 2018). While the concept of a bi/multilingual is viable from a social and affective point of view, from a translanguaging point of view, the largest linguistic entity is the idiolect, or the set of features that is unique to each individual (cf. Otheguy et al 2018, 2015; Wei 2018). Through this sort of lens, a bi/multilingual is in no way qualitatively different from monolinguals, but only quantitatively so, in that they have a wider range of linguistic features to draw upon and deploy (cf. Otheguy et al 2018, 2015; Wei 2018). We say we speak a "language" because the process of naming a language ties us back to our group (cf. Edwards 2009); These group connections arise first, and are the result of perceived shared social, historical, ethnic, class, geographical, nationalist, political, etc, experiences (cf. Otheguy et al 2018, 2015; Wei 2018). Once a language is named for one or more of the above reasons, it is only later that the linguist weighs in on the debate, oftentimes lending credence to the idea of separate groups, due to a significant amount of linguistic overlap between the various idiolects which constitute one group's speech versus another. What's more, the perceived need to group languages together is most likely a result of European nationalism, and doesn't necessarily reflect linguistic (nor biologic) truths (cf. Otheguy et al 2018, 2015).

There are a number of past findings from bilingual studies which support a translanguaging point of view, including: (1) That language membership information is accessed before any semantic information (cf. Hoversten et al 2015); (2) That one language is never truly inhibited, even in a purely monolingual mode, with both languages remaining active at all times (cf. Kootstra 2015; Thierry & Wu 2007; Wu & Thierry 2010; Also Otheguy et al 2018, Amengual 2012); (3) That there are varying degrees of phonological overlap in Spanish/English bilinguals, regardless of language dominance or age of acquisition, an effect which is amplified in cognates (cf. Amengual 2012; Brown & Harper 2009); (4) That bilinguals have a single (read: unitary) lexicon, where all words are treated the same regardless of language membership (Poort & Rodd 2019); And (5) that bilinguals treat homographs and cognates in the same way cognitively that monolinguals treat homonyms and polysemous words (Poort & Rodd 2019).

While reinterpreting these findings from a translanguaging point of view requires some reworking of traditional bilingual theory (the major departure being that there is a single cognitive linguistic system, rather than two), it is worthwhile for two reasons. First, named languages have been historically used as weapons of discrimination, hierarchy, and oppression (cf. Otheguy et al 2018, 2015), which reduce individual speaker autonomy and creativity, and require us to make large generalizations for sometimes very diverse and disparate groups of people (cf. Wei 2018). Second, given their high degree of functionality as bilinguals, both historically and in the present day, working-class New Mexicans and their "Spanglish" or *mocho* speech practices have been discriminated against, punished, and stigmatized by members of other races and classes.

This, as seen throughout this and other studies, has had significant affective repercussions on this community, and has caused an unprecedented loss of the local mother tongue, Traditional Southwestern Spanish, viewed by prescriptivists as being tainted by an English influence, among other things. That's not to say that steps in this regard have not already been taken, in both bilingual studies and documentational linguistics. Instead, the adoption of a translanguaging point of view may further assist researchers, language advocates, and teachers to move past the rigid boxes that we've been shoehorned into, helping us to further normalize bilingual speech practices in this overwhelmingly monolingual country, and making explicit the contentious history associated with bilingualism within both academia and the public domain.

To conclude, I mentioned before the general complementariness of translanguaging to a usage-based theoretical framework; If we as bilinguals have a unified lexicon, where "language" membership is another detail stored in our episodic memory, that would imply that all linguistic material, regardless of "language" origin, would be stored together within a single exemplar cloud. This would be visible at the word level, where words which share various degrees of phonologic, semantic, orthographic, and affective similarity will be connected within the cloud. What's more, the phonemes emergent from these words would also be connected, so that all tokens of /s/ would be stored together in a single exemplar cloud, regardless of whether or not they were from English or Spanish. This ties back in the factor group Language Dominance: Depending on what language the speaker is dominant in, for example English, would imply that English tokens are more frequent than Spanish ones, and even if they are not, they may be more heavily weighted for sociolinguistic reasons, which can offset the

effects of frequency (cf. Sumner et al 2014). Therefore, the more English /s/ tokens that are present, the more likely the prototype for /s/ would be unreduced, an effect which may be magnified if someone has more of an English dominance than a Spanish one. Given that all of my speakers are high-functioning bilinguals, whose identity as New Mexicans is built on being bicultural and bilingual (cf. Nostrand 1992), it is my opinion that a joint usage-based/translanguaging perspective is one that most accurately and humanly captures the nature of their struggle, and provides the greatest opportunity to preserve and foster a resurgence of this disappearing "dialect."

CHAPTER 6

CONCLUSIONS & FUTURE STUDY

Within the course of this study, several things have been established. First, it was found that linguistic variables condition the rate of /s/ reduction within Cíbola Spanish to a much greater extent than any of the extralinguistic variables tested here. These linguistic factors include Spoken in Isolation, Frequency, Word Position, Preceding & Following Phonological Context, Morpheme Status, Word Length, Lexical Stress, and Language Dominance. This is in comparison to the single extralinguistic factor found to be significant in multivariate analysis, Identity. Second, we reviewed the fact that Cíbola Spanish patterns differently for this sociolinguistic variable than other related New Mexican dialects, as well as geographically proximate dialects from Mexico and Texas. This reinforces the need to study this unique group of speakers in-depth, the remnants of their own separate sub-dialect within Traditional New Mexican Spanish (cf. Bills & Vigil 2008). What's more, this linguistic study should also be carried out socially and ethnographically, given the community's history of shifting demographics, language loss, dialect/language contact, and socioeconomic class changes in this rural community, all of which have undoubtedly played a role in shaping not only the speakers, but also the language spoken. Third, we have reviewed some of the speakers' language attitudes relating to NM Spanish, their views of it as being deficient, and their tenacity in speaking and preserving this dialect for future use. Finally, I have proposed that we approach the problem of language loss from a joint and sociolinguistically-informed

translanguaging/usage-based theoretical standpoint, which will form the basis for my own personal research in the area, and may help lay the groundwork for linguistic revitalization within Cíbola on a larger scale.

With that said, this project is not without its shortcomings. For present purposes, I will review three which I believe weigh heaviest in my analysis. First and foremost, in my opinion what detracts the most from the study, is the issue of the 'kitchen sink effect' (cf. Tagliamonte 2012, 2006). In other words, I had way more independent variables than I probably needed. The issue with the kitchen sink effect is that it has been shown to produce less-than-optimal results within the variable rule program, with analysis of no more than six factor groups being recommended in the literature (Tagliamonte 2012; On the other hand, the Rbrul user's manual claims that it can operate with no limit on the amount of factor groups, cf. Johnson 2021b). Nevertheless, to restrict the kitchen sink effect in future studies, of the nine linguistic variables found to be significant in my multivariate analyses, I would likely conduct future tests using only **Spoken in Isolation** (although more work is needed to determine if it is an overlap or masked effect for style and/or phonological environment), **Frequency**, **Preceding & Following Phonological Context**, **Morphemic Status**, and **Lexical Stress**. I would incorporate Word Position into the design of the study itself, given a greater speaker and token count, and would remove Length and Language Dominance from primary analysis, due to some of the issues mentioned in their respective sections. Namely, the overlap with Frequency for Word Length, and the general unwieldiness of my methodology for quantifying Dominance.

Second, I would forgo a more traditional sociolinguistic analysis, as done here, in favor of something along the lines of the PCA of Torres Cacoullos & Berry (2018). As mentioned previously, this has its benefits in that it avoids grouping the speakers together *a priori*, in favor of examining their linguistic behavior first, before finding social correlations. This would require a greater speaker count, as well as an analysis of several linguistic variables, but it has the potential to alleviate some of the issues we saw in the Extralinguistic Variables discussion, in that it (1) gives us a more holistic view of the social underpinnings of a speech community's linguistic behavior, and (2) would greatly benefit an ethnographic and sociolinguistic analysis of identity labels and formation.

Third, and perhaps the most easily rectifiable shortcoming, is that instead of drawing my data from the first hour of the interview (at least for the NMCOSS), I would likely either draw from the second hour of speech, or only the free conversation portions. This is to try and encourage a more relaxed and vernacular speaking style, expected to be correlated with higher usage of the linguistic variable. And because Style was not found to be significant as a standalone variable anyways, its removal would likely be of little consequence.

Finally, what is the future for analysis of this community? First of all, I propose the formation of a modern translanguaging corpus for Cíbola, not only of the named dialect "Traditional New Mexican Spanish," but of all viable idiolectal groupings within the region, including the named languages Mexican Spanish, English, local indigenous languages (Navajo, Zuni, & Western Keres), or any mixed idioms (i.e. Spanglish) thereof. A well-formulated corpus of sociolinguistic data could provide years of material for potential linguistic analysis, which may include further studies of /s/ reduction,

phoneme duration, vowel variation, and more in-depth studies relating to frequency, among other topics. What's more, it would set the stage for an extensive ethnographic and sociologic survey of the region, as it records the history, worldview, and culture of the local populace, and allows us to use the data collected here to contribute to our understanding of humanity as a whole, and the situation in the Borderlands in particular. And finally, the formation of a corpus such as the one proposed here creates a legacy for the people who contributed to it. From their time and energy generously given, the people of Cíbola, along with linguists, applied linguists, anthropologists, teachers, language advocates, and historians, can create learning materials, oral histories, and a plethora of various other resources and tools, which may help to preserve and propagate the culture, history, language, and legacy of the region for generations to come.

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