The Pennsylvania State University

The Graduate School

SPANISH RHOTIC VARIATION IN COROZAL TOWN, BELIZE

A Dissertation in

Spanish

by

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Submitted in Partial Fulfillment
of the requirements
for the Degree of

Doctor of Philosophy

May 2022

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ABSTRACT

When compared to knowledge of Spanish dialects around the world, the Spanish spoken in northern Belize appears almost entirely unstudied by linguists. Despite this paucity of attention, these dialects should be of greater interest for many reasons. First, northern Belize has continuously served as a cultural and linguistic crossroads from the pre-Colombian era to today. This includes contact at various times between groups of English colonists, indigenous and Spanish speaking Mayans, Spanish speaking Mexicans, and several distinct ethnic groups descended from free and enslaved Africans. Second, Spanish speakers in the northernmost city of Corozal Town, where the interviews in the present work were conducted, face unique linguistic pressures from both English and Mexican Spanish.

The few previous studies examining Belizean Spanish highlight the use of a retroflex rhotic variant as the most salient linguistic feature. Many of these studies focus on the effects of contact between Spanish and English, assuming that the retroflex is somehow connected to this phenomenon. Breaking with this assumption, the present study provides the first variationist account of linguistic and social factors constraining use of the retroflex in the Spanish of Corozal Town. Importantly, this work contextualizes findings within broader patterns of rhotic variation and change in Spanish and across languages.

Results demonstrate linguistic factors such as position in word affecting variation, with word initial and word internal syllable final positions demonstrating highest usage rates of the retroflex. Further analysis reveals that surrounding phonetic context plays a role for the variation in both positions, with preceding vowels and following front vowels favoring the retroflex in word initial position and following alveolar or dental consonants favoring the retroflex for word internal syllable final rhotics. Interestingly, findings for word internal syllable final position mirror those

found for non-standard rhotics in other dialects of Spanish, including ones not in a language contact situation involving English. Finally, word frequency is found to have no effect on retroflex use. Overall, linguistic factors suggest that the retroflex is not a current locus of change in this variety. Furthermore, the results support a reconsideration of the canonical phonological contrast in Spanish rhotics.

The impacts of social factors are best understood in combination and in light of linguistic attitudes, revealed through content analysis of the sociolinguistic interviews. Analysis of age and gender shows that older women are the stronghold of the retroflex variant. The effects of contact with nearby Mexican Spanish are also tested, revealing that speakers with frequent contact may be adopting the canonical trill rhotic in initial position. This suggests the trill as a possible site of change in progress and highlights the relative prestige of Mexican Spanish for speakers in Corozal. Further findings and implications are also discussed.

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ACKNOWLEDGEMENTS

This dissertation has resulted from the input, generosity, and support of many people including colleagues, friends, and family. I could never adequately thank all of them, but I would like to acknowledge some people that played an especially important role in my success.

First, to my dissertation committee, especially my advisor Rena Torres Cacoullos. Without her guidance and mentorship, this project would not have been possible. The countless hours discussing and revising my work were always appreciated and contributed immeasurably to my development as a researcher.

Second, to my fellow graduate students in the Spanish department. From long days in class to sleepless nights in the office, and even a global pandemic, we finally made it. Working with and learning from all of you has been a source of academic and personal inspiration. A special thanks is owed to Sonya Trawick, who was always willing to provide insightful comments on my work or collaborate on a project. I consider it a privilege to count her as a colleague and a friend, and I will forever appreciate her contributions to my work.

Third, to the people of Corozal Town, Belize and the participants that so graciously shared their time and fascinating stories with me. I owe them a debt of gratitude that could never be repaid. Again, a special thanks is in order. This time to Ms. Adela Pederson Vallejos, who served as a community contact, local guide, interview scheduler extraordinaire and, most importantly, a friend. Her work as President and Founder of the non-governmental organization To'one Masehualoon, which seeks to preserve Yucatec Mayan language and culture in Corozal, is both admirable and impressive. Her care for and knowledge of the local community is unparalleled and the opportunity to travel with her as she worked throughout the community was nothing short of an honor.

Finally, thanks to my family for their endless support during my entire time at graduate school. Whether helping me move apartments, visiting on breaks, or chatting in video calls, the time you all spent supporting my work did not go unnoticed and was appreciated more than I can express. I would never have made it this far or achieved the level of success I have without all of you.

Chapter 1: Introduction

1.0 Rhotics, variation, and change

The class of sounds referred to as 'rhotics', or r-sounds, presents unparalleled phonetic heterogeneity and persistent challenges in terms of phonological categorization. While most classes in phonetic theory can be linked by common articulatory or auditory properties, the sounds usually included in the term rhotics maintain no such connection. Rhotic sounds may be produced in a variety of places throughout the articulatory space from dental and alveolar to post-alveolar, velar, and uvular. Manner of articulation within the class is similarly dispersed including trills, taps, and approximants, among others. Thus, as noted by Ladefoged and Maddieson (1996: 215) "an issue for phoneticians is whether the class membership is based only on synchronic and diachronic relationships between the members of the class".

In terms of phonological categorization, the class presents somewhat more unified behavior. For example, no matter their phonetic character, rhotics tend to have an affinity with surrounding vowels. This is demonstrated by the tendency of rhotics to have syllabic variants and to combine in myriad ways with surrounding vowels (Ladefoged and Maddieson, 1996: 216). The relationship between rhotics and vowels is evident in languages such as English, German, Swedish, French, or Danish, especially when comparing different dialects of those languages (i.e., 'rhotic' vs. 'non-rhotic' dialects of English). Additionally, across languages with consonant clusters, rhotics tend to occupy positions close to the syllable nucleus (Lindau, 1985). Perhaps the most important phonological evidence of the relation between rhotics is the tendency for members of the class to alternate with one another. While phonological contrast between two or three rhotics is relatively rare, only occurring in about 18% of world languages, languages with a single rhotic phoneme display wide variation. Usually, this includes variation in place or manner of articulation

based on position in the word. In sum, the phonetic variability and fluid phonological relationships found within the rhotic class make it an especially intriguing subject of investigation.

This dissertation investigates rhotic variation and change in an understudied variety of Spanish, spoken in Corozal Town, Belize. Specifically, it explores the linguistic and social factors that constrain the use of a retroflex rhotic variant. It examines how patterns of variation in Corozal Spanish[1] compare to rhotic use in other languages and other Spanish dialects. Additionally, the possibility of an incipient change in the rhotic system of this dialect is considered. Results of these analyses provide insight on broader questions such as cross-linguistic trends in rhotic variation and change, the social structure of language variation, and the nature of phonological contrast in Spanish.

1.1 Corozal Town, Belize and variation in Spanish rhotics

The research site of Corozal Town, Belize presents a uniquely intriguing site for the examination of Spanish and rhotic variants. This area has been a linguistic and cultural crossroads for many centuries. First, it served as the capital and a principle economic site for Mayan tribes stretching from the Yucatan Peninsula through much of present-day Central America. Indigenous people successfully resisted repeated conquest attempts from both the British and the Spanish beginning in the 16th century until the British Crown officially established a colony in 1862. From the beginnings of conquest, the area now encompassed by northern Belize was inhabited by various

[1] Corozal Spanish will be used to refer specifically to the Spanish included in the data set for the present dissertation, which was exclusively collected near Corozal Town. This contrasts with the more general terms, Belizean Spanish and Northern Belizean Spanish, used here and in other studies that may or may not include speakers from Corozal Town.

ethnic and cultural groups including free and enslaved Africans, British colonists and pirates, and Mayan indigenous people.

While Spanish speaking populations remained relatively sparse during the early years of conquest and settlement, a mass migration occurred shortly before the official establishment of the colony that permanently shifted the demographic balance. As a result of the Yucatan Caste War, which began in the late 1840's, thousands of Spanish speaking indigenous and mestizo people emigrated to the territory now occupied by Corozal District. Spanish speaking communities of Yucatec Mayan descent still mark the area, and inhabitants of these communities make up some of the interviewees in the present work.

Thus, for more than 150 years, groups of people speaking Spanish, English, Yucatec Mayan, Garifuna, and Belize Kriol (an English-based creole), have lived together in and around Corozal Town. Despite a history of demographic, cultural, and linguistic fluctuation in the region, Spanish and more standard forms of English remain the most important languages in modern day Corozal. In fact, 2010 census data revealed that around 85% of people in Corozal self-reported proficiency in Spanish, 30 percentage points higher than the overall national average. As for standard English, there is a slight lowering of self-reported proficiency, with 54% in Corozal and a 63% national average. While this shows a favoring of Spanish at the community level, the influence of English as the language of public life is undeniable and certainly recognized by the speakers themselves.

An understanding of historical and cultural dynamics in the region demonstrates why many features of Spanish in Belize have been attributed to contact with English. This is especially the case for the retroflex rhotic as no other linguistic feature of Belizean Spanish has been more often linked to English. Furthermore, all previous analyses of Spanish in northern Belize recognize the

retroflex rhotic as the most salient and most interesting aspect of these dialects. Combining the long history of language contact with the known predisposition of many early linguists to ascribe language contact as the source of uncommon features, such a perspective is unsurprising. However, this dissertation aims to cast new light on this question through a principled analysis of the effects of contact and by examining possible internal sources of rhotic variation and change. With that goal in mind, the following section outlines the major research questions and basic methodology of the study.

1.2 Methodology and Research Questions

Most previous studies of Belizean Spanish include dialect surveys with elicited speech (e.g., Cardona Ramirez, 2010) or qualitative analysis of interview data (e.g., Hagerty, 1979). While a few recent studies have included quantitative analysis of conversational speech (Balam, 2013; 2016; Fuller Medina, 2016), these tend to focus on various effects of language contact such as code-switching. In contrast, the present study analyzes spontaneous unilingual Spanish speech. The data were collected over a period of two weeks using the sociolinguistic interview method (Labov, 1984: 33). Crucially, this method encourages use of a speaker's vernacular – the ideal speech style for the analysis of variation.

As for the method of analysis, this dissertation employs a variationist approach. The basic assumptions of this theory include that variation is inherent to language, which displays structured heterogeneity based on both language internal and external (i.e., social) factors. This stands in opposition to earlier linguistic theory that assumed "free variation" – the idea that variation is not constrained or patterned based on any factors. Additionally, variationist linguistics emphasizes the importance of speech communities as the unit of study, given that language use at this level is

assumed to be "more regular and systematic than the behavior of any one individual" (Labov, 1972:124). Thus, the present study examines how distinct linguistic and social factors affect the variable patterns of rhotic use to answer the first main research question of this dissertation.

Research Question 1: Which linguistic and social factors constrain the use of retroflex rhotics in Corozal Spanish?

In addition to exploring patterns of variation, this dissertation seeks to understand how rhotic use may have changed over time and possible patterns of ongoing or future change in the dialect under study. As mentioned above, much of the research on Belizean Spanish varieties highlights the impact of English in general and specifically with regard to the retroflex rhotic. Such studies do not offer quantitative evidence of the link between English and the retroflex rhotic in Belizean Spanish. Instead, these studies seem to apply a common, though highly dubious, assumption "that change is an almost inevitable result of language contact" (Poplack and Levey, 2010). Thus, the current study uses comparisons to other Spanish varieties and broader knowledge of cross-linguistic rhotic variation patterns to bring a more principled analysis to the following research question:

Research Question 2: Is the retroflex rhotic a current locus of change in Corozal Spanish, or is it in stable variation?

The first two questions aim to provide specific information regarding patterns of variation and change in the rhotics of Spanish in Corozal Town, Belize. Answers to these questions provide important insight into broader theoretical issues relating to rhotics. As described above in Section 1.1, rhotic sounds present interesting challenges for the fields of phonetics and phonology. Spanish dialects are especially intriguing for the exploration of related questions given that they maintain two distinct rhotic phonemes, a relatively rare configuration across languages. However, previous

studies have questioned the exact nature of this phonemic contrast (e.g., Hualde, 2004). An even greater number of studies undeniably demonstrate the unstable phonetic nature of the Spanish trill. Thus, the third research question connects the specific findings for Corozal Spanish to broader trends within the Spanish rhotic system.

Research Question 3: What implications do the findings of this dissertation have in the broader context of variation in Spanish rhotics?

Finally, this dissertation examines possible impacts of language contact and turns to a more exploratory analysis of other possible factors affecting the use of different rhotic variants. First, it addresses the likelihood of English as the source of the retroflex variant. This is accomplished through detailed comparisons between variable patterns in the current data and studies of rhotics in other Spanish dialects. Analysis of the social, historical, and cultural dynamics of the region provide additional means of assessing the origins of the retroflex variant. With these goals in mind, the first part of the final research question is formulated as follows:

Research Question 4A: Given previous claims regarding the effects of contact with English, what does the evidence provided by this data suggest about a possible link between language contact and changes in the rhotic system of Corozal Spanish?

Examination of the data revealed that English may not be the only outside source that could affect the use of rhotics in the Spanish of Corozal Town. Anecdotes from interviewees, observations during field work, and analysis of the history and culture of the region indicate that Mexican Spanish, as spoken in nearby Chetumal, Mexico, likely serves to influence the speech of at least some residents of Corozal. As explored further in Chapter 3, many speakers view Mexican Spanish as a more prestigious variety. Importantly, the retroflex rhotic is a highly salient feature to these speakers, and they often mention it explicitly as at least part of the rationale for assigning

lower status to Belizean Spanish. Thus, to further explore the impacts of this social and linguistic connection, the following research question is examined:

Research Question 4B: How have prolonged contact with Mexican Spanish and the distinct social status of these dialects contributed to possible change?

Each of the four research questions provides information on different aspects of the variation and change involved in Corozal Spanish rhotics. In combination, they also serve to further explore the theoretical implications of the observed variation. The following section briefly outlines the contributions of each chapter to the overall dissertation.

1.3 Chapter Overviews

Chapter 2 examines reported patterns of rhotic variation and change found across languages, within Spanish dialects, and within Spanish in Belize. This includes background on myriad studies across Germanic and Romance languages that evince the general principles of widespread phonetic variability, propensity to change, and the indistinct phonological nature of many rhotics. The patterns of variation in Spanish dialects and Belizean Spanish offer crucial points of comparison for the present results. Overall, this detailed analysis of rhotics provides the necessary context through which the results of the present dissertation can be explained.

Much as Chapter 2 provides background on linguistic factors that may affect variation, Chapter 3 examines the intricate social dynamics that play a role in determining rhotic use. Specifically, it explores the historical, cultural, and social factors that impact the linguistic outcomes observed in Corozal Town, Belize. This includes a review of regional history as well as an examination of present day social, cultural, and political dynamics. Additionally, Chapter 3 describes the data collection and corpus constitution, and includes a content analysis of the interviews to better understand the thoughts and perceptions of the interviewees who contributed

the data. This fine-grained analysis of linguistic and cultural attitudes reveals factors that may not otherwise be evident, such as frequency of contact with Mexican Spanish and the possible outcomes resulting from social perceptions of dialect differences.

Chapter 4 moves to the analysis of linguistic factors affecting rhotic variation. Preliminary analysis focuses on the position in the word, which also dictates Spanish rhotic use in canonical varieties. Based on this analysis and previous studies, the main linguistic factors are tested on word initial and word internal syllable final rhotics. These factors are surrounding phonetic context and frequency measures. Findings of this analysis are placed within the broader context of Spanish rhotic variation and used to examine possible changes in the rhotic system.

Chapter 5 analyzes the social factors impacting variation and explores possible patterns of change. Factors examined include basic demographics, such as age and gender, as well as the level of contact with Mexican Spanish. To better understand the impact of these social factors, the implications of speakers' membership in multiple groups is also considered. Overall, results of this chapter are utilized to highlight the sociolinguistic variation of rhotics in Corozal Spanish and examine a possible change in progress impacted by perceptions of social prestige in local language varieties. Finally, Chapter 6 provides a summary of results as well as concluding discussion points and revisits the research questions presented above.

Chapter 2: Phonetics, phonology, and rhotic variation

2.0 Introduction

Extensive variation within the class collectively known as rhotics (r-sounds) has been demonstrated across many languages. In fact, this class encompasses a uniquely wide range of sounds. This includes, for example, sounds with alveolar, retroflex, and uvular places of articulation as well as approximant, tap, and trill manners of articulation, among others. In other words, phonetic variability has been noted as "a particularly salient characteristic of rhotics" and members of the class cannot be reliably identified by any single phonetic correlate (Chabot, 2019:5).

In addition to phonetic variation, cross-linguistic phonological analysis reveals the difficulty of capturing the rhotic class within phonemic categories. Most languages are described as containing only a single rhotic phoneme, with less than one-fifth of the world's languages contrasting between two or three (Ladefoged & Maddieson, 1996). However, the allophones associated with a single phoneme are often quite numerous with each being characterized by distinct articulatory properties. For example, in languages such as Assamese, Munda, or Temne, a single rhotic phoneme manifests in approximant, trill, and flap allophones (Hall, 1997:108). These facts have led to the conclusion that "the overall unity of the group seems to rest mostly on the historical connections between…subgroups, and on the choice of the letter 'r' to represent them all" (Ladefoged & Maddieson, 1996:245). Despite the seemingly irreconcilable differences between rhotics both within and across languages, there remains a general consensus that categorizing sounds as rhotics still serves as a meaningful distinction (see Wiese, 2001; Chabot, 2019 for further discussion).

Perhaps due to their phonetic variability and phonological complexity, rhotics have been implicated as important factors in variation and change across languages such as German, Portuguese, Spanish, and many others. Not only do rhotics have a particularly high propensity to change in their own realizations but they also play a major role in a disproportionate number of vowel changes (Denton, 2001). Several factors have been claimed to facilitate this tendency toward variation and change. For example, one hypothesis regarding the spread of uvular [ʀ] through Western European languages cites social factors such as the prestige of speech styles associated with French aristocrats. In other cases, socio-economic status has been shown to play a role in synchronic British English rhotic variation (Foulkes & Docherty, 2001). Aside from social influences, the simple fact of the underlying phonetic instability of rhotics has been cited as a driving force behind their propensity to change (Schiller, 1999). No matter the underlying reason, the propensity toward change is obvious when analyzing rhotics from a cross-linguistic perspective.

Given the extensive variation, heterogeneity, and abundance of changes associated with rhotics, it is crucial to better understand findings of a range of previous studies before analyzing results of the present work. Reviewing these studies provides important insight for discerning linguistic and extra-linguistic factors affecting specific instances of variation and change. Thus, the following section of this chapter (2.2) explores patterns of rhotic variation and change from selected languages. Sections 2.3 and 2.4 provide similar analyses relating more specifically to various Spanish dialects and Belizean Spanish, respectively. This chapter examines both phonological and phonetic aspects of rhotic systems in various languages, thereby providing the necessary context for understanding results for Corozal Spanish presented in Chapters 4 and 5.

2.1 Cross-linguistic rhotic variation and change

Studies demonstrating variability in rhotic production often provide insight on the diversity of mechanisms underlying variation and change across languages. As mentioned above, understanding such findings provides important context for the results of this dissertation. Specifically, comparing or contrasting rhotic use in other languages separates results that are evidence of novel patterns, and therefore may be contact induced, from those that fit within broader trends. With that goal in mind, this section examines rhotic variation and change in both Romance and non-Romance languages.

Beginning with non-Romance languages, one analysis of German (Wiese, 2001) centers on a recent change from trilled alveolar [r] to a uvular approximant [ʁ]. This change took effect around the time of the Second World War. Interestingly, Wiese notes that it is reflected particularly well within the standards of pronunciation for theater and film, with actors in the pre-war period preferring the alveolar trill and post-war actors opting for the uvular variant (2001:14). Thus, this change in the accepted norm of rhotic pronunciation occurred within the relatively short time period of a couple generations at most. With regard to broader patterns of German rhotic variation, Wiese (2001:14) notes that, despite the voiced uvular approximant standard, nearly all known variants of /r/ occur within German dialects. Extrapolating from this observation, he argues that "changes in the pronunciation are the *expected event*: nothing in a sound system of a language is as elusive as the pronunciation of the r-sound" (Wiese, 2001: 14, emphasis added). Surely, as will be demonstrated by the following studies of other languages, this argument holds in a larger cross-linguistic perspective as well.

For example, studies of other Germanic languages spoken in Europe such as Dutch and the closely related Scandinavian languages (Swedish, Norwegian, and Danish) all present

considerable rhotic variation. Torp (2001) investigates the spread of dorsal rhotic variants in the Scandinavian languages. In Danish, the only standard pronunciation is a dorsal rhotic, though reduction and vocalization are also quite common in all but initial position. On the other hand, in Swedish and Norwegian, the apical rhotic is the most frequent. However, dialectal variation in the Götaland region of Sweden results in the complementary distribution of dorsal and apical variants. Overall, findings indicate that, despite the close relation and practical mutual intelligibility of these languages, rhotic distribution and use remain considerably varied.

Perhaps an even greater amount of variation can be found in different varieties of Dutch. In fact, it has been claimed that nearly all rhotic variants attested in the languages of the world appear in Dutch, even in the standard language (Van de Velde & Van Hout, 1999). In order to test this assertion, an experimental study was conducted in an attempt to elicit normative realizations (Verstraeten & Van de Velde, 2001). Subject pools accounting for several social factors were recruited from both the Netherlands and Flanders to assess the range of possible socio-geographic variation in major Dutch speaking areas. Despite the formality associated with the reading task, ten different rhotic variants were produced by speakers from the Netherlands, while those from Flanders produced seven distinct rhotics. Accounting for overlap, there were eleven total unique variants between the groups. These included rhotics with alveolar, retroflex, uvular, and glottal places of articulation as well as manners ranging from tap and trill to approximant and fricative. Other studies of rhotics in specific varieties of Dutch include van Oostendorp (2001), which specifically explores post-vocalic /r/ in Brabant and Limburg Dutch, a variable that has also been examined in varieties of English.

One of the most well-known of all rhotic variation studies is Labov's (1966) work on rhoticity in New York City. This study focused on the variable realization of post-vocalic rhotics

in speakers of varying social classes, finding higher rates of rhoticity in the casual speech of the upper-class. Another influential finding of this work was the "crossover effect" in which speakers between working and middle class had higher rates of rhoticity in formal elicitation tasks, despite low rates in casual and interview speech. The seminal nature of this work inspired a multitude of other studies of rhoticity in American English (e.g., Becker, 2009; Nagy & Irwin, 2010; Mather, 2012; among many others). Additionally, rhoticity and other aspects of rhotic variation have been explored in both British English (e.g., Foulkes & Docherty, 2000, 2001; Llamas, 2001) and Scottish English (e.g., Lawson, Scobbie, & Stuart, 2011; Schützler, 2013; Dickson & Hall-Lew, 2017). The results of these studies demonstrate a broad range of variation not only in the types of rhotic variants attested but also in the social and linguistic factors that constrain their usage.

Romance languages present an equally diverse range of rhotic variation when compared to Germanic languages. For example, Brazilian Portuguese (BP) dialects vary widely in their use of rhotics. In linguistic studies, all non-canonical variants have traditionally been grouped under the label "retroflex rhotics", despite some of these realizations not actually involving retroflection (Rennicke, 2011:150). So called retroflex variants have been attested in a variety of studies and appear at differing frequencies in nearly half of all Brazilian states (see Noll, 2008; Leite, 2015 for dialect specific analyses). Though most often occurring in syllable coda position, dialectal variation allows for its use as the second member of a consonant cluster or in intervocalic position (Almeida, 2004; Rodrigues, 1974). While the existence of these rhotic variants has been confirmed across Brazil, their origins still remain rather opaque.

Rennicke (2011) investigates rhotic variation specifically within BP dialects found in Minas Gerais and explores theories regarding the origins of these variants. One early attempt at explaining the presence of a retroflex involved language contact, specifically with the indigenous

languages of Brazil. Other proposals relating to contact have considered possible influence of African languages or American English. However, none of the proposed external sources of change satisfactorily explain the presence of non-standard rhotics in BP (see Head, 1987 for further discussion of these proposals).

Therefore, other research has sought to explain BP retroflex rhotics through language internal developments. One analysis focuses on the convergence of syllable coda /r/ with the already posteriorized /l/ in BP (Head, 1987). Given that the posteriorized liquid variant [ɬ] existed in BP, it is argued that the posterior movement of /r/ to that position was blocked. Thus, the rhotic took on a retroflex articulation. The assumption that the rhotic would initially change to a posteriorized [ɬ] is supported by the fact that the alternating relationship between the liquids of BP in syllable coda position (e.g., alto →arto) is well attested.

Another work also emphasizes the relationship between /r/ and /l/ in syllable coda position in the development of a retroflex in Minas Gerais and São Paulo (Cohen, 2006). This analysis proposes the possible internal development of BP rhotics from /r/ → retroflection → *vocalization → ∅, with vocalization as a possible step before deletion. Finally, Rennicke (2011: 154) cites various linguistic atlases of Brazil that demonstrate the variety of possible outcomes associated with rhoticism of /l/. Again, rhoticism has been associated with popular BP and is shown to relate to educational level and register as opposed to geographic boundary. However, the precise outcomes associated with rhoticism do follow along geographic dialectal boundaries. As described in a variety of atlases of BP, retroflex rhotics frequently appear in this context in the speech of western Paraná, southern Minas Gerais, and Mato Grosso do Sul. To the north, retroflex variants occur with decreasing frequency across northern Minas Gerais, through Bahía, Sergipe, and Paraíba. The diminishing use of retroflex rhotics is associated with an increase in apical and velar

variants. Thus, while many erroneous language contact scenarios have been proposed, most evidence points to an internal evolution of rhotic variation in BP. This variation seems to be bound both by geography, phonological principles, and widespread processes such as rhoticism of liquids.

French provides another example of a Romance language that demonstrates considerable rhotic variation. Late 19th and early 20th century descriptions identified no fewer than six regional variants within France alone (see Demolin, 2001 for review of French rhotic variants). Studies and descriptions in the 21st century (Walker, 2001; Russell Webb 2004, among others) note that normative French varieties, or those without significant regional characteristics, employ fricative or approximant variants with velar or uvulo-velar place of articulation, which may be voiced or voiceless. Use of these variants is often constrained by position in the word, with fricatives being more common in initial position, approximants more common as codas, and considerably more variability in intervocalic position (Russell Webb, 2009: 89).

Varieties of French outside of France also demonstrate rhotic variability. For example, three major varieties of Belgian French manifest four main rhotic allophones, alternating between voiced and voiceless forms of a uvular trill and a uvular fricative (Demolin, 2001:65). Four other allophones with far lower frequency were also observed which included both velar and alveolar places of articulation. While these allophones seem to be conditioned at least partly by syllable position, further study is needed to confirm exactly which factors may constrain this variation in Belgian French.

In Quebecois French many studies have already investigated specific social and linguistic factors impacting rhotic variation and change (Sankoff, Blondeau, & Charity, 2001; Sankoff & Blondeau, 2007; among others). The main focus in most studies is the process of change resulting in the reduction in frequency of the apical variant [r] in favor of the dorsal [R]. Concerning social

factors, Cedergren (1988) succinctly explains the those with the most salient impact on the change in early studies include age, seen as the most important factor, followed by social class, gender, and education.

In order to further explore the effects of age, Sankoff and Blondeau (2007) focus on the role of individual speakers in this change. Tracking the use of both variants in the same speakers over time, they find that the change is fueled by younger speakers adopting the dorsal variant and not due to speakers changing their variant selection in adulthood. In fact, they argue that the general pattern is one of relative stability after adolescence, with many speakers adopting a single variant and using it categorically or near categorically (Sankoff & Blondeau, 2007: 577). They note that variable speakers tend to maintain the apical rhotic in initial position whereas the incoming dorsal variant seems to appear first in coda position (579), suggesting a role for syllable position in the variation and change. Further exploration of allophonic variation can be found in other studies of French in Montreal and the wider Quebec region, which also attest up to six different rhotic realizations (e.g., Tousignant, 1987; Sankoff & Blondeau, 2008; and Milne, 2012).

Finally, Table 2.1 provides a summary of cross-linguistic trends in the study of rhotics. The far-left column provides the specific language examined and cites the study. The middle column provides information regarding the type of rhotic found in the language. The far-right column provides further insight on the importance of each key finding.

As demonstrated in this section, a range of languages reflect the indeterminate nature of the rhotic class by manifesting several variants synchronically and notable change diachronically. Further complicating the picture is the fact that this variation and change is conditioned by distinct social and linguistic factors, even within different dialects of the same language. Thus, before analyzing Corozal Spanish, it is crucial to understand several elements of Spanish rhotics including

the standard phonological organization of rhotic variants as well as the phonetic variation observed across other dialects. The following section provides an overview of these topics giving further context for the present study.

Table 2.1: Summary of rhotic studies across languages (excluding Spanish)

Language (Study)	**Rhotic variant(s) or process**	**Key findings/arguments**
German (Wiese, 2001)	Change from alveolar trill > uvular	• Nearly all known rhotic variants appear in German dialects • Given underlying variability, "change in rhotics is the *expected* event"
Scandinavian languages (Torp, 2001)	Dorsal, apical, and vocalized	• Wide variability despite closely related languages
Dutch (Van de Velde & Van Hout, 1999; Verstraeten & Van de Velde, 2001; van Oostendorp, 2001)	Alveolar, retroflex, uvular, glottal, tap, trill, approximant, fricative	• Wide intra-language variability based on social and geographic factors
American English (Labov, 1966; among many others)	Rhoticity vs. deletion	• Rhoticity affected by socio-economic status and speech style
Brazilian Portuguese (Head, 1987; Cohen, 2006; Rennicke, 2011)	Rhoticized /l/, retroflexion	• Despite contact-induced change proposals, evidence suggests internal variation as the source of change
Normative French (Demolin, 2001; Russell Webb, 2009)	Fricative, approximant, velar, uvulo-alveolar	• Variation based on linguistic factor, position in word
Quebecois French (Sankoff, Blondeau, & Charity, 2001; Sankoff & Blondeau, 2007)	Change from apical > dorsal	• Change occurs across time with young speakers adopting dorsal variant • Syllable position also plays a role for some speakers

2.2 Rhotics in Spanish

Prescriptive rules of Spanish dictate the use of two separate rhotic phonemes, one realized as an alveolar tap and the other as an alveolar trill. This system is inherently intriguing for a few reasons. First, less than 20% of the world's languages contain a phonemic contrast between at least two rhotics, making this type of system relatively rare (Ladefoged & Maddieson, 1996). Secondly, despite the extensive variation already described within the class of rhotics, both canonical variants utilize the alveolar place of articulation. Third, the two rhotics included in the canonical Spanish phonological description have remained remarkably unchanged when compared to languages such as French or German as described in the previous section. The /r/ phoneme entered Old Spanish via Latin when syllable final /-ɾ/ and syllable initial /ɾ-/ combined to form syllable initial /r/ (Penny, 2002: 82). Given the previously demonstrated propensity for rhotic change, centuries of development and the spread of Spanish across the globe have had curiously little impact on this part of the language. However, moving beyond prescriptive phonology reveals considerable dialectal variation. Unsurprisingly, much of the variation occurs as allophones of the more articulatorily complex trill realization.

In place of the canonical trill, an assibilated rhotic has been attested in the Spanish of the Costa Rican Central Valley (Vásquez Carranza, 2006), Highland Ecuador (Bradley, 1999; 2004), and several other dialects in Central and South America (see Cárdenas, 1958 for discussion of the geographic range of assibilated /r/). Other research attests a retroflex approximant realization in Yucatan Spanish (Lope Blanch, 1975) as well as backed (i.e., velar, uvular) variants in Puerto Rico (Navarro Tomás, 1948; López-Morales, 1979), Cuba, Panama, and coastal Colombia and Venezuela (Canfield, 1962; Cuéllar, 1971). Additionally, pre-aspirated or pre-breathy-voice variants have been reported in Dominican Spanish (Jiménez Sabater 1975, Lipski 1994; Willis,

2007). In sum, with regard to the trilled Spanish rhotic it has been observed that "outside of…conservative Spanish speech communities, the vibrant has undergone a wide range of phonetic adjustments" (Widdison, 1998:51).

Taking this assertion one step further, Hammond (1999) argues that phonetic analysis reveals the prescribed alveolar trill to be an infrequent realization in Spanish. Specifically, he claims that the trilled phone [r] only occurs "in normal Spanish discourse among a very small number of monolingual native speakers" (Hammond, 1999:136). This observation highlights a possible oversight in studies of Spanish rhotics. Specifically, the assumption that a trill serves as the underlying variant in most Spanish dialects is not supported by evidence and has important implications for studies of rhotic variation and change. For example, if a fricative variant, which is often found in place of a trill, were considered the canonical pronunciation, changes to other variants (e.g., assibilated, retroflex) would be more easily explained in terms of articulation. Thus, adhering to the unsupported idea of the underlying Spanish multiple contact alveolar trill may cause unnecessary difficulty in analyzing rhotic change. Additionally, for many dialects Hammond (1999: 147) proposes that a neutralization has occurred in intervocalic position, the only place where the two phonemes differentiate minimal pairs. The possible loss of phonemic contrast between the two rhotics is also examined by Hualde (2004). Following these two assertions, many of the studies mentioned above investigate the phonetic or acoustic properties associated with rhotics as well as the maintenance of the distinction between tap and trill variants.

For example, the assibilated rhotic of highland Ecuador has been described phonetically as a strident fricative [ř] (Bradley, 1999: 57; Lipski, 1994; Widdison, 1998). This particular realization results from reduction of the tongue tip gesture necessary to create the trill. While the majority of the cases of the assibilated variant may seem to coincide with prescriptive

environments occupied by the trill, the distribution is not identical between tap and trill in prescriptive Spanish and tap and assibilated rhotic in Ecuadorian Spanish (Bradley, 1999:57). In fact, the patterns of rhotic use in Ecuadorian and standard Spanish only converge in syllable initial position, where the assibilated [ř] or trill occurs word initially or in post-consonantal position and contrasts with a tap intervocalically (Argüello, 1980; Boynton, 1981; Lipski, 1990). In the remaining contexts, the distribution of the assibilated rhotic differs from that of the trill. For example, the assibilated rhotic is used word internally in coda position before a coronal, but not before a bilabial or velar sound (e.g. [p] or [g]). Conversely, the standard Spanish trill can appear in coda position in emphatic speech no matter the following consonant. Thus, in Ecuadorian Spanish, the non-trill rhotic variant does not simply take the place of the trill in the phonological system.

The maintenance of the tap-trill phonological contrast has also been explored in Veracruz Mexican Spanish (Bradley & Willis, 2012). This study employs spectrographic analysis of syllable initial rhotics on data collected from a semi-spontaneous speech task. With regard to the observed variation, this study finds four different allophones of the tap, ranging from an approximant to complete elision. As for the trill, the ten speakers produce a total of eight distinct variants, including non-vibrant approximants and fricatives, as well as forms with a single contact followed by frication or r-coloring and those with two or more contacts with or without vocalic r-coloring (Bradley & Willis, 2012:56). In acoustic analysis of Dominican Spanish (Willis & Bradley, 2008), the same level of allophonic variation for the tap is attested, while the majority of trill variants are pre-breathy voice followed by one or multiple closures. In addition to allophonic variation, these studies also examine the duration of each rhotic. Results indicate that, for both varieties, the contrast between tap and trill is maintained by the overall longer average duration of the trill as

opposed to distinct numbers of lingual contacts. In addition to demonstrating how phonological systems can adapt new methods for distinguishing phonemes, these studies also highlight a broad range of allophonic variation for both taps and trills.

Studies of the Costa Rican Central Valley dialect describe considerable allophonic variation in the region, specifically focusing on assibilated rhotics (e.g., Calvo Shadid & Portilla Chaves, 1998; Sánchez-Corrales, 1986; Vasquez-Carranza, 2006; among others). These various works have described a wide range of assibilated rhotics occurring across phonetic contexts including apico-alveolar fricatives, affricates, and, of particular interest here, assibilated retroflex variants. Three assibilated retroflex rhotic allophones were reported in the formal speech of female participants from the Central Valley (Calvo Shadid & Portilla Chaves, 1998). These allophones, which include a voiced retroflex approximant [ɻ̝], voiced retroflex fricative [ʐ̝] and voiced retroflex tap [ɽ̝], comprise 16% of the data (N=707). The remaining 84% of rhotics were realized at the canonical alveolar place of articulation. Two separate studies have concluded that the trill in Central Valley Costa Rican Spanish has been replaced by a fricative phoneme /ʂ̝/, which is argued to have assibilated due to structural pressure from the existence of similar fricative sounds /f/, /s/, and /x/ (Calvo Shadid & Portilla Chavez, 1998; Sánchez-Corrales, 1986).

In an attempt to further elucidate the extent of rhotic variation in the Central Valley, Vasquez-Carranza (2006) employed a reading task with words encompassing all possible phonological contexts in which the tap or trill would occur canonically. The author claims that all participants replaced the trill with the assibilated variant in all contexts (Vasquez-Carranza, 2006: 296). This includes word initially, intervocalically (wherever the spelling *'rr'* appears), and in post-consonantal position after l, n, or s. To a great extent, these findings mirror those for the distribution of the assibilated rhotic in Ecuadorian Spanish (Bradley, 1999). Interestingly, an

analysis of the alveolar tap revealed that this variant also showed assibilation as the second member of consonant clusters with [t], word medially in complex onsets after coronal /l/ or /n/ (e.g., *saldrá, vendrá*) and phrase finally (e.g., in *vamos a comer)*. Overall, the author argues for a language internal account for these changes, based on the natural physiological processes associated with articulatory weakening (Vasquez-Carranza, 2006: 303).

In addition to assibilated rhotics, velar and uvular variants have also been attested in Spanish varieties across many parts of the Caribbean, most notably in Puerto Rico. Even the earliest systematic studies of Puerto Rican Spanish reported as many as eight distinct trilled /r/ realizations, with velar productions appearing in 59% of cases (Navarro Tomás, 1948). Alternatively, the variation between alveolar trill and posterior variants has been said to relate to register. More recent work has revealed that use of posterior /r/ is widespread across the island and the precise realizations are highly variable. In an analysis of three separate tasks, it was found that 85% of speakers used a posterior /r/ at least once and 9 allophones aside from the canonical alveolar tap or trill were attested (Graml, 2009).

Other studies of rhotic variation focus not on the tap or trill itself but on describing variation in specific positions in a word (for intervocalic see Morgan & Sessarego, 2016; as part of consonant clusters: Bradley, 2006; Sessarego, 2011; in syllable/word final: Broce & Torres Cacoullos, 2002; Ugueto, 2016; Molina Ortés, 2018; Kim, 2019; among others). As displayed below in Figure 2.1, the Spanish taps and trills can be found in almost entirely complementary phonological distribution, only contrasting in intervocalic position in about thirty minimal pairs. Despite this fact, word or syllable final position remains especially intriguing as either the tap or trill can appear there. While some argue that the selection of rhotics in this position is based on emphatic or stylistic choices (e.g., Quilis, 1993), others claim that the tap is the higher frequency

or canonical variant (Blecua, 2001; Hualde, 2005). Studies of variation in this position have revealed both linguistic and social factors impacting the variation.

Figure 2.1: Tap and trill rhotics by position in word for canonical Spanish

Contrast Tap vs. Trill	V__V	Intervocalic
Trill Only	#___	Word initial
	C.__	After hetero-syllabic consonant
Tap Only	C___	After tautosyllabic consonant
	V._#V	Word final before a vowel
Variable (most commonly tap)	V__C	Word internal before consonant
	V_#C	Word final before consonant
	V_##	Word final before pause

Kim (2019) examines syllable and word final rhotics in the coastal Tupe region of Peru. Overall, acoustic analysis revealed four variants across these contexts including, from most to least frequent, an approximant, a tap, an assibilated rhotic, and a trill. Given previous focus on the assibilated variant, a logistic regression analysis was conducted to test the social and linguistic factors that impacted its use. The most influential factor was the only linguistic factor selected, following phonetic context. A following pause, alveolar, or dental consonant, greatly increased likelihood of the assibilated rhotic. Additionally, three social factors played a role. Speakers that were part of the youngest and middle age groups of the study (age 20-40 or 40-60 years), those living on the coast for less than a year, and men all had higher likelihoods of using assibilated variants when compared to speakers in other groups (Kim, 2019:151).

Molina Ortés (2018) analyzes word and syllable final rhotics in Granada, Spain. About 93% of the rhotics are classified in two categories, the first combining the tap and approximant variant (62%) and the second including elided rhotics (31%). The remaining 7% of rhotics were aspirated, lateralized to [l], or assimilated with the following consonant. This study explores a number of linguistic and social factors by examining rates of use in the varying contexts. For example, findings indicate that syllable final position maintains the highest rates of tap or approximant rhotics (87%) while more than half of word final rhotics are elided (57%). Of the two most frequent parts of speech, infinitive forms show a preference for elided rhotics (56%) and approximant/tap realizations are the predominant variants used in nouns (79%). Finally, the author notes a linear relationship between level of education and retaining or not fully eliding rhotics as the speakers with the highest level of education retain the most and those of the lowest have the highest rates of elision.

Syllable final rhotics have also been explored in Taos New Mexican Spanish (TNMS) (Vigil, 2008). This particular study is also important given that TNMS is in contact with English, much like Corozal Spanish. To begin, Vigil notes that the mere presence of a retroflex variant is the most notable feature of rhotics in this position (2008: 229). Similar to the studies discussed above, speakers use the retroflex at the highest rates before alveolar consonants, with lower rates before dentals, and very few instances before velar consonants. Additionally, women employ the retroflex at much higher rates in this position when compared to men, signaling that the variation is constrained by social factors (Vigil, 2008: 150).

Table 2.2 shows a summary of the major findings for studies of non-standard rhotic variants in Spanish dialects. The far-left column provides the specific dialect examined and cites the

particular study. The middle column describes the nature of the non-standard rhotic variant, and the far-right column provides information regarding the key findings of each study.

As demonstrated in the preceding paragraphs, despite a prescriptive phonology only including alveolar tap and trill variants, Spanish is no exception to the cross-linguistic pattern of remarkable rhotic variation. Examination of studies on Spanish also shows that, while understanding the phonological nature of the relationship between taps and trills is important, such prior assumptions possibly obscure broader patterns of variation. Thus, studies testing social and linguistic factors that constrain variation can provide further insight into the nature of a broader range of variants. The sociophonetic study proposed below seeks to provide such insight into a previously understudied Spanish speaking community while also exploring broader implications of rhotic variation for cross-linguistic analyses and usage-based theory.

Table 2.2: Summary of studies on Spanish rhotics

Spanish Dialect (Study)	**Non-standard variant**	**Key findings**
Highland Ecuador (Bradley, 1999)	Assibilated	• occurs word internally before coronal consonants, not before bilabial or velar • occurs word initially
Veracruz, Mexico (Bradley & Willis, 2012)	Various (4 tap allophones, 8 trill allophones)	• wide allophonic variation of both standard rhotics • phonemic contrast maintained by longer duration in trill positions
Dominican Republic (Willis & Bradley, 2008)	Pre-breathy voice trills	• phonemic contrast maintained by longer duration in trill positions
Central Valley Costa Rica (Vasquez Carranza, 2006)	Assibilated	• appears in all prescribed trill positions • argues for language internal motivation for change, based on articulatory weakening
Puerto Rico (Navarro Tomás, 1948; Graml, 2009)	Posterior variants (uvular, velar)	• variation widespread across the island and precise realizations are highly variable • social factors (e.g., register) may play a role in the variation

Tupe Region, Peru (Kim, 2019)	Assibilated in final position	• likelihood increased before pause, alveolar, or dental consonant; decreased before velar or bilabial consonant • social factors (age, time spent on coast, gender) impacted variation
Granada, Spain (Molina Ortés, 2018)	Approximant & elided taps in final position	• infinitive forms show preference for elision, nouns for approximant/taps • higher education leads to lower rates of elision
Taos, New Mexico (Vigil, 2008)	Retroflex	• Highest rates before alveolar consonants, low rates before dental & velar • Women use retroflex at higher rates than men showing social factors constraining the variation

2.3 Rhotics in Belizean Spanish

The earliest study of Belizean Spanish (Hagerty, 1979) was a phonological analysis of its unique features, including rhotic variants. The analysis was based on seven distinct rhotic allophones found in different regional varieties and in different positions in the word. First, there is the canonical [ɾ][2] which is described as a single voiced alveolar flap. According to the study, this allophone occurs syllable finally as well as in the second position of a consonant cluster. A similar variant, the assibilated alveolar rhotic [ř], appears after /t/ as in words like *'otro'* (other), and in syllable final position before a pause. The third allophone is described as a voiced retroflex approximant [ɻ]. Interestingly, this variant is only found in the speech of northern district speakers, and it is noted that "an identical sound would be the initial /r/ of midwestern American English" (Hagerty, 1979:79). In addition to appearing in the same contexts as [ɾ], it also occurs in syllable

[2] Phonetic symbols in this paragraph do not always match those employed by Hagerty (1979). For the sake of clarity, these symbols reflect those in the IPA that match descriptions provided in Hagerty (1979: 79-84).

initial position, either word initially after a pause or word medially when preceded by a consonant. The retroflex can also be found variably in syllable final position. This provides preliminary evidence that, in northern Belize, the retroflex appears in positions occupied by both the tap and trill in canonical Spanish.

Additionally, Hagerty examines the phonemic relationship between rhotic variants. First, he argues for the maintenance of phonemic opposition between tap and trill in intervocalic position in some regional varieties. While /ɾ/ only appears as a tap, /r/ is classified as a voiced multiple vibrant with alveolar [r], assibilated [ř], and retroflex [ɻ] allophones. Despite recognizing distinctions in some regions of Belize, Hagerty (1979: 82) proposes the possibility of a merger in both Orange Walk and Corozal districts. He notes that speakers always prefer the retroflex in intervocalic position. In fact, in his analysis, some younger speakers failed to make the distinction between minimal pairs such as *caro* (expensive) [ka.ɾo] and *carro* (car) [ka.ɻo], instead using the retroflex articulation for both (Hagerty, 1979:81).

Finally, Hagerty further explores the use of the retroflex variant. Though it remains quite unique in the broader scope of Spanish rhotics, the retroflex can also be found in Mexican Spanish of the Yucatán Peninsula, a close geographic neighbor with deep historical ties to Corozal. In Yucatán Spanish, the retroflex is most commonly found in syllable final position, and only appears on occasion intervocalically (Lope Blanch, 1975). Hagerty reports that speakers of the northern districts use retroflex variants at least as often, and possibly more often, in intervocalic position as compared to syllable final (Hagerty, 1979: 84). In sum, the high variability and salience of this feature prompted further inquiry (e.g., Cardona Ramirez, 2010; Quilis, 1990; Quesada Pacheco, 2013).

Cardona Ramirez (2010) offers a comprehensive account of Belizean Spanish across five northern and western districts including results of survey elicitation tasks from 39 speakers. Overall results for rhotics are presented in terms of variants used in different positions in the word. In initial position, which tested the word *rojo* 'red', five rhotic allophones are reported. In order of least to most prevalent they are, alveolar tap [ɾ] (*n*=2), non-sibilant voiced approximant alveolar [ɻ̟] (*n*=2), trill [r] (*n*=4), voiced approximant alveolar [ɹ] (*n*=9), and retroflex approximant [ɻ] (*n*=9). The word *perro* 'dog' was elicited to test intervocalic positions with double '*rr*' spellings, where a trill would be expected canonically. In this data, the retroflex approximant appears in most cases (33% or 13/36). While token counts remain quite low, the use of a retroflex variant in both positions is evident. Moreover, the wide variation matches patterns found in the other Spanish dialects discussed in the previous section.

In syllable and word final positions, the following consonant plays a role in which variant is employed. In word final position, as well as before velar or bilabial consonants, a preference for the canonical tap [ɾ] arises. However, before the alveolar consonants /n/, /s/, and especially /l/, the retroflex is used at the relatively high rates of 32%, 25%, and 38%, respectively. The other alveolar approximant allophones that appeared in initial position are also present here, though in less significant numbers. Overall, these patterns mirror those of non-standard rhotic use in this position from other varieties (see Bradley, 1999; Kim, 2019; Vigil, 2008)

Unlike the results presented in Chapters 4 and 5 which exclusively analyze Corozal Spanish, Cardona Ramirez's study combines speakers of different regional Belizean dialects. However, within the study he specifically notes that the northern districts, most of all Corozal, have the highest rate of retroflex use in the syllable final position (Cardona Ramirez, 2010). Thus,

although the research is largely descriptive in nature and has relatively low token counts, it serves as an important baseline for further exploration of the retroflex rhotic in Corozal.

The only major quantitative work on Belizean Spanish rhotics approaches the question within the paradigm of tap-trill contrast maintenance (Balam, 2013b). The data included elicited production from 10 adolescent bidialectal Spanish speakers from Orange Walk, Belize. These speakers utilize both their native Northern Belizean dialect as well as Standard Spanish learned in school and sometimes used in communication with non-Belizeans. A contrast between rhotics was found to be maintained intervocalically, with a retroflex approximant occurring where a trill would occur prescriptively. This finding refutes the contention that the Spanish of northern Belize was "undergoing a phonemic merger" by generalizing the use of the retroflex (Hagerty, 1979: 81). Further impressionistic analysis of the elicited data revealed that the retroflex approximant occurs most consistently where trills would be expected canonically, in word initial and intervocalic double 'rr' positions. Additionally, the retroflex occurs variably in syllable final position before homorganic (i.e., alveolar) consonants (Balam, 2013b:296). This final observation demonstrates that a focus on contrast maintenance may actually be serving to obscure the use of the retroflex rhotics in other phonetic environments.

Table 2.3 summarizes results of findings for Belizean Spanish studies of rhotic sounds. The far-left column identifies the specific information regarding the region of origin for speakers involved in the cited study. The middle column describes which non-standard variants are found in the region and the final column provides further insight on key findings.

Table 2.3: Summary of studies on Belizean Spanish rhotics

Belizean Region (Study)	**Non-standard variant**	**Key findings**
All regions (Hagerty, 1979)	Assibilated, retroflex (only in northern districts)	• Maintenance of phonemic contrast for non-northern varieties • Phonemic merger toward retroflex in Corozal and Orange Walk Districts • Notes use of retroflex in closely related Yucatán Spanish
All regions (Cardona Ramirez, 2010)	Various (approximants, retroflex, trill)	• Position in word and surrounding phonetic context constrain variation • Notes higher use of retroflex in northern districts, especially Corozal
Orange Walk (Balam, 2013)	Retroflex	• Maintenance of phonemic contrast, retroflex in place of canonical trill • Variable use of retroflex in word internal syllable final position

As demonstrated in Sections 2.2 and 2.3, despite a prescriptive phonology only including alveolar tap and trill variants, Spanish is no exception to the cross-linguistic pattern of remarkable rhotic variation. Examination of studies on Spanish also shows that, while understanding the phonological nature of the relationship between taps and trills is important, such prior assumptions possibly obscure other patterns of variation. Thus, studies testing social and linguistic factors that constrain variation can provide further insight into the nature of a broader range of variants. Considering these observations, the current study provides a more holistic understanding of rhotic variation in Corozal Spanish by relating it to other dialects and discussing implications for Spanish phonology.

2.4 Conclusion

The exploration of rhotic variation provided above establishes two key aspects for contextualizing the present study. First, the results from cross-linguistic studies show that the phonetic instability of the rhotic class leads to high levels of variation. This general trend is then confirmed for Spanish by the studies detailed in Section 2.3 and specifically for Belizean Spanish in Section 2.4. Furthermore, the lack of agreement regarding categorization of rhotic sounds provides evidence at the phonological level that the class accommodates a wide range of variants. Overall, such findings highlight the fact that rhotic sounds present unstable or highly variable elements in many languages. Additionally, evidence from Sections 2.3 and 2.4 shows that categorizing rhotics, especially in Spanish, may require a more nuanced approach than other types of phonemes. This idea will be explored further in Chapter 4 considering the data for Corozal Spanish.

Relatedly, the findings of previous studies show that change in rhotics should likely be considered the expected outcome. Most studies examined above find several rhotic variants present within any given language or dialect. These often include variants not associated with the standard varieties of myriad Germanic and Romance languages. Comparing the middle columns of Tables 2.1 and 2.2 demonstrates the variability and propensity to change inherent in rhotics across languages and within Spanish. Taken together, these findings support the notion that explaining changes in rhotics need not require resorting to external factors such as language contact. Rather the phonetic and phonological nature of the class makes these sounds especially susceptible to change. Overall, the evidence presented in the sections above serves as an important point of comparison for analysis of linguistic and social factors constraining rhotic use in Corozal Spanish, presented in Chapters 4 and 5, respectively. Before presenting the results, the next chapter will

provide further background regarding the specific data collection process and the community of the interviewees.

Chapter 3: Community, Corpus, and Fieldwork

3.0 Overview

This dissertation seeks to understand the social and linguistic factors impacting the use of rhotic variants in northern Belize. Overall, this small Central American nation has not garnered much attention from linguists, especially not outside studies of the English based creole spoken throughout the country. In the first major analysis of Belizean Spanish[3] (BS), Hagerty (1979) explicitly noted the conspicuous gap that Belize represented in the field of Hispanic linguistics. More than a decade later, he once again asserted that "features which set it apart from other Spanish dialects, have yet to be fully studied" (Hagerty, 1992:16). Despite these invitations, few studies in the intervening decades delved into this uncharted territory. While some recent work investigates patterns of language mixing in the region (Balam 2013a, 2015, 2016; Fuller-Medina, 2016) few studies focus on monolingual Spanish speech (e.g., Balam, 2013b). Thus, this work seeks to fill that gap and provide new insight on the complex intersections of historical, social, and linguistic phenomena in Belize.

The first section will outline historical and social developments while exploring their impact on language use at certain times. Given the dramatic demographic and cultural differences between various parts of the country, this work will focus on the northern district of Corozal, where the data for this analysis were collected. However, it will also include discussions of other regions to provide a holistic picture of the linguistic environment. The second section of this chapter will examine current trends in the social, demographic, and linguistic research in Belize. Finally, a

[3] Belizean Spanish will be used in this chapter to refer generally to any Spanish used within Belizean borders. There is no such "Belizean Spanish" dialect and as many as three distinct dialect zones have been identified within the country (see Cardona Ramirez, 2010).

content analysis of interview excerpts will serve to take the work beyond mere observations by outside researchers to highlight issues that are salient to the members of the community interviewed for this specific work.

3.1 Historical, social, and linguistic environment of northern Belize

Throughout history, the territory that now comprises Corozal District, Belize has served as a cultural and linguistic crossroads. Mayans first settled this area thousands of years ago. They established important sites such as Chactemal which served as a Mayan capital and has been continuously inhabited for more than 5,000 years. In fact, this is the same location where present day Corozal Town is located, and many Mayan communities still dot the surrounding area. Though the indigenous history is a crucial part of understanding broader regional culture, the focus of this dissertation on Spanish language use inevitably links to colonial conquest.

As is the case with most parts of the Americas, the historical trajectory of Belize changed dramatically with the arrival of colonial powers. Despite their success in the vast majority of Central and South America, Spanish colonizers repeatedly failed to conquer much of present-day Belize. While it remains unclear exactly when Spaniards first arrived in the area, the first attempts at conquest occurred in the early 1500's. Over the first three decades of this century, Mayan communities across the region suffered many attacks. Chactemal was a particularly lucrative target for Spanish conquistadors given its significance as a commercial hub for the Yucatan Peninsula and the entire surrounding area. In the face of continued attacks, in 1533 Mayan resistance fighters expelled Spanish soldiers, under the command of Alonso Davila, from Chactemal (Hagerty, 1996:17). Though the somewhat unknown history of the region makes it possible that a few Spanish speakers continued to inhabit the area, British colonizers, and their native English language, quickly entered present day Belize.

British exploration and the first settlements began in the mid-1500's. While the first royal governing officials arrived the following century, it wasn't until 1862 that they officially established the colony of British Honduras. The first groups to arrive included mostly pirates and other outcast individuals who had journeyed to the new world. They served an important role in combatting Spanish attacks and weakening the hold of the Spanish Empire by attacking merchant ships. This unofficial status left them outside the formal British colonial structure, instead these groups of people operated as private ventures in search of economic riches (Gabbert, 2007:40). Though historical records are scarce, this likely meant a variety of British English dialects could be found among the original colonizers of northern Belize. It is also important to note that during this time, the British population would have remained relatively small and transient. However, as time went on and British control became more established, colonial exploitation became commonplace as in many other parts of the Americas.

First, these original colonizers moved to enslave indigenous people to extract natural resources. At this point, most Mayan groups had retreated to the interior of Belize or northward into present-day Mexico. Thus, the British turned to exploiting Miskitu people in the early days of the colony. By the early 1700's, they began to import enslaved Africans (Gabbert, 2007:42). Many arrived by way of Jamaica and were forced to work in the increasingly profitable logging and chicle industries. This process facilitated the development of the English based creole language now referred to as Belizean Kriol (BK). Many scholars note that speakers of Kriol often utilize the language along a continuum between the lexifier language, Standard English, and a basilectal form, that differs drastically from the lexifier (see Young, 1973; Escure, 1981; Decker, 2005). This type of analysis highlights the relationship between Standard English and Kriol. Though speakers of Kriol have likely outnumbered speakers of Standard English for most of the nation's history,

the standard has played an outsized role in public life. Today, organizations such as the National Kriol Council seek recognition of the language as independent from the standard[4]. No matter how the English varieties of Belize are categorized, the fact remains that speakers of English have continuously inhabited the area for around 500 years.

The importation of large numbers of enslaved people into a sparsely populated nation had consequences beyond the linguistic landscape. Trafficking enslaved Africans triggered a demographic shift that would shape the early modern history of the area. In fact, throughout most of the 18th and 19th centuries, descendants of free and enslaved Africans, often referred to collectively as "Creoles", made up the ethnic and linguistic plurality in the nation of Belize (Gabbert, 2007). The most concentrated areas of Creole population were in the central regions near the present-day capital of Belize City (see Figure 3.1 below), where most of the nation's total population can be found. Moving northward, the Creole cultural and linguistic influence is certainly weaker, though not entirely absent, in Corozal District. From the 1500s to the mid-1800s, creole English, various indigenous languages, and varieties of British English, were the dominant languages used throughout most of Belize. While the prevalence of Kriol still holds in many of the central and southern districts, the northern districts of Orange Walk and Corozal experienced independent developments that led to the present-day predominance of Spanish speakers.

In the wake of independence from Spain, tension between the indigenous and European populations in the Yucatán Peninsula eventually erupted into war. Now known as the Caste War of Yucatán, one such conflict lasted the entire second half of the 1800s. Beginning in 1847, thousands of Mayans and Mestizos fled the violence of the war by escaping to the south. This

[4] See Escure (1997) for further insight on the development of BK, including a sociohistorical outline of the contact between Africans, Europeans, and Miskito indigenous populations.

resulted in many Spanish and Maya speakers taking refuge in the territory occupied by the present-day northern districts of Belize. This immigration spanned the next decade and eventually doubled the population of Belize (Camille, 1996:53). This is evident in the 1861 census, in which half of the colony's inhabitants were identified as immigrants living in northern Belize but born in Yucatán or other places in Central America (Bolland, 1977). Interestingly, this new northern population center remained separate from the rest of Belize where most English speakers resided. Despite its small size, about 8,800 square miles (similar to the U.S. state of New Jersey), Belize lacked the proper infrastructure to facilitate communication and intranational migration until at least the mid 1900s (Le Page and Tabouret-Keller, 1985:183).

Much like with the importation of enslaved people, the influx of Mayans and Mestizos also changed the linguistic environment. In the decades since 1847, unique Spanish varieties developed in northern and western Belize. At first, the major language contact situation in the north was between Spanish and Maya. In fact, for about a century after the mass immigration from Yucatán, few English or Kriol speakers lived in the north. Perhaps the first sites of contact between speakers of Spanish and Kriol occurred in the logging camps where seasonal or permanent laborers would harvest chicle and mahogany (Balam, 2014:82). Additionally, there is some evidence to suggest that as early as 1930, or perhaps a few decades prior, more standard varieties of English were also present in northern Belize. Not only did English speakers live in the area, but standard English also was possibly being used as the language of instruction in Maya/Mestizo schools (Church et al., 2011). From the early 1900s to the present day, another rapid demographic shift altered the linguistic landscape yet again. With the development of better travel infrastructure came immigration from other parts of Belize as well as Central American neighbors. This brought more speakers of standard English, Kriol, and other Spanish dialects. Additionally, as the area

modernized, the use of Maya became rarer and indigenous groups resorted to learning Spanish or English.

As evidenced by the myriad demographic and linguistic developments described above, the history of Spanish in northern Belize remains steeped in language contact. As a result, bilingualism and multilingualism remain the norm throughout the country and speakers of two or more languages have been the focus of most previous research. The next section will explore the present-day outcomes in terms of demographic and linguistic aspects of northern Belize.

3.2 Language use in Belize

Speakers in many parts of Belize use Spanish as well as varieties of English in their daily lives, and Corozal is no exception. Standard Belizean English (SBE) is the official language of all parts of the nation. In this capacity it is mainly utilized in public discourse (i.e., government offices or other institutional bodies), in addition to serving as the language of formal instruction in most public schools. Belizean Kriol, on the other hand, has been referred to as the lingua franca of the country (Ravindranath, 2009; Balam, 2013a). This may at least partially stem from the broad national influence of Kriol cultural, economic, and political power which does not necessarily predominate each region. For example, SBE and BK are especially prevalent in the eastern and southern districts of Belize. Overall census results from 2010 for self-reported conversational proficiency found that 63% of Belizeans can hold a conversation in SBE, 44% can do the same in BK, and 57% in Spanish. The regional differences in language use are most evident when examining Spanish speakers in the north. In both Corozal and Orange Walk, approximately 85% of speakers reported an ability to hold a conversation in Spanish, nearly 30 more percentage points than the national average. Interestingly, even with the increased Spanish speaking population, rates of SBE proficiency hold relatively steady in the north with 54% in Corozal and 62% in Orange

Walk, compared to the 63% national average. This is likely due to the fact that SBE is taught and used in most public schools. On the other hand, BK sees a marked drop with fewer than 20% of speakers in both districts reporting conversational proficiency, as opposed to the national average of 45%. Given the linguistic, social, and historical circumstances described above, BS presents an especially interesting case for studying Spanish varieties in contact with other languages.

Indeed, most of the research on BS approaches it through the lens of language contact. This is most often focused on proposed influences of both standard English and BK. As is the case for all language contact environments, early linguistic studies of Belize confirmed that lexical borrowings are the most common outcome[5] (Hagerty, 1996:134). In addition to the lexicon, possible changes at the morphological and syntactic levels are also discussed. One example is the use of non-standard gender assignment patterns. In other Spanish-English contact varieties, gender assignment to noun phrases is often a topic of study when a Spanish modifier is combined with an English noun borrowing (e.g., Poplack, Pousada, & Sankoff, 1982; Otheguy & Lapidus, 2003; among many others); however, Hagerty explores gender assignment in unilingual BS. Thus, noun phrases such as "*el gente"* (*the.MASC people.FEM*), or *"la problema" (the.FEM problem.MASC)*, are provided as examples in which the determiner does not express the gender of the noun in canonical Spanish grammar. Though no quantitative evidence is provided, the fact that English nouns do not mark for gender leads to the assertion that this "gender confusion" may be seen as Spanish becoming more similar to English structure (Hagerty, 1996:137). Other possible structural convergence sites are also discussed, including the simplification of verbal paradigms as in the common use of *ha* (have.3SG) for *he* (have.1SG) in the present perfect. Though many of these

[5] See Hagerty (1996: 135-136) for examples of lexical borrowings encountered in his data.

characteristics remain understudied, some more recent work has also explored outcomes of Spanish-English contact in Belize.

Most notably, the only linguistic variable that has received extensive attention in the context of BS is the use of bilingual compound verbs. First noted in a short descriptive study of BS (Hagerty, 1996:136), bilingual compound verbs occur in other contact varieties of Spanish such as those found in the Southwestern United States. In both communities, the light verb 'hacer' carries tense, aspect, and mood while an English verb bears the semantic content of the phrase as in Example 1, taken from Balam, Prada Pérez, and Mayans (2014).

Example 1: *Hicieron* rent *un* golf cart
'They rented a golf cart'

While this type of language mixing is also attested in New Mexican Spanish, the extent to which speakers of Northern Belizean Spanish (NBS)[6] engage in the use of bilingual compound verbs remains unique. Findings of recent analyses suggest that BS speakers utilize BCVs with a wider variety of verbal semantic classes and with different types of argument structures (Balam, 2014). Additionally, an innovative 'double hacer' construction has been attested in the speech of younger NBS codeswitchers, as shown in Example 2 taken from Balam (2015).

Example 2: *que no haga* choose *hacer* study business
'that he/she does not choose to study business'

Though constructions of this type comprise less than 1% of the overall compound verb data (N = 1750), they remain particularly interesting given the fact that they are entirely absent from other

[6] Northern Belizean Spanish is a term utilized by Balam throughout his published works and will be used here when referencing his work or speaking of Spanish spoken generally in the Corozal and Orange Walk Districts. It should be noted that most of the data included in Balam's work comes from speakers in Orange Walk as opposed to the present work which is exclusively data from Corozal.

contact varieties of Spanish that also use BCVs (e.g., New Mexican Spanish). The appearance of the 'double hacer' construction may represent a greater degree of grammaticalization of BCVs in Belizean Spanish and future generations may witness an increase in the use of this form (see Wilson-Vergara, 2013 for relevant discussion on development of BCVs in New Mexican Spanish).

Aside from the interaction between verbal systems in the English and Spanish of Belize, Fuller Medina has also investigated other aspects of codeswitching in the country. An analysis of English origin items in codeswitched speech provided insight into the nature of language mixing in NBS. Utilizing measures such as gender/number agreement on English origin nouns shows that these items act as borrowings as opposed to codeswitches. The same can be said for English-origin verbs through analysis of variable clitic placement (Fuller Medina, 2016).

Finally, the gender assignment system has also received some attention in recent works (Fuller Medina, 2016; Balam, 2016). As mentioned above, previous descriptions claimed that the gender system of NBS may have been non-canonical even in unilingual speech, though these generally rely on impressionistic observations as opposed to quantitative methods. However, recent studies (Quesada Pacheco, 2013; Balam, 2016) find that gender assignment patterns in Northern Belize closely match canonical varieties in many ways. On the other hand, in bilingual codeswitched speech two quantitative analyses have shown a categorical preference for assigning masculine gender to English origin nouns (Fuller Medina, 2016; Balam, 2016).

In addition to analysis of linguistic outcomes of language contact, speakers' attitudes toward language mixing have also been examined. The most recent work (Balam, 2013a) includes bi/trilingual speakers in Orange Walk. Overall, this study finds a positive view of codeswitching and the multilingual identity it reflects. Moreover, it reveals a switch in younger speakers to using more BK and less NBS. In fact, younger male speakers held a fair degree of linguistic insecurity

regarding their Spanish, referring to it as incorrect or broken. Despite this finding, and the common idea that NBS and standard Spanish were very different, most young speakers in the data set held more negative views of the standard. With regards to codeswitching, for adolescent males it seems to carry at least some level of prestige and using monolingual varieties of a language is avoided. However, the adolescent females regarded both monolingual varieties and codeswitched speech as equally acceptable. The studies detailed above demonstrate the general trend of focusing on language contact phenomena such as codeswitching or structural convergence in multilingual Belizean communities. However, the monolingual Spanish varieties also merit attention in their own right.

3.3 Spanish in Belize

The earliest study of BS (Hagerty, 1979) was a phonological analysis of its unique features. This study revealed several linguistic elements not documented in other standard Spanish dialects. For example, speakers produced glottal stop allophones of both /b/ and /d/. Additionally, both alveolar and retroflex variants of /t/ and /d/ were recorded, while intervocalic /d/ was occluded at a higher rate than in any other Spanish dialect. In a similarly expansive and more recent study, Cardona Ramírez (2010) explores phonological aspects of various Belizean Spanish dialects. Regarding the vocalic system, findings indicate stable pronunciation patterns that rarely differ from canonical Spanish. The few exceptions include some vowel shortening, especially for unstressed /a/ between /s/ or before /s/ (e.g., *esposas* ‘wives’, or *mesas* ‘tables’) and unstressed /e/ before /s/ (e.g., *dientes* ‘teeth’). As with most Spanish dialects, the main phonetic variation occurs in consonants.

Like the findings presented by Hagerty (1979), this study has a special focus on the occlusive consonants /b/, /d/, and /g/. Beginning with the results for /b/, Cardona Ramírez (2010:30) shows that most phonetic contexts result in the fricative [β], including /b/ following /l/, /ɾ/, or a falling diphthong. The one context in which the occlusive becomes the majority variant (54%) is following /s/ (e.g., *las vacas* 'the cows').

As for the phoneme /d/, this study finds the use of four distinct allophones: occlusive, fricative, approximant, and retroflex occlusive. Cardona Ramírez notes that this final pronunciation only occurs as a result of progressive assimilation, when the /d/ follows a retroflex /ɾ/. In most of the other examined contexts, which include /d/ following /l/, /s/, and a falling diphthong, the majority variant is the occlusive [d] as opposed to the approximant found in many other Spanish varieties. However, the higher rates of occlusive [d] in many contexts mirrors findings for other varieties such as Yucatan, Guatemalan, and Salvadoran Spanish (see Lipski, 1994: 258, 265, 271, 290; Quilis, 1999: 221 for more on occlusive /d/ in Central American Spanish dialects). The first two dialects are spoken in close geographic proximity to Belize, while Salvadoran Spanish has been prominent in the country since the mass migration of Salvadorans to Belize in the 1980's. As further evidence of the tendency toward strengthened occlusive articulation of /d/, Cardona Ramírez also elicited pronunciations of the common *-ado* ending (e.g., *cansado* 'tired'). Results indicate a higher-than-expected rate of full occlusion in this context when compared to the tendency to weaken or elide /d/ in other dialects. Once again though, it is noted that occlusive /d/ in this position has been attested in the Spanish of El Salvador (Guitart & Zamora, 1982). Additionally, a possible influence of indigenous languages is proposed with the caveat that further study would be necessary to identify the causes of this phenomenon.

Finally, in the case of /g/, Cardona Ramírez (2010) identifies three possible allophones: occlusive, fricative, and approximant. Results indicate that the fricative realization is the most prominent in Belizean Spanish. However, it is also noted that intervocalic position, where one would expect the greatest degree of weakening, has a relatively elevated rate of the full occlusion (Cardona Ramírez, 2010:34). Nonetheless, the northern districts of Orange Walk and Corozal participate the least in this phenomenon, using the weakened realization with greater frequency than Spanish speakers in other parts of the country.

In addition to the occlusive consonants, a description of fricatives in Belizean Spanish is also provided. For /f/ this scholar notes the standard labiodental pronunciation as the most prominent throughout all of Belize. As for less common variants, the presence of non-standard bilabial productions [ɸ] is found in Benque Viejo, Belize's westernmost town on the border with Guatemala. Additionally, a velarized variant is attested in the rural speech of northern Belize (i.e., [hwɐrte] for [fuɐrte]), though it appears in less than 2% of all elicited tokens (5/311).

As for /s/, there are five total allophones reported across all positions and phonetic contexts. The main variant is the standard voiceless alveolar fricative [s]. The voiced [z] allophone occurs most frequently before voiced consonants /b/, /d/, and /g/, much like other Spanish dialects. Interestingly, Cardona Ramirez notes little aspiration at only 6% of the overall data (N = 24/413). As he goes on to explain, "Contrary to what could be expected from a Caribbean country, Belize is not a country that aspirates or elides /s/" (Cardona Ramírez, 2010; my translation). Belize may be considered a Caribbean country based on geographic proximity and cultural ties to islands like Jamaica. However, as covered in the previous section, historical connections for Spanish in the north of Belize are much more closely related to Yucatán, Mexico than any part of the Spanish speaking Caribbean. In the western portions of the country, an influence of Guatemalan Spanish

is also present. In many parts of both nations, there is a tendency to retain the /s/, although Lipski notes that in border regions with Belize, speakers in Guatemala and Yucatán tend to slightly weaken /s/ in some positions (see Lipski, 2014: 284, 302). As with many of the features attested in Belizean Spanish dialects, further data collection and quantitative analysis is necessary to reveal the precise social and linguistic factors impacting /s/ variation.

Other major patterns of phonetic variation are also examined by Cardona Ramírez (2010) including /n/ in final position, palatal /j/, velar /x/, affricate /tʃ/. Considering all these phenomena, the results are used to create a dialect atlas of Spanish in Belize, seen in Figure 3.1, and summarized in Table 3.1.

Figure 3.1: Dialect Map of Spanish in Belize (Cardona Ramírez, 2010: 50)

As explained in Cardona Ramírez (2010: 50-52), Zone 0 occupies most of the central and eastern coastal regions of the country. This area includes few Spanish speakers, instead indigenous groups constitute most of the population on the interior and creoles and Garifuna predominate

along the coast. This zone includes the southern portions of Orange Walk and Belize Districts as well as much of Cayo and Stann Creek. Zone 1 includes the districts of Corozal, in the far north, as well as parts of Orange Walk, and Ambergris Caye. Corozal Town, the sole site of data collection for the present study is marked on the map. This zone is principally defined by aspirated /s/ as [h] preceding /n/ and /ɾ/ as well as the presence of retroflex /r/ in both pre- and post-nuclear position.

Zone 2, in the west central region bordering Guatemala, lies within Cayo district and contains the major towns of Benque Viejo del Carmen, San Jose Succotz, and San Ignacio. In this zone, Cardona Ramírez (2010) notes the existence of vocalic shortening, velarization of final /n/, and realization of /r/ as [ɾ] in intervocalic position. Finally, Zone 3 includes the southern half of Toledo District. Speakers in this region share the velarization of final /n/ and realization of /r/ as [ɾ] in intervocalic position with the west-central Zone 2. Overall, the study by Cardona Ramírez provides important descriptive and preliminary quantitative data establishing different dialect zones in Belize. The present study seeks to build on such work by focusing on one specific linguistic variable in the northern region.

Table 3.1: Summary of Belizean Spanish dialect zones (Cardona Ramírez, 2010)

Zone	Major Characteristics of Spanish
0	• Few Spanish speakers: indigenous Maya on the interior, Garifuna & Creole on coast
1	• Retroflex /r/ in pre- and post-nuclear position • Higher rates of aspirated /s/ > [h] preceding /n/ & /ɾ/ compared to other zones
2	• Vocalic shortening • Velarization of final /n/ • /r/ as [ɾ] in intervocalic position

3	• Velarization of final /n/ • /r/ as [ɾ] in intervocalic position

As demonstrated above, language use across Belize presents a complex intersection of Spanish, English, Kriol, and indigenous languages. Given this fact, much of the recent quantitative research focuses on language contact outcomes such as bilingual compound verbs or codeswitching patterns. On the other hand, the monolingual Spanish varieties have received attention almost exclusively for the purpose of description, dialect atlas construction or to explore the influence of Spanish on Kriol, English, or indigenous languages. Thus, this dissertation will seek to build upon the few works described above by utilizing variationist quantitative methods to better understand the use of retroflex rhotics variants which are often referred to as the most interesting, unique, or notable aspect of the dialect. As will be discussed further in Section 3.4, local speakers often share this sentiment about their own speech.

3.4 Fieldwork, data collection, and corpus constitution

The data collection fieldwork for this dissertation took place in Corozal Town, Belize in the summer of 2019. To assist my data collection, I had the privilege of working with a community member who led an NGO in the area. The result was sociolinguistic interviews with 19 speakers totaling around 12 hours of speech. As the interviewer, I spoke only in Spanish during the interviews though most interviewees knew I spoke English as well. Due to the nature of language use in the area, English loan words and some sustained stretches of English speech do occur in a few interviews.

A first pass orthographic transcription was carried out using Sonix, a paid online automatic transcription service (https://sonix.ai/). Sonix uses machine learning techniques such as neural

networks and natural language processing to automatically transcribe text from audio or video files including .mov, .wav, .mp3, and .mp4. The files for this dissertation were submitted as .wav. The result included time aligned transcription of each interview, separated at each change in speaker. These transcripts were then reviewed for accuracy and any necessary changes were made within the Sonix online user interface. Accuracy of the automatic transcription varied based on quality of the original audio recording and general clarity of a given participant's speech. The automatic transcription provides an option to view color coded output indicating the "confidence level" associated with each word. Levels range from best to worst as "very confident", "fairly confident", and "slightly confident". This feature allows for more targeted correction of the transcript, further reducing the amount of time spent transcribing. Conversations with a high proportion of more than one language may prove more challenging, as the program does not automatically detect the language spoken. Instead, the user selects a single language to guide the automatic transcription. On the other hand, conversations with technical jargon or other infrequent words or phrases could be handled by adding such language to the "custom dictionary" feature. For the recordings used in this work, the few stretches of English speech were easily corrected after the automatic transcription. Though the accuracy of transcription varied widely based on changing factors like background noise or clarity of speech, even the least clear recordings received "very confident" ratings on over 60% of the transcript. This drastically reduced the expected amount of time spent transcribing.

Transcriptions were easily editable within the Sonix online user interface. This includes the ability to create new lines by separating stretches of speech, correct word use, re-assign speaker names, or perform various other tasks. There is also a "Notes" feature, which allows for annotation of speech at any time stamp which will then be visible in the exported file of choice. Throughout the

editing process, original timecodes may become misaligned. The user may resubmit such transcripts to be realigned; however, this does incur an extra cost. Alternatively, the user could change timecodes manually. For these interviews, timecodes remained relatively stable throughout editing, so the realignment feature was not necessary.

To ensure the most accurate transcription possible, I listened to and edited each full transcript. Most of the necessary editing came in the form of correcting single words or stretches of speech that the automatic transcription marked with low confidence levels. However, occasionally, words in higher confidence sections would also require editing. During editing, I also separated much of the speech into smaller sections. As noted above, the automatic transcription separates speech based only on changes in speaker. If exported in this way, the resulting spreadsheets would be cumbersome for coding and analysis. Thus, I chose to split speech roughly corresponding to utterances completed in a single breath. Rarer types of revision included reassigning speaker labels and editing incorrectly transcribed English speech.

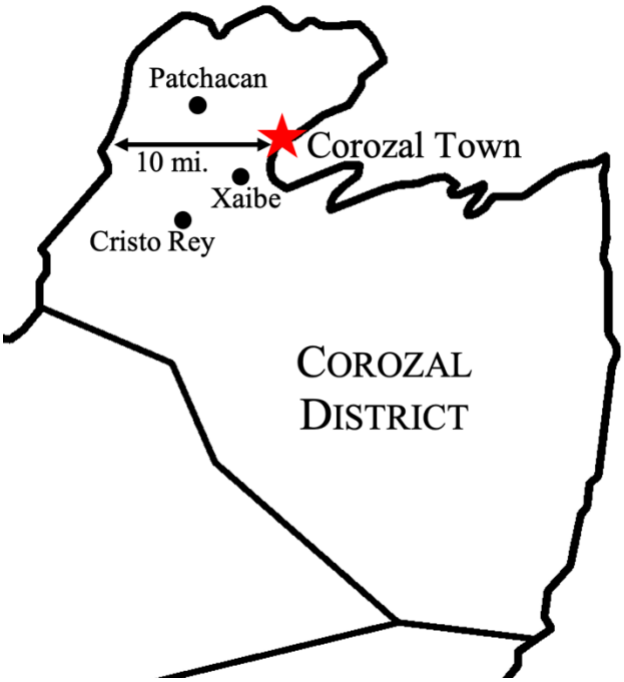
Following revisions, each transcript can be exported in a range of file types. The transcripts used for analysis in this work were exported as text files (.txt) and later converted to comma separated values (.csv). Overall, I would estimate that combining Sonix automatic transcription with manual corrections provided highly accurate, time stamped orthographic transcription in less than half the time expected of manual transcription alone.

The participants in this data set came from a variety of backgrounds and professions including junior college professors, stay at home mothers, students, field hands, and freelance handymen, among others. Their ages range from 20 to 70. The 10 male participants have the following age breakdowns: 5 participants 20-40 years and 5 participants 40 and older. The 9 female participants include the following age breakdowns: 5 participants 20-40 years and 4 participants

40 and older. All participants were born and raised in Corozal District within 10 miles of Corozal Town. As noted above, this area has been the site of various language contact situations since the earliest arrivals of Spanish and British colonizers, with intensified Spanish-English contact prevalent since at least the turn of the 20th century.

Many participants in the current data set grew up or resided outside of Corozal Town in Mayan villages, or '*aldeas',* such as Xaibe, Patchacan, and Cristo Rey. As seen in Figure 3.2, all these areas lie within a ten-mile radius around Corozal Town. While many people in these communities can remember at least one family member who spoke Yucatec Mayan, most members of the last two generations do not speak the language and mainly use Spanish in their daily life. Unlike the rest of Belize, the villages also use Spanish as opposed to English as the language of educational instruction. Even with the relatively high usage of Spanish, many of the conversations I observed in these communities included at least some use of English, especially among speakers of younger generations.

Figure 3.2: Map of Corozal District



While the previous work on Belize stresses the three-way contact situation between English, Spanish, and Kriol, my observations seem to suggest that this contact depends largely on individual experience and lifestyle. For example, someone who spends most of their time in the *'aldeas'* will have less contact with English or Kriol speaking individuals than those living in Corozal Town. On the other hand, someone who lives in the town and works in an environment that demands multilingualism (e.g., government office or bank) will have more balanced use of Spanish, English, and Kriol in their professional life and may use one or more languages regularly in their personal life as well.

With respect to the linguistic diversity of the town, Spanish, English, and Kriol are all prevalent in the daily life of many people. Most public signage is in English, but English, Kriol, and Spanish are all spoken in most public spaces. Moreover, little to no stigma is attached to the use of Spanish. In fact, it seems that many speakers of Spanish who have little knowledge of English live in or around Corozal and can do so without major difficulties. One individual I spoke with, who is not included in the analysis here, related a story of moving to Corozal from the south of Belize and remarked that she found Spanish to be a necessity. Though she only learned rudimentary Spanish related to her work in a government office, she had encouraged her children to learn the language as higher paying, more prestigious careers in the area often require use of both Spanish and English.

Much like Spanish, the use of BK seems to carry almost no stigma. Many speakers use the language for daily communication in both public and private environments. However, when offering their opinions on the language, most people referred to it as "broken English". While these comments did not seem to carry a necessarily derogatory connotation, I was told on several occasions that learning 'proper' English (presumably Standard Belizean English) should be

prioritized over Kriol when teaching children. For example, some speakers of Kriol with whom I spoke noted a fear that children would opt to use Kriol instead of learning 'proper' English. This exemplifies the notion of "Creolization" of younger generations, a fear that has been present in Belize since at least the late 1970's (see Brockmann, 1979). However, other individuals seemed happy to pass this language on to their children in any context without fear of social stigma. I should note that as a community outsider who was specifically seeking Spanish speakers, I heard Kriol on relatively few occasions and only discussed its use with a few people. On the other hand, I discussed opinions on Belizean Spanish with a much broader range of people. The following section includes excerpts and analysis of some commentary offered by interviewees included in the data for this work.

3.5 Local views on language in Corozal[7,8]

Content analysis of the sociolinguistic interviews entails extracting comments from conversations that provide insight on the actual state of language use in Corozal as well as speakers' opinions (on such content analysis for constructing a sociolinguistic profile of study participants, see Poplack, Walker, and Malcolmson (2006): 196–207; Torres Cacoullos and Travis (2018): 63-67; Travis and Torres Cacoullos (2015)). While census data and other prior research remain useful for a basic understanding of the linguistic situation on the ground, observations from local speakers go beyond such formal study. Over the course of the interviews analyzed here, speakers remarked on a variety of relevant topics, most notably including comparisons of Corozal

[7] Note that all names referring to individual speakers in this section and beyond are pseudonyms. These have been assigned to protect the identity of the participants. The numbers following each name indicate the time of the recording at which the example speech occurred.

[8] This dissertation met criteria for exempt research as determined by the Pennsylvania State University Office of Research Protection Institutional Review Board. Approval Study Number 00012365.

Spanish (CS) to other varieties and discussions of when different languages are spoken. The following two sections will explore these topics in depth while providing and contextualizing various speaker comments.

3.5.1 English, Kriol, and Spanish use in Corozal

Though much research on language in Belize focuses on intense contact, census data from the north indicate that English varieties may not be as prevalent in the everyday lives of residents there. This is the case for both standard English varieties as well as Belizean Kriol. Self-reported levels of proficiency are lower for both language varieties in Corozal as compared to the national average. Notably, fewer than 1/5 of Corozal residents reporting the ability to hold a conversation in Belizean Kriol despite the fact that it is often considered a national lingua franca. Importantly, the comments provided in various conversations elucidate some different domains of use for each language. Furthermore, analyzing speaker remarks clearly demonstrates the crucial role of individual experience in the overall use of a given language. For example, the following excerpts come from two middle-aged women, Elena and Susana. The first comment draws an important distinction between language of the home and language of education, a proxy for the official public sphere more broadly. The second demonstrates the predominance of English in other public spaces as well (i.e., professional work contexts). Finally, the third comment once again highlights the use of [standard] English in official capacities.

Example 3:

en la casa nuestro primer lenguaje es el español.	‘at home our first language is Spanish
Cuando ya vamos a la escuela	When we go to school
nos- nuestro lenguaje es el inglés,	we- our language is English
y es obligatorio aprender el inglés.	and it’s obligatory to learn English’

Elena, 22:25-22:42

Example 4:

Cuando tengo que ser profesional	'When I have to be professional
hablo el inglés porque es nuestro	I speak English, because it's our
number one language *en* Belize.	*number one language* in Belize'

Elena, 39:34-39:39

Example 5:

no importa de qué cultura vengas,	'no matter which culture you come from
tu lenguaje va a ser inglés	your language is going to be English
cuando estás trabajando	when you are working'

Susana 21:35-21:38

These comments provide one view on the dichotomy presented to many Spanish speakers of Corozal. At home, or in public or private spaces with other Spanish speakers, the default is Spanish. When in the official public sphere, English becomes the necessary or, as in the case of education, imposed primary language. While Standard English is certainly the nominal official language, Elena goes on to offer another interesting anecdote about her child's experience in primary school. She describes the difficulties faced by her child as other children often conversed in Kriol and ridiculed her child's consistent use of Standard English. While recounting this story, she offers the following observation of the reality in Corozal public schools.

Example 6:

porque en la primaria los pequeños son,	'because in primary school the children are,
hablaban criollo, español, e inglés.	they spoke Kriol, Spanish, and English
Pero como yo a ella no le hablaba en criollo,	But as I didn't speak to her in Kriol
ella hablaba su inglés.	She spoke her English
Su inglés correcto, como debía de ser.	Her correct English, as it should be'

Elena, 26:27-26:49

With this remark she demonstrates the reality that children attending public schools come from a variety of home language backgrounds and that Standard English can be perceived, at least to some degree, as an outsider language. While this is true in Corozal Town, the surrounding *aldeas*, or small communities made of individuals almost entirely of Maya-Mestizo descent, present a

different language situation altogether. This is evident in the commentary provided by, Juan, a man in his early twenties, when speaking about disparities in his school experiences in Corozal Town and a nearby aldea.

Example 7:

en [la aldea][9] cuando iba a la escuela,	'in the aldea when I went to school
puro español.	only Spanish [was spoken]
Y los maestros en [la aldea],	And the teachers in the aldea
los un poco los enseñaban en inglés.	they taught us a little bit in English'

Juan, 21:36-21:42

He then goes on to explain what it was like when he moved to Corozal and notes that, even though teachers in the aldea may have occasionally used English, it was not enough to get by in his new school setting.

Example 8:

pues ahí yo no sabía nada de inglés,	'Well, here I knew no English
nada, completamente nada.	Nothing, absolutely nothing'

Juan, 21:57-22:00

Thus, in the town itself, the official language status of English dominates as the language of instruction. A few miles into the countryside, children may be educated almost entirely in the local dialect of Corozal Spanish with little to no exposure to standard or creole English varieties. This example is just one illustration of how individual experience has a major impact on the languages one may encounter as a resident of northern Belize.

[9] Due to the fact the *aldeas* are relatively small communities and personal anecdotes may easily lead to identification, I will not be providing specific location names mentioned by speakers in the interest of protecting their anonymity.

The distinction between public and private spaces was not the only one offered by speakers to separate who uses English or Spanish and when they use it. For example, the following comment demonstrates how ethnicity or cultural background may also play a role in language use.

Example 9:

que son como los creole,	'those who are creole
los garífuna.	the Garifuna
Ellos usan más el inglés.	they use more English.
y los mestizos,	and the mestizos
pues normalmente ellos están por español.	well usually they use Spanish'

Fernando, 11:12-11:17

Here Fernando offers his explanation of what types of people generally use each language. He groups both creole and Garifuna[10] people as those who generally use English. In this case, his use of the term '*inglés'* very likely refers to Belizean Kriol but also may include a more standard English variety. On the other hand, he mentions that *'mestizos'*, or those of mixed Mayan and European (Spanish) descent usually speak Spanish. While this is by no means a strict separation of language and cultural background, comments from other speakers hint at the same type of distinction and elucidate possible outcomes of cross-cultural contact.

After describing her childhood using mostly Spanish with some English, Mónica, a young Mestizo woman, describes what happened when she married into a new family with a different cultural background.

Example 10:

y que mi pareja es de color piel,	'and my husband has a skin color
de otro color.	of a different color
él habla el creole,	he speaks creole
por él es que lo he aprendido,	he is the reason I have learned it
porque casi yo no la hablaba,	because I almost didn't speak it

[10] Garifuna describes a specific culture of people descended from enslaved Africans and indigenous Arawak or Carib people in the Caribbean. For more information regarding their cultural presence and influence in Belize see Cayetano & Cayetano, 1997; Izard, 2004; among many others.

hablaba inglés,	I spoke English'

Mónica 6:58-7:14

Interestingly, immediately preceding the above statement, Mónica describes how she still only speaks Spanish with her own mother, because her mother does not like it when she speaks Kriol. She then goes on to offer the following assessment later in the interview.

Example 11:

Si tú hablas cierta idioma,	'If you speak a certain language
y tu pareja habla otro idioma,	and your spouse speaks a different language
te vas adaptando y,	you gradually adapt and
ya cuando te das cuenta,	then before you know it
hablas los dos,	you speak both
y es lo que ha pasado con nosotros.	That's what has happened with us
especialmente conmigo,	Especially with me
con mi pareja.	with my spouse'

Mónica 11:07-11:22

These remarks offer insight into a few important points regarding language use in Corozal. First, she affirms the observation offered by Fernando above. Specifically, that her family of *mestizo* cultural background spoke, and continues to speak, almost exclusively in Spanish. On the other hand, her husband's family, presumably of creole cultural background, uses Belizean Kriol. Her second comment demonstrates that her role in this relationship included adapting and learning Kriol to be able to communicate in the home. Elsewhere in the interview, she explicitly discusses speaking both Spanish and English with her own children. Given the use of Kriol between her and her spouse, we can assume that these children are exposed to the three major languages of the region. However, as demonstrated above with the experiences shared by Juan, children growing up in an *aldea* may only encounter Spanish. Again, this highlights the dramatic differences in language use that exist between individuals in Corozal and how the linguistic situation defies neat categorization at both the individual and societal levels.

3.5.2 Language mixing in Corozal

Speakers' evaluations of codeswitching or language mixing behavior represent one area in which the inherent fluidity of language use in Corozal remains most evident. In fact, language mixing was one of the most mentioned topics whenever the interviews turned to discussion of language in Corozal. For example, the following excerpt once again comes from Mónica, following her description of speaking mainly Spanish in the home as a child.

Example 12:

O los dos como Spanglish	'Or both like *Spanglish*
habla el español y en inglés	one speaks Spanish and in English
dices como mitad en español	you say like half in Spanish
y mitad en ingles.	and half in English'

Mónica 7:20-7:23

A total of seven speakers utilized the term *Spanglish*[11] to describe language use in Corozal. This term is also often seen in relation to language mixing of Spanish and English in the United States, a situation with some parallels to the Belizean context. The following commentary demonstrates awareness, at least in some speakers, of this relationship to other Spanish-English contact zones.

Example 13:

Yo creo eso está pasando	'I think this is happening
como el español que está en Estados Unidos	Like in the Spanish in the U.S.
se llama spanglish, verdad?	It's called Spanglish, right?
A veces es una mezcla,	Sometimes it's a mix'

Roberto 18:12-18:18

While these speakers simply noted the existence of language mixing in Corozal, others went further and offered contexts in which this may occur. For example, the excerpt below from Jimena,

[11] Spanglish is a common term, often used in different ways to denote various types of Spanish-English mixing or simply Spanish varieties in contact with English. For more information on the term, especially in the US context, see Otheguy and Stern (2010).

a young mother, is her explanation of what it's like to speak with her daughter about what she learned at school on a given day.

Example 14:

y ella me empieza a decírmelo en inglés	'and she begins to tell me in English
y yo le contesto en inglés.	and I answer her in English
De repente alguna cosa.	Suddenly there's something
Ahí viene la mezcla de	Here comes the mixture of
de que me dice ella una parte	she tells me one part
y yo le contesto una parte en inglés.	and I respond to her part in English
una parte en español	part in Spanish
y así así va	and it goes on like this'

Jimena 11:34-11:47

This anecdote provides one of the few insights I gathered into the language experience of children in Corozal. While codeswitching or language mixing will not be addressed in the quantitative analysis portion of this study, it is interesting to note that it remains a viable type of communication in the community. Additional remarks about child language use were provided by Susana, an elementary level teacher at a town school in which the official language was undoubtedly standard English. While describing how her young students often speak in class, she says:

Example 15:

van a decir	'they will say
teacher *puedo ir a beber* water,	*teacher* can I go get a drink of *water*
me entiendes so no	you understand? *so* it's not
No es la oración,	the sentence is not
no es completo en español.	it's not completely in Spanish
Entonces tenemos esa tendencia de siempre	So we always have this tendency
poner inglés	to put in English
cuando estamos hablando en español.	when we're speaking Spanish'

Susana 18:51-18:57

In addition to this evidence of language mixing in young children, older speakers also offered similar assessments of the linguistic reality in Corozal. For example, both Fernando, a young man,

and Elena, a middle-aged woman, spoke of language mixing as a part of daily life and normal language.

Example 16:

Todos se entienden porque,	'Everyone understands because
no solamente yo,	it's not just me
sino algo de,	but something like
como algo normal en la juventud.	it's something normal for young people
estás hablando en español,	you are speaking in Spanish
De repente usas una palabra en inglés,	suddenly you use an English word'

Fernando 7:39-7:51

Example 17:

y otra cosa que aquí en Belice,	'and another thing here in Belize
hablamos español,	we speak Spanish
Luego lo mezclamos con inglés,	then we mix it with English
o lo mezclamos con criollo.	or we mix it with Kriol'

Elena 21:34-21:44

The prevalence of codeswitching across all age groups is perhaps the best demonstration of the complexity of the linguistic situation in Corozal. Specifically, there are three languages, Spanish, Kriol, and Standard English, that one may encounter at any given moment. As explored above in Section 3.4.1, the probability of using one of these languages instead of another can vary widely based on one's type or level of education, familial or ethnic background, or any number of social settings. Adding another layer of complexity, this section shows that in situations where speakers are bi- or multilingual, codeswitching also becomes a viable mode of communication. The awareness of these speakers of their unique linguistic habits and their relationship to surrounding areas leads to the formation of opinions, evaluations, and comparisons. The next section will explore some such commentary offered by these speakers.

3.5.3 Evaluations of Belizean Spanish and comparison to other varieties

Oftentimes while talking to people from Corozal about their daily lives, they mention trips to nearby Chetumal, Mexico. In fact, Chetumal is where many Corozal residents go for common goods and services. While the population of Corozal Town is around 10,000 (2010 Census), Chetumal is home to around 150,000 people. This disparity leads to Chetumal having much larger commercial centers as well as more options for entertainment and other service industries (e.g., restaurants, mechanics, etc.) all at lower cost than those in Corozal. It is also relatively common for people to commute from Corozal to Chetumal for work or higher education. This creates an interesting contact situation between two distinct Spanish dialects. To elucidate whether the differences were discernable to Belizean speakers, I asked many of them directly if they could tell the difference between speakers from each place and, if so, how[12]. The following excerpts show a few responses that capture the major trends. The first such trend is speakers offering their evaluations regarding the relative "correctness" of BS. For example, when asked if he notices any differences between Chetumal and Corozal Spanish, Eduardo offered the following comments.

Example 18:

sí hay una gran diferencia	'yes there is a big difference
el español de acá de Belice	the Spanish from here, from Belize
es totalmente distinto.	is totally distinct
No sé si ya escuchó,	I don't know if you already heard it
pero muchos dicen que	but many say that
el español que hablamos aquí	the Spanish we speak here
no es el español correcto.	is not correct Spanish'

Eduardo 14:27-14:38

[12] Crucially, any questions that directly involved language evaluation were held until the end of interviews whenever possible. This was done to avoid increasing speakers' metalinguistic awareness of traits they mentioned.

This type of response was relatively common, as about a third of speakers offered similar remarks regarding the "correctness" of Corozal Spanish. While it is safe to assume that such comments mean speakers like Eduardo believe Chetumal Spanish to be more correct, other speakers explicitly make the connection. For example, Isabel's response to a similar question included mentions of "Spanglish" followed by this commentary:

Example 19:

No habla el español correcto en Corozal,	'Correct Spanish is not spoken in Corozal
ni Orange Walk	nor in Orange Walk
ni todo país de Belice	nor in all of Belize
Chetumal 100 por ciento hablan en español.	Chetumal 100 percent they speak Spanish
Cuando vamos allá	When we go there
tratamos de hablarle correcto español.	We try to speak correct Spanish to them'

Isabel 40:02-40:11

Here, she not only states that Corozal Spanish is incorrect but extends that assessment to all Spanish varieties spoken in Belize. She sets this in contrast to Chetumal where Spanish is spoken all the time. She also mentions making an intentional effort to speak "correct Spanish" while in Chetumal. She goes on to continue her response with the following:

Example 20:

y se le hace muy difícil	'and it's very difficult
porque tenemos tres que no	because we have three [languages] that
ninguna de las tres es	none of them are
es cien por ciento correcto.	are 100 percent correct
Ese es nuestro gran problema aquí en el norte,	this is our big problem here in the north
…	…
Hable con otra persona, va a hablar,	speak with another person, they will speak
con usted en español,	with you in Spanish
en inglés y en criollo.	in English and in Kriol
Ni lo va a conocer para que	and they won't even know why
está hablando en otra lenguaje	they are speaking in another language'

Isabel 43:58-44:12

Based on many remarks from other speakers, I believe this commentary regarding the "big problem" of language mixing in northern Belize would find widespread support. In fact, many other speakers also noted that mixing languages was common but not a correct form of speaking. This held true whether discussing the use of Spanish, Kriol, or other English varieties. This type of mindset was expressed by both men and women across the spectrum of education and socioeconomic levels. While the use of Spanish in Corozal may not technically be stigmatized, the excerpts above do signify a trend of viewing the Corozal dialect as inferior to the neighboring Chetumal. This is perhaps best captured by a comment from Fernando, who spends time in Mexico going to school and enjoys going there for entertainment as well.

Example 21:

cuando hablo con mis amigos	'when I speak with my friends
pues no puedo hablar el español sofisticado	well I can't use sophisticated Spanish
porque pues es como 'qué onda'	because well it's like "qué onda"
no le van a entender.	they won't understand that'

Fernando 8:54-9:02

In this anecdote, Fernando laments his inability to use "sophisticated Spanish" with his Belizean friends. Tellingly, his example of sophistication is the well-known Mexican Spanish greeting "¿Qué onda?" which roughly translates to "what's up?". Obviously, Fernando feels as though his command of Mexican Spanish slang grants a certain level of social prestige that his other friends lack.

While the presence of language mixing was a main component that many speakers thought made Corozal Spanish unique, it certainly was not the only factor. Many speakers highlighted specific characteristics that they believe make BS distinct. Multiple speakers vaguely described a unique accent as well as things like pace of speech, with Belizeans speaking comparatively slower.

By far the most common characteristic cited as immediately revealing a speaker's Belizean identity was the retroflex rhotic sound. The following are a few observations of this phenomenon.

Example 22:

no hablamos el español correcto.	'we don't speak correct Spanish
No pronunciamos la erre,	we don't pronounce the [trilled] r'

Isabel 41:31-41:36

Example 23:

Más refinados que nosotros.	'more refined than us
su idioma,	their language
porque ellos mayormente usan erre.	because they usually use [trilled] r
Nosotros no tenemos erre.	we don't have [trilled] r
ellos sí usan	they do use it'

Julián 29:25-29:35

These first two excerpts clearly relate back to the previously mentioned topics of incorrect or inferior Spanish in Corozal. In these cases, the speakers identify the rhotic pronunciation as the factor that sets Corozal Spanish apart from Chetumal with a negative connotation. Other speakers also mention the rhotic pronunciation but stop short of applying any such judgement.

Example 24:

no utilizamos la doble erre,	'we don't use the double r
no lo pronuncian aquí,	they don't pronounce it here'

Elena 21:15-21:19

Example 25:

Por ejemplo, la erre	'for example, the r
es algo clave, no?	that's something key, right?
allá usan la erre	there they use [trilled] r,
y aquí es /ar/,	and here it's [imitates retroflex /r/]

Fernando 9:22-9:26

Example 26:

Sí, la diferencia es que	'yes, the difference is that
los beliceños no pueden decir el erre	Belizeans can't say the [trilled] r
para salvarse la vida	to save their own lives'

Lucía 7:06-7:12

Thus, the rhotic is obviously a salient feature of Belizean Spanish, not just for linguists or outside observers, but also for the speakers themselves. This fact may be especially true in Corozal given

their frequent contact with Mexican Spanish speakers from Chetumal. Finally, in one instance, a speaker linked the rhotic pronunciation of /r/ to English. Though previous studies have claimed English influence as the source of this feature, that has yet to be confirmed by any principled quantitative linguistic study. Thus, it is interesting to hear a native speaker, presumably with no background in linguistics, make this connection independently.

Example 27:

en México es erre erre.	'in Mexico it's 'r', 'r' [imitates trill]
Entonces vamos a suponer.	so let's suppose
Nosotros aquí estamos acostumbrados	here we are accustomed
al 'r' del inglés.	to the 'r' of English
Entonces para un vehículo	so for a vehicle
es un carro, vamos a decir carro.	it's a car [retroflex], we will say car [retroflex]'

Ricardo 35:19-35:38

Again, this comment demonstrates the high level of awareness of CS speakers regarding their differences with the geographically nearest Spanish variety in Chetumal. Additionally, along with all the other comments in the content analysis, it shows linguistic intuition for the specific features or phenomena that make CS unique. Thus, many of the topics discussed in this section, such as different contexts of use for each language and comparisons to other Spanish varieties could prove to be fruitful for future research. The present study also draws on these observations by seeking to better understand the use of the retroflex rhotic, the most salient feature of CS.

3.6 Conclusion

The sections above bring together the social, historical, and linguistic elements that define present day Corozal, Belize and the Spanish dialect spoken there. Though much of the linguistic research on this area has been qualitative, it has illuminated many aspects worthy of further study. Combining this with the preliminary quantitative data offered by recent work shows that many

important insights remain to be uncovered. Moreover, the content analysis of speaker commentary reveals the inherent complexity of attempting to categorize the linguistic or social dynamics at play. With all of this in mind, the next chapter will present the first quantitative variationist study of retroflex rhotics, the most notable phenomenon in Corozal Spanish which has largely eluded study or explanation in the forty years since it was first recorded.

Chapter 4: Analysis of Linguistic Factors

4.0 Overview

Existing literature on the Spanish of Belize includes mostly descriptive accounts or explicit focus on language contact phenomena. Various studies analyze codeswitching (Balam & de Prada Perez, 2017; Fuller Medina, 2016), English influence on Belizean Spanish (Hagerty, 1996), or general characteristics that distinguish Belizean Spanish varieties (Cardona Ramirez, 2010). These studies have provided a general outline of the different Spanish varieties spoken in Belize while also exploring the results of long-term Spanish-English contact in this particular context. However, analyses of variable patterns in specific monolingual Belizean Spanish varieties remain rare. Despite the lack of studies of variation, with respect to phonetic or phonological features, nearly all linguistic analyses of Belize concur that the rhotics are the most salient feature of the dialect and are often said to contribute to an English-like accent (see Hagerty, 1996:137).

In order to build on previous observations and provide new insight, the results presented in this chapter come from a variationist analysis of the linguistic factors impacting the use of retroflex rhotics in the Spanish of Corozal Town, Belize. The contributions of this analysis advance previous works in a few important ways. First, while previous studies of Spanish varieties in Belize have largely relied on description and qualitative approaches, the analysis below employs quantitative methods. Quantitative research requires adherence to the scientific method and remains crucial for producing reliable, replicable results. Thus, the work presented below follows principled methods of data collection, extraction, and analysis to ensure the results are both accurate and generalizable to a broader group of speakers.

In terms of specific quantitative approaches, this study employs the variationist method (Labov, 1966). One defining feature of variationist linguistics is the assumption that variation is

not random. In other words, variation is inherent to language and constrained by linguistic and social factors. In order to elucidate such factors, previous research has developed methods such as the *principle of accountability* (Labov, 1982). Studies not utilizing these methods, which focus on impressionistic description or utilize anecdotal evidence, risk overestimating the prevalence of a given feature. Therefore, most previous analyses of Belizean Spanish lack proper quantification of how often speakers actually use retroflex rhotics, instead relying on the researcher's impressions. To avoid this pitfall, the present study follows the principle of accountability. This means that all rhotic tokens were extracted for analysis as opposed to only those where a speaker uses the variant of interest (i.e., retroflex). Crucially, this allows for analysis of all contexts in which the retroflex appears *and* contexts in which it could have appeared but did not. This guarantees a broader understanding of variable patterns, allows the formation of conclusions regarding the factors affecting variation, and avoids overgeneralizations that may result from strictly qualitative approaches.

Finally, this analysis adds to previous work by focusing solely on the monolingual Spanish of Corozal Town. As stated above, few studies have moved beyond the impact of language contact in Belizean Spanish varieties. These contributions are certainly important and serve to enhance our knowledge of language contact outcomes. However, they often fall short in documenting and examining the underlying nature of Belizean Spanish varieties whose speakers are not all proficient or everyday speakers of English. As Hagerty noted in his original study (1979:2) "the meager documentation available regarding Belizean Spanish amply demonstrates a void in Hispanic dialectology which must be filled". Though there has been further exploration of these dialects in the intervening decades, Hispanic linguistics still lacks even a basic understanding of the factors constraining variation of the most salient characteristic of Belizean Spanish. Thus, the results

presented in this chapter aim to provide a quantitative analysis of the linguistic factors impacting the use of retroflex rhotics in Corozal Spanish.

4.1 Methodology and data

4.1.1 Sociolinguistic interviews

All recordings were obtained via sociolinguistic interviews (Labov, 1981a, 1984) using lavalier microphones with a Zoom H1n recorder. The interviewer elicited narratives of personal experience regarding a variety of topics. These included stories about family members, favorite pastimes, childhood memories, and other subjects of personal interest to the interviewee. Finally, near the end of each interview, participants were asked questions about their general attitudes or opinions regarding language use, specifically in Corozal and more generally throughout Belize.

The goal of the sociolinguistic interview is to reduce any possible effect of the Observer's Paradox, wherein participants may alter their natural speech or behavior when knowingly under observation. In a sociolinguistic interview, the interviewer allows the interviewee to guide the conversation based on their own interests which encourages narrative based exchanges. In some sense, this approach offers the interviewee control over the conversation and allows them the comfort of focusing on topics they want to discuss. In doing so, there is less focus on the microphone or recording equipment and more focus on telling each story. This increases the likelihood that the recorded speech represents a participant's vernacular—the variety spoken when in familiar, informal, and unmonitored settings. The vernacular provides the "most systematic data for linguistic analysis" in that variation has been demonstrated to be more patterned than in less informal, superposed styles (Labov 1984: 29).

4.1.2 Linguistic variables and the variable context

Linguistic variables are units in language that have more than one possible realization. The differing realizations reflect the inherent variability in human language. Decades of research using variationist methods shows that this variability is not random, but rather it is constrained by a variety of linguistic and social factors. Thus, the primary objective of the variationist approach is to determine which linguistic and social factors impact specific instances of variation.

Perhaps the most well-known example of a linguistic variable comes from Labov's (1966) pioneering work developing the variationist approach through the study of (r) in New York City. Specifically, his work focuses on the variability between realizations [∅] or [ɹ] (Labov, 1966:33). Linguistic factors found to predict the use of either variant included surrounding phonetic context and speech style. Additionally, the social factor of socioeconomic class also played a role in the variation. Through the development of this method, and the hundreds of subsequent studies it inspired, research has essentially dispensed with the notion that variation can occur randomly and without constraining factors.

Given these facts, the present study begins with the assumption that variation is inherent and serves a social function within speech communities (Labov, 1994). Specifically, the results presented below in this chapter demonstrate linguistic factors impacting the use of retroflex rhotics in Corozal Spanish. To begin, the variable context included all words containing rhotics. After preliminary analysis, the two main contexts in which variation occurred, word initial and word internal syllable final, were selected for further data extraction and analysis.

4.1.3 Data extraction and coding

Following the transcription process, data extraction began with the first 200 rhotics from 10 of the 19 speakers. This first sample served to explore which positions in the word employed

the retroflex at the highest rates. Subsequently, based on this initial analysis presented below in Figure 4.2, further data extraction occurred across all speakers. In the case of analyses for word initial rhotics, tokens were only extracted from 5 speakers that showed variation in this position. For word internal rhotics, all 19 speakers showed variation and were included in the analyses. Each extracted token was coded for the following linguistic factors explained below in Section 4.2.

Coding of rhotic variants in the present data was completed impressionistically. Few cases of uncertainty arose and were largely due to unclear speech. These cases were excluded from analysis. The five following variants occurred in the present data set: tap, retroflex, deleted, trill, and fricative. All of these variants have been attested in previous studies of Belizean Spanish dialects as described at length in Section 2.3. Speakers in this data set utilize canonical Spanish forms of the tap and trill rhotics, though use of the latter remains relatively rare. The retroflex[13] variant has been compared to initial 'r' in midwestern American English (Hagerty, 1979), and impressionistic analysis of the present data confirms this striking similarity. The deleted or elided rhotic does not include any closure and is found only in syllable and word final positions. This variant also occurs in Veracruz Mexican Spanish (Bradley & Willis, 2012) and has been previously attested in the Belizean Spanish of Orange Walk (Balam, 2013b). Finally, a fricative rhotic is found in variation with trills which is a common pattern in both Spanish (e.g., Calvo Shadid & Portilla Chavez, 1998; Bradley, 1999; Bradley & Willis, 2012) and other languages (e.g., Demolin, 2001; Verstraeten & Van de Velde, 2001; Russell Webb, 2009). Fricatives are often conceptualized as a reduction of the trill given that it is far less complex articulatorily and no closure occurs.

[13] It should be noted that the possibility of some or all speakers employing a bunched rhotic articulation, as opposed to retroflex, cannot be excluded based on impressionistic analysis. More precise articulatory measurements would be needed to differentiate between these two variants. However, the fact that listeners cannot discern such differences may suggest that no separate analysis of these two articulations would be necessary if the variable production exists.

4.1.4 Data analysis

The existing literature on the Spanish of Belize includes mostly descriptive accounts or explicit focus on language contact phenomena. Furthermore, studies of rhotic variation in the dialect tend to include speakers from vastly different regions or focus on maintenance of phonological contrast. Alternatively, the present study will employ the variationist method. By assuming that variation is inherent and serves a social function within speech communities (Labov, 1994), this analysis will provide a broader understanding of both the linguistic and social factors accounting for rhotic variation in Corozal Spanish. The overall analysis presented below cover rhotics in all positions in the word from a subset of ten speakers from the data. Further analyses include data distributions for rhotics in both word internal syllable final and word initial positions.

4.2 Analyzed factors

4.2.1 Position in word

The first factor is position in word, coded as WORD INITIAL, COMPLEX SYLLABLE ONSET, INTERVOCALIC (split by SINGLE or DOUBLE), WORD INTERNAL SYLLABLE INITIAL, WORD INTERNAL SYLLABLE FINAL, or WORD FINAL. In canonical Spanish, several positions are restricted to only the tap or trill as shown in Figure 4.1. For example, the figure shows that word initial rhotics and those after a heterosyllabic consonant are realized as trills. Meanwhile, rhotics following a consonant in the same syllable or in word final position before a vowel will appear exclusively as taps according to canonical Spanish pronunciation. Interestingly, only a single context accounts for the phonemic contrast between tap and trill. This is important because, as explored further in Chapter 2, many studies have examined rhotic variation in specific positions based on the assumption that only either the tap or trill should appear there. Additionally, many studies have focused solely on the very narrow context of phonemic contrast, disregarding the possibility of broader variation beyond

that context. Therefore, a preliminary analysis of all positions in the word is crucial in order to avoid prior assumptions about the nature of the non-standard retroflex rhotic and other rhotic variants. This piece of the analysis also serves as a useful comparison to rhotics in canonical Spanish.

While the main goal of this analysis is to examine variation more broadly, the results will provide insight on the question of contrast maintenance or merger. For example, if a merger of the type predicted by Hagerty (1979:81) has occurred in intervocalic position, there would be a preference for the retroflex in all intervocalic rhotics regardless of single or double 'r' spellings. Alternatively, evidence of contrast maintenance would be present if speakers employ different variants in these two contexts. Studies of contrast maintenance across Spanish varieties with non-canonical rhotics have found a range of outcomes, from maintenance by various means to complete merger in the contexts where the contrast should be operating according to canonical Spanish. Overall, the findings of this study will provide an important point of comparison to previous results while examining competing phonological theories of the Spanish rhotic system.

Figure 4.1: Tap and trill rhotics by position in word for canonical Spanish

Contrast Tap vs. Trill	V__V	Intervocalic
Trill Only	#___	Word initial
	C.__	After hetero-syllabic consonant
Tap Only	C___	After tautosyllabic consonant
	V._#V	Word final before a vowel
Variable (most commonly tap)	V__C	Word internal before consonant
	V_#C	Word final before consonant
	V_##	Word final before pause

4.2.2 Phonetic Environment

Phonetic environment is an important determinant in Spanish rhotic use for some positions in the word. For example, in word internal syllable initial position the trill is always preferred after a consonant, as in the first rhotic of the word *alrededor* (around). On the other hand, in intervocalic position the double 'r' spelling is necessary to prompt the use of the trill to express the appropriate member of a minimal pair, as in *perro* (dog). While few cases of word internal syllable initial rhotics appear in this data, a parallel context of interest is word initial rhotics. Though this position always calls for the trill in canonical Spanish, the effect of preceding context across word boundary may still play a role. It is expected that trills will be favored when preceded by words ending in consonants, while those preceded by words ending in vowels will have higher rates of non-

canonical variants[14]. To test this hypothesis, all word initial rhotics were extracted only from speakers that showed variation in initial position (N=5). Then, contexts were coded as either FAVORS RETROFLEX, when preceded by a vowel, or DISFAVORS RETROFLEX, when preceded by a consonant.

In addition to the preceding context, the following context was also analyzed for word initial rhotics. While the impact of the following vowel for Spanish rhotic variation may be generally overlooked and less well understood, evidence from Catalan provides preliminary insight into how this factor may play a role. In a study of Catalan rhotics, Recasens (2007:14) finds that intervocalic trills have significantly longer durations before high front vowels. He attributes this to the articulatory difficulty of transitioning between a high front vowel and a trill. This finding suggests that the following vowel may play a role in other cases of variable rhotic production. In an attempt to further elucidate possible patterns in the present data, the following vowels for word initial rhotics were coded as FRONT or NON-FRONT. It is expected that NON-FRONT vowels will result in higher uses of the trill, given that this context promotes use of the canonical duration trill in Catalán. Meanwhile FRONT vowels, which favor longer durations for trills in Catalán, may present a context that is more susceptible to variation. In this case, the non-standard retroflex rhotic will be more likely to appear in this context.

As for word internal syllable final position, all speakers demonstrated variation between tap and retroflex. Therefore, all rhotics in this position from all speakers were extracted. Previous studies show widespread variation and classify this position as variable even in canonical Spanish. Following studies of other dialects, the following phonetic environment was coded (e.g., Bradley,

[14] While this context may include occasional pauses between words, conversational speech data reduce this phenomenon. Thus, the general expected outcomes would not be affected by rare cases of pausing.

1999; Balam, 2013b; Kim, 2019, among many others). Coding was based on the place of articulation of the following consonant resulting in the categories: ALVEOLAR, DENTAL, LABIODENTAL, VELAR, and BILABIAL. Based on previous studies, it is expected that the non-standard rhotic variant will be favored in ALVEOLAR and DENTAL positions and disfavored before BILABIALS and VELARS.

4.2.3 Frequency

Determining the impact of word frequency is an important part of usage-based linguistic analysis of variation and change. As Bybee (2002b: 220) notes, when discussing the implications of this theory, "every aspect of language can profitably be reexamined in light of the important frequency effects". Even though many studies find robust frequency effects, the results of these effects, their relationship to other factors, and the methodological application of frequency are not always straightforward. For example, in the present work, separate frequency measures will be necessary for word internal rhotics versus those in word initial position. Furthermore, several methodological decisions must be made within each of these measurements.

First, for words containing an internal rhotic the phonetic context always remains the same. While this means any lexical frequency measures will inherently account for context, other methodological decisions are necessary. One such decision is whether to measure global frequency, within a much larger corpus of Spanish, or local frequency, within the corpus utilized for the rest of the study. Following previous studies accounting for frequency in a usage-based perspective (e.g., Erker & Guy, 2012; Lamy, 2015), the results presented below utilize local frequency. This decision is supported by the broader usage-based principle of attributing patterns of variation to speakers' experience which is most accurately represented using measurements from the same corpus (Erker & Guy, 2012:530).

Another difficulty in using frequency measures arises when attempting to operationalize it in quantitative studies. Frequency measures may be analyzed as continuous variables (e.g. counts or occurrence per volume of words) or with more discrete distinctions (e.g. grouping as frequent, semi-frequent, infrequent based on a given threshold). While multiple frequency measures were investigated as recommended in other studies (see Erker & Guy, 2012), the results presented below employ a continuous measure. Furthermore, for word internal rhotics, results are reported on a logarithmic scale to facilitate data visualization (Erker & Guy, 2012: 538).

Exploring the implications of frequency is especially important in the present work for providing preliminary insight into possible patterns of rhotic change in Corozal Spanish. With regard to frequency, if the retroflex is conceptualized as a change internal to the phonological system, the expectation would be that high frequency words are affected first. Given the inherent articulatory complexity of the trill and the demonstrated unpredictability of rhotic change, the retroflex rhotic can be conceptualized as a reduction of the configuration necessary to produce the trill. This would be similar to the reduction resulting in the assibilated rhotic of Ecuadorian Spanish (Bradley, 1999), and is supported by the appearance of retroflex variants in other varieties such as Costa Rican (Calvo Shadid & Portilla Chaves, 1998) or Yucatan Spanish (Lope Blanch, 1975). Thus, a greater use of retroflex in high frequency words would mirror results for other system internal, reductive sound changes such as t/d deletion in American English (Bybee 2000, 2002a; Gregory, Raymond, Bell, Fosler-Lussier, & Jurafsky, 1999) and the reduction of syllable initial [s] to [h] in Spanish (Brown, 2004; Raymond & Brown, 2012). On the other hand, if the retroflex is influenced by factors external to the Corozal Spanish phonological system, low frequency words would be expected to show greater rates of retroflex use (for more on contact induced change affecting low frequency words first see Torres Cacoullos & Ferreira, 2000). In this case, higher

frequency has a conserving effect, in which the strong exemplars associated with high frequency become entrenched and resist non-reductive change (Bybee, 2010:24). These competing hypotheses can only be examined after accounting for frequency.

The concerns discussed above regarding operationalization of frequency, inclusion of frequency in quantitative analysis, and understanding its implications still hold for word initial rhotics. However, variation at word boundaries requires a different approach to the overall measurement of frequency. To understand why, it is first important to recognize the difference in the amount of variability in the phonetic environment between word internal and word initial contexts. For example, a word internal rhotic, as in *importante* 'important' would have the same surrounding context in every token. On the other hand, a word with an initial rhotic, as in *realidad* 'reality', may be preceded by different vowels or consonants in each token. In other words, the same word is always in an *alternating* environment (Bybee, 2006). Thus, for sounds at word boundaries, it is more appropriate to consider the frequency with which they occur in specific conditioning environments. In fact, previous works have shown that words with word initial or final variation that most commonly occur in a favorable context for a given variant, also have higher rates of that variant when not occurring in those contexts (Bybee, 2002a; Brown, 2004; Guy, Hay, & Walker, 2008). Thus, the more appropriate measurement is frequency in favorable context.

To apply this method in the present data, each word initial token was coded for the number of times it appeared in a favorable context for retroflex use. The favorable context of preceding vowels was determined by the findings shown in Figure 4.3. For example, the word *ropa* (clothes) appears three times in the data, giving it a raw frequency of 3. However, a vowel precedes it in only one of those cases. Thus, the frequency in favorable context of the word *ropa* is 1. The results

of this analysis will help determine whether or not the retroflex variant can be considered a locus of change in Corozal Spanish.

4.3 Results

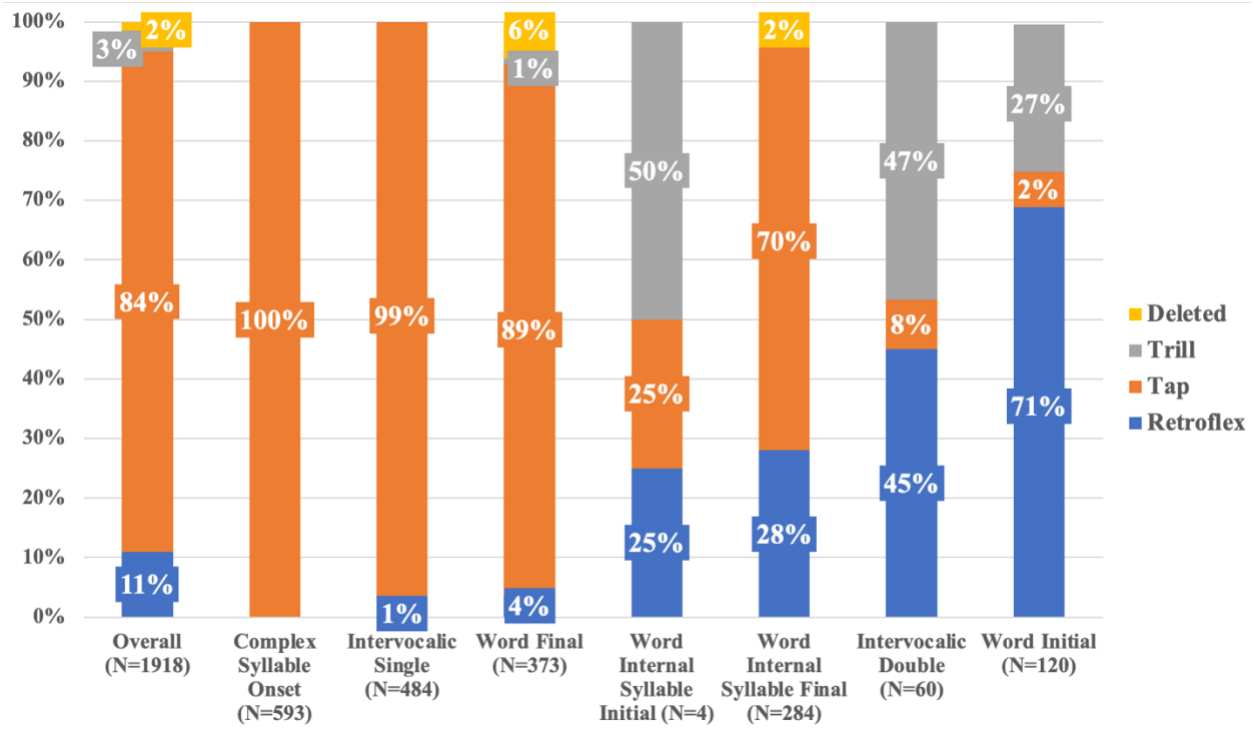
4.3.1 Position in word

Figure 4.2 shows the variants used across all positions in the word for the first two hundred rhotics from 10 representative speakers, 5 males and 5 females from across the spectrum of age groups. The far-left column shows that the overall rate of the non-canonical retroflex variant is 11% while the tap is by far the majority variant at 84%. Trills and deleted rhotics make up 3% and 2% of the overall data, respectively. The next three bars show that taps make up the vast majority of rhotics in complex syllable onsets, intervocalic single, and word final position. Taps also occupy these positions in canonical Spanish varieties either exclusively--in complex syllable onsets and intervocalic single--or variably--in word final. Variant choice for word internal syllable initial position is determined by the preceding consonant in canonical Spanish; however, low token counts in the present data (N=4) preclude drawing any conclusions.

The final three bars show increased rates of the non-canonical retroflex. The two rightmost bars represent phonological environments, word initial and intervocalic double, in which the trill would be used in canonical Spanish. Focusing on these positions may lead to the conclusion that the retroflex is used variably in place of the trill, thereby not changing the phonological contrast. However, word internal syllable final position (third bar from right), also shows considerable use of the retroflex. This is a position in which the most common variant in canonical Spanish is the tap while the trill would appear variably, usually for emphatic effect (Quilis, 1993). Thus, the retroflex does not seem to be serving exclusively as a variant of the trill nor simply maintaining the canonical phonological contrast.

The overall results also demonstrate, through use of the tap, trill, and retroflex variants, that there is no support for a proposed merger of rhotics in Corozal Spanish, as suggested by Hagerty (1979: 81). This is especially obvious when comparing the intervocalic single and intervocalic double positions where the phonemic contrast is expected to operate. In the former there is almost exclusive use of the tap (99%), while in the latter there is variation between trill and retroflex. To better understand the observed variation, additional analysis of linguistic factors in word initial and word internal syllable final position was undertaken, where the number of tokens is sufficiently robust.

Figure 4.2: Rhotic variants across all positions in word[15]



[15] Some speakers produced fewer than 200 rhotics resulting in total N < 2,000

4.3.2 Surrounding Phonetic Context

Results in Figure 4.3 are drawn from a subset, comprised of 5 speakers. The excluded speakers showed no variability in their use of word initial rhotics, always opting for use of the retroflex. The analysis is based on preceding phonological contexts that trigger use of the trill in syllable initial position in canonical Spanish. Thus, the right bar (Preceding Vowel), contains those word initial rhotics preceded by vowels as these contexts are expected to trigger use of the retroflex. The left bar (Preceding Consonant) includes those preceded by consonants. As shown when comparing the two bars, the expected result occurs. Rhotics preceded by vowels are more likely to be realized as retroflex, while a preceding consonant tends to promote use of the trill. However, results of a chi-squared test showed these differences to be not statistically significant $\chi^2 = (1, N = 276) = 2.1$ and p-value = .15.

Figure 4.3: Initial rhotic variants by preceding context

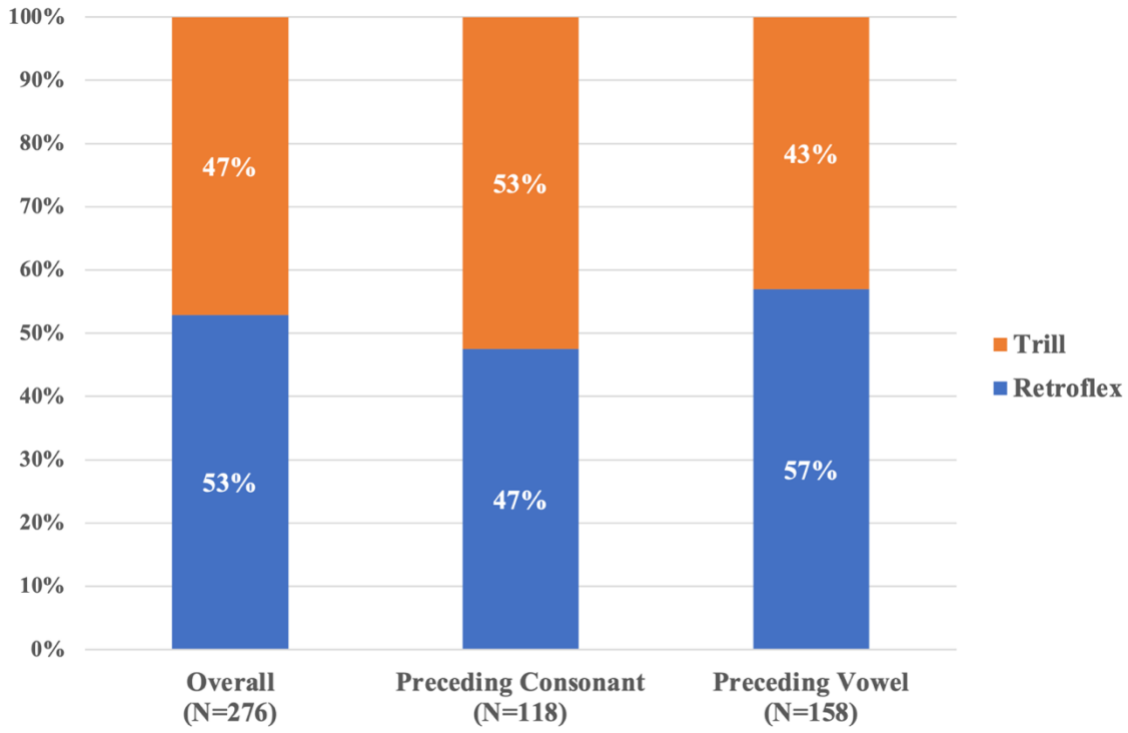
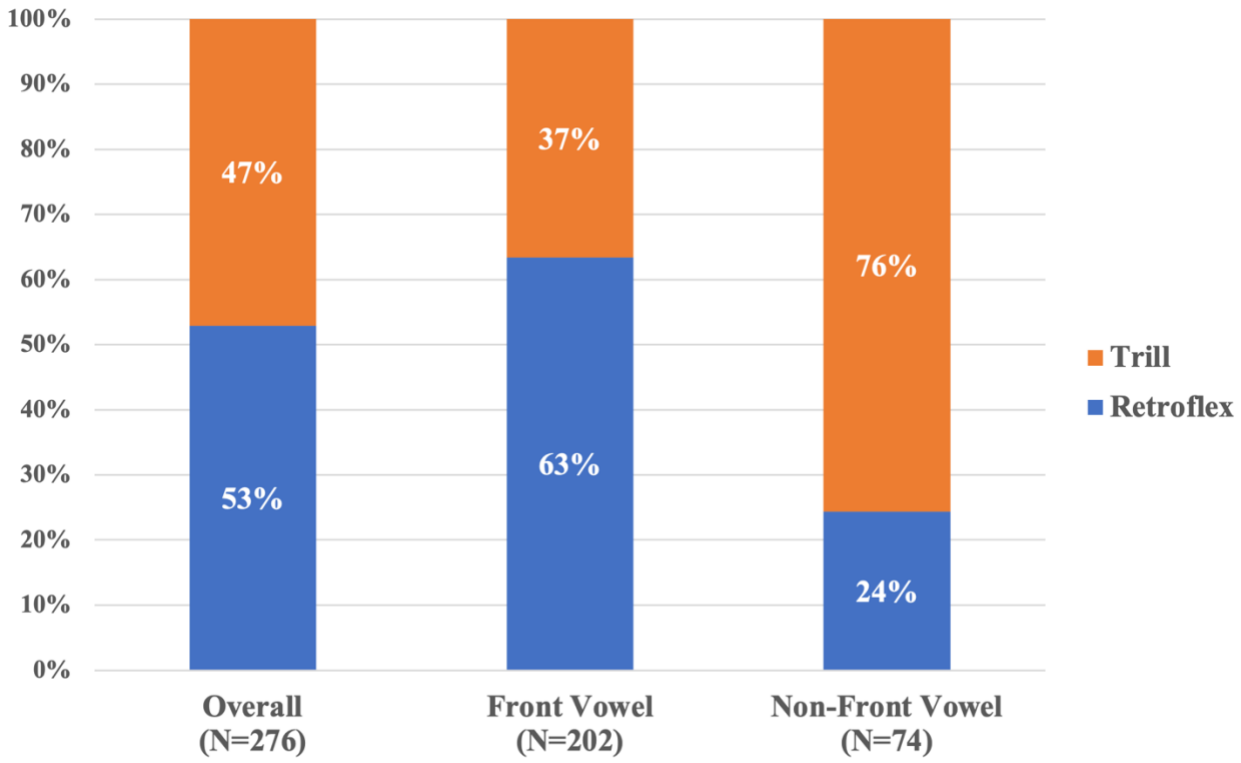


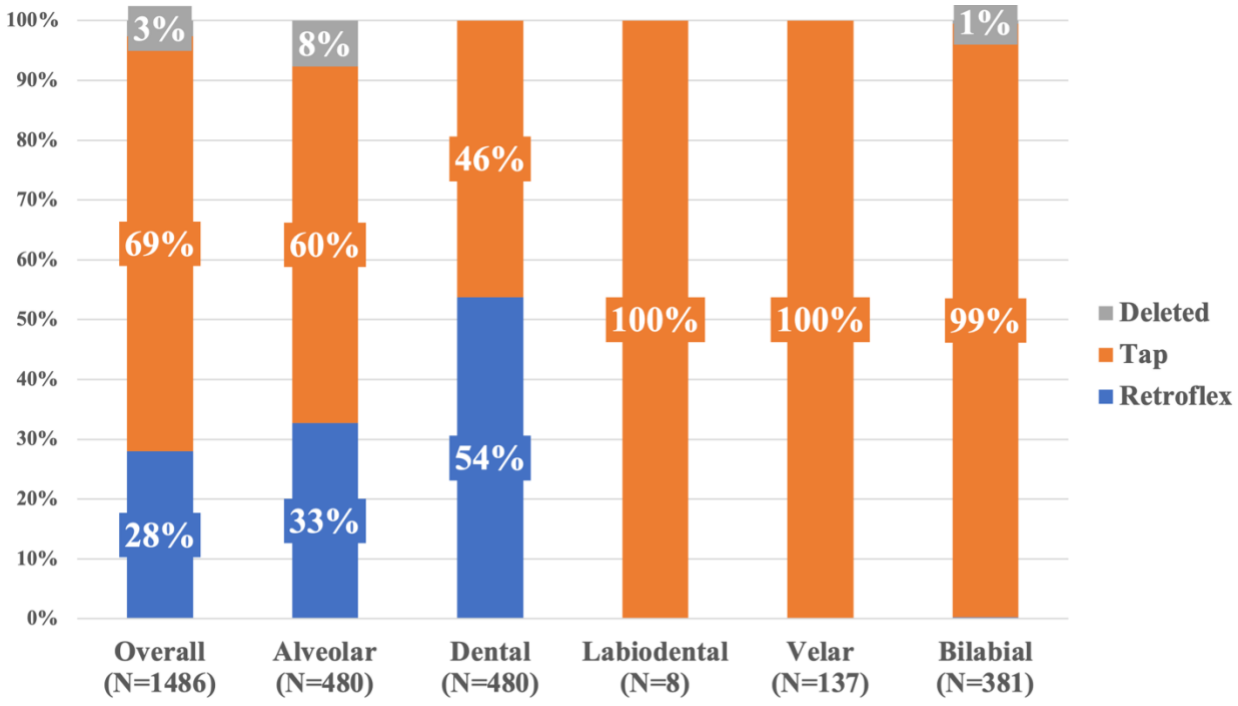
Figure 4.4 shows results from the same subset of 5 speakers as Figure 4.3, this time for following context of word initial rhotics. Overall, front vowels do show a preference for the retroflex rhotic with a 63% rate of use as compared to the overall rate of 53%. Additionally, non-front vowels demonstrate a greatly reduced rate of retroflex use at only 24%. As mentioned above, findings for Catalan rhotics showed that a following high front vowel led to an increased duration of an intervocalic rhotic. This finding suggested that a following high front vowel may present a context that is more susceptible to variation. In this data, it seems that either front vowel, /i/ or /e/, following a rhotic may lead to higher rates of non-standard rhotic use. A chi-squared test revealed these differences to be significant with χ^2 (1, N=276) = 31.6 and p-value < .001.

Figure 4.4: Initial rhotic variants by following context



Moving to word internal syllable final position, several previous studies show that place of articulation of the following consonant can constrain the use of non-standard rhotic variants. Usually, this position is occupied by a tap in canonical Spanish. However, as discussed in Chapter 2, considerable dialectal variation has been reported. As shown below in Figure 4.5, in Corozal Spanish, there is a categorical use of taps in this position before labiodental, velar, and bilabial consonants. On the other hand, when preceding alveolar or dental consonants word internally, speakers employ the retroflex variant at rates of 29% and 46%, respectively. Variability preceding these categories of consonants is corroborated by other linguistic analyses of non-standard rhotics, the implications of which will be discussed further in Section 4.4.4.

Figure 4.5: Word internal rhotics by following context



4.3.3 Frequency

Figure 4.6 displays results for frequency in favorable context (FFC) of the word initial rhotics for speakers that demonstrated variation in that position. The interquartile range is slightly larger for words with an initial trill. Outliers generally represent a single word with a given frequency that displayed variation in initial rhotic use. Finally, in addition to the largely overlapping box plot statistics, the mean frequencies in favorable context are also nearly the same at 2.6 and 2.3 for retroflex and trill, respectively. Results of a Welch two sample t-test show the slight differences to be insignificant t (270) = -.63, p value = .53. Overall, these results show that FFC does not seem to affect the use of Corozal Spanish rhotic variants in initial position.

Figure 4.6: Word initial rhotics frequency in favorable context

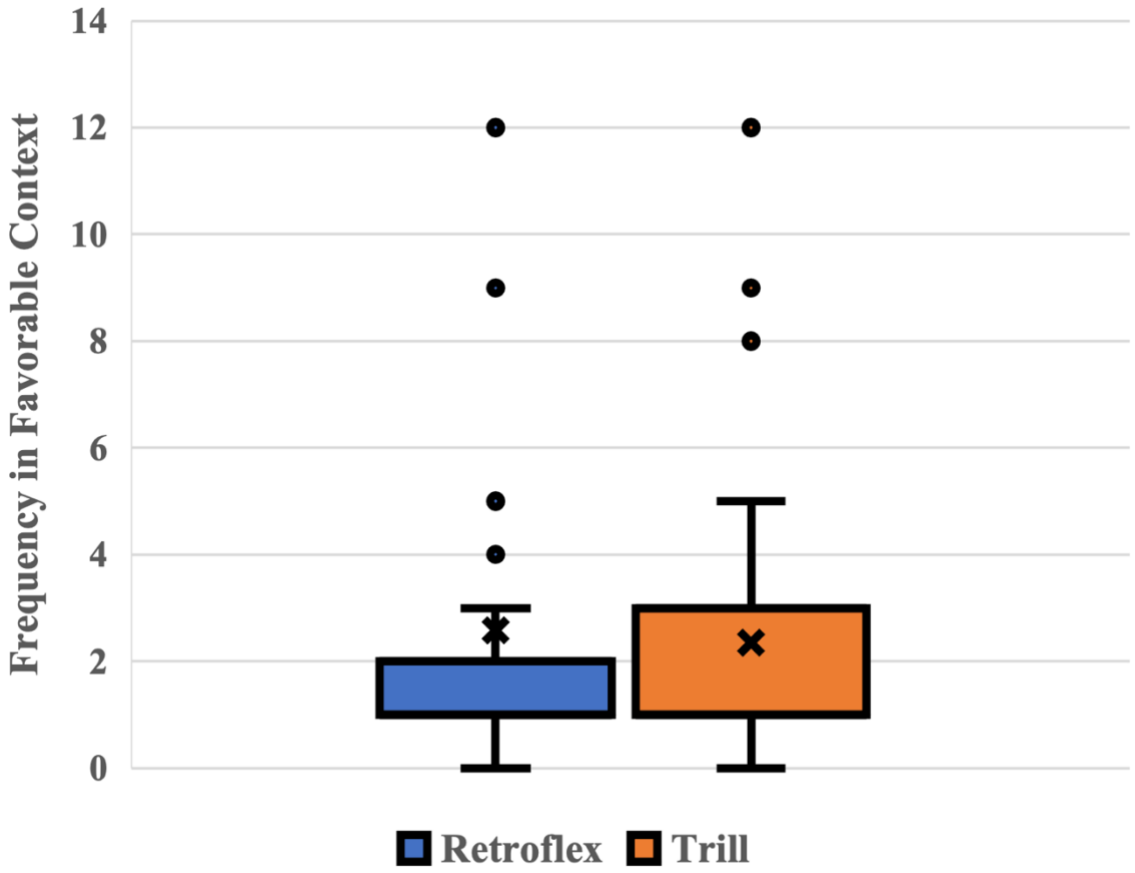
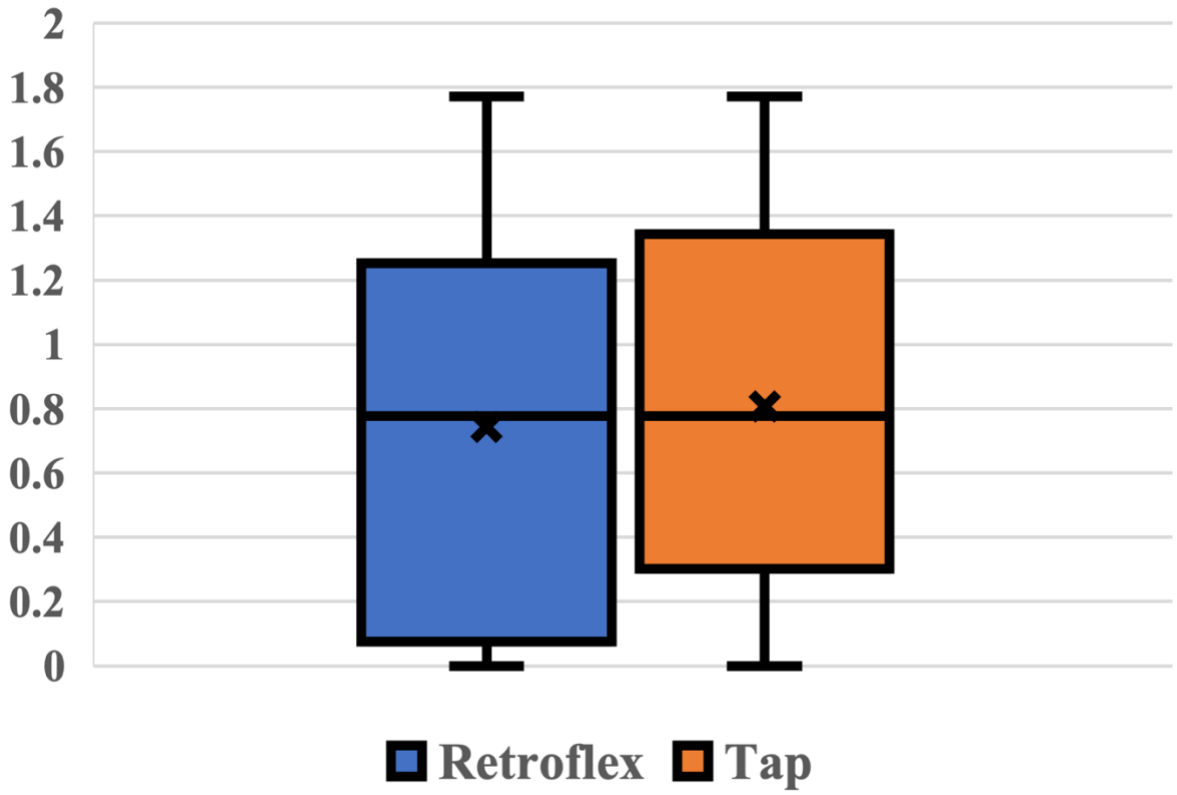


Figure 4.7 shows results for frequency of words with word internal syllable final rhotics. The graph uses a logarithmic scale to avoid skewness toward higher values and offer a clearer visual representation of the results. Similar to the results for word initial rhotics, those with word internal rhotics have nearly identical median frequencies, just above .75 on the logarithmic scale. Again, means are also similar at .74 and .81 for retroflex and tap, respectively. As shown in the figure, the interquartile ranges are also nearly identical. Results of a Welch two sample t-test show the slight differences to be insignificant t (268) = .46, *p* value = .65. This reinforces the notion that frequency is not playing an important part in determining use of the retroflex rhotic. The implications of these combined findings on frequency will be explored further in Section 4.4.3.

Figure 4.7: Word internal syllable final rhotics log frequency



4.4 Discussion

4.4.1 Maintenance of phonemic contrast

In studies focusing on phonemic contrast maintenance, results range from maintenance by various means to proposals for rhotic mergers. For example, in Central Valley Costa Rican Spanish, it is argued that an assibilated rhotic appears in all positions where a trill is used canonically (Vasquez Carranza, 2006). Alternatively, cues such as overall duration of rhotic segments, as opposed to number of lingual contacts, have been proposed as another method to maintain phonological contrast (see Bradley and Willis, 2012). In Corozal Spanish, the only previous study that directly addressed this issue proposed a merger in progress toward the use of retroflex rhotics in all intervocalic positions (Hagerty, 1979: 81).

The results presented in Figure 4.2 show that this data does not support a rhotic merger. Instead, it shows that Corozal Spanish maintains a distinction in intervocalic position. This is evident in the near categorical (99%) use of the tap in intervocalic position with single 'r' spellings. In fact, use of the retroflex in this position is highly restricted to a single lexical item, *Corozal,* by a single speaker. On the other hand, intervocalic position with 'rr' spellings result in variation, principally between the retroflex and trill. Combining these findings with the high rates of retroflex in word initial rhotics (71%), the other main position occupied by a trill in canonical Spanish, might suggest that the retroflex is utilized in the same positions as the trill. However, the use of the retroflex in word internal syllable final position shows that a focus on contrast maintenance or examining non-standard variants in comparison to the trill fails to capture the full scope of variation in Corozal Spanish.

4.4.2 Implications of variability in word internal syllable final position

The limited nature of the rhotic contrast in Spanish means that most positions in a word employ one rhotic or the other categorically. In fact, even variable positions tend to use the tap in most instances. Despite these patterns, analyses have consistently shown word internal syllable final position to be a site of uniquely high variability (see Bradley, 1999; Kim, 2019; Vigil, 2008). This holds no matter the non-standard variant in a given dialect.

Specifically, non-standard rhotic variants are favored when preceding alveolar or dental consonants, as in words like *carne* or *norte*. This is not only true in the present data set, but also finds support in studies of assibilated rhotics (Bradley, 1999; Kim, 2019), and other varieties with retroflex rhotics such as Taos New Mexican Spanish (Vigil, 2008). Furthermore, the following contexts of bilabial or velar consonants are also found to disfavor the use of non-standard variants in many of these other varieties. These findings highlight important facts about the retroflex rhotic in Corozal Spanish.

First, by appearing in this position and showing linguistically constrained variation, the retroflex is not simply functioning as an allophone of the trill. This is further supported by the fact that the variation is constrained by similar factors in this position across Spanish dialects. Thus, while results from word initial and intervocalic double position suggested the retroflex appears mainly in canonical trill positions, the findings for word internal syllable final position demonstrate that the retroflex may exist as its own variant. This will be explored further in Section 4.4.4.

These findings also provide preliminary insight into the question of the origins of the retroflex rhotic. Previous studies and descriptions of Belizean Spanish often attribute the use of a retroflex rhotic to extensive contact with English and the English-based creole spoken throughout the country. While similarities certainly exist between the English rhotic and that of Corozal

Spanish, the case for a contact induced change remains dubious. A contact account is especially weakened when considering the relationship between the retroflex of Corozal Spanish and that of other varieties. For example, a retroflex rhotic has been documented in Yucatán Spanish (Lope Blanch, 1975). Unlike the Spanish of Belize, this dialect has no plausible English source for its retroflex rhotic. Also, the parallel development of a retroflex in Taos New Mexican Spanish (TNMS) presents an interesting point of comparison. Much like in Corozal, the Spanish of Taos has been in contact with English for about two centuries. Importantly, studies of that dialect described a retroflex rhotic with similar constraining factors in word internal syllable final position (Bills, 1997; Vigil, 2008). Furthermore, Vigil (2008: 231) suggests a language internal development as the source of the retroflex in TNMS, citing the use of a retroflex in the same position in Costa Rican Spanish. It is important that no such phonetic conditioning (i.e., with following alveolar or dental consonants) of the English retroflex has been reported. Overall, the results presented here appear consistent with findings that retroflex rhotics may emerge organically within Spanish dialects and that the use of such variants would be constrained by the phonetic context in this position.

4.4.3 Frequency, variability, and change in progress

The results for frequency effects reveal important insights regarding the origins and patterns of change for retroflex rhotics in Corozal Spanish. Properly interpreting these results first requires a better understanding of Usage Based Theory and its contributions to the study of language change. Studies of sound change often focus on "regular" changes, those that have affected every word containing the appropriate phonetic environment. This logically follows from the fact that most changes become lexically regular in their end state. Early hypotheses of sound change offered by

the Neogrammarians assumed that all words containing the appropriate phonetic conditioning were affected by the change at the same time (see Labov, 1981b for overview of Neogrammarian inspired research). In other words, sound change was "lexically abrupt". However, in the more than 100 years of research following this assertion, empirical analysis of vast amounts of data from various languages revealed a different pattern.

Specifically, usage-based approaches emphasize that sound changes result from a period of variation (e.g., Bybee, 2000; Phillips, 2006). Therefore, even when a change eventually spreads to all words with the required phonetic environment, a previous stage occurs in which some contexts progress through the change earlier than others. Additionally, variable patterns can remain stable and not be part of a process of change. However, when a change is occurring, one of the most important factors known to affect the process is frequency.

If a change can be traced to language internal factors, we would expect the high frequency words to be affected first. This expectation follows from usage-based exemplar theory in which each instance of language use has an impact on the lexicon (Bybee, 2006). As clusters of exemplars form, higher frequency exemplars become more accessible and more likely to be chosen for production (Pierrehumbert, 2001). In effect, high frequency words create a positive feedback loop in which each use of an exemplar raises the probability that it will be used again later. Reductive changes affecting high frequency words first have been well documented in both American English (Bybee 2000b, 2002; Gregory, Raymond, Bell, Fosler-Lussier, & Jurafsky, 1999) and in Spanish (Brown, 2004; Raymond & Brown, 2012).

Alternatively, for changes coming from outside the Spanish phonological system, it would be expected that low frequency words would lead the change (Torres Cacoullos & Ferreira, 2000). In this scenario, the retroflex variant would likely first enter Belizean Spanish via English

borrowings. This assumption is supported by previous studies of bilingual communities that demonstrate a range of variability when it comes to phonetic integration of borrowed words (Poplack, Sankoff, & Miller, 1988; Poplack, Robillard, Dion, & Paolillo, 2020; among many others). As bilingual speakers begin to incorporate the retroflex into the Spanish lexicon, words with higher frequency, and stronger exemplar representations, would resist the newer variant given that they are further entrenched. Meanwhile, lower frequency Spanish words would be left more susceptible to adopting the change as the exemplar of rhotic use in varying contexts expands to include the retroflex.

Examining results for word internal rhotics in the present work shows that all summary statistics presented in the box plot are nearly identical for both high and low frequency words (see Figure 4.7). Similarly, results for word initial rhotics show approximately equal median frequency in favorable context for both the retroflex and trill variants (see Figure 4.6). Combining the results for both positions makes a strong case for frequency having no effect on the use of the retroflex rhotic in Corozal Spanish. This finding refutes the hypothesis that the retroflex is a locus of change in progress, instead providing evidence of stable variation.

Nevertheless, the absence of frequency effects does not preclude the possibility that the Corozal Spanish rhotic system has undergone change earlier or is currently undergoing change. Previous studies of Belizean Spanish note that multiple contact allophones of the trill are relatively rare in many dialects. However, some speakers in the present data frequently utilized such an allophone in variation with the retroflex, especially in word initial and intervocalic double ‘r’ positions. This observation will be explored further in the following chapter by investigating the trill as a possible incoming variant and locus of change, taking into consideration social factors.

4.4.4 Reframing Spanish rhotic variation and contrast

Many studies attempt to unify phonetic variation of rhotics within the phonological paradigm of phonemic contrast maintenance. This is especially true of studies claiming that a non-standard variant operates principally as an allophone of one phoneme or the other. While this may or may not be the case at the surface level depending on the dialect examined, the entirety of rhotic variation observed in Spanish calls into question the nature of strict and discrete phonemic separation. In fact, disagreement already exists among phonologists as to whether Spanish has one or two distinct rhotic phonemes (for arguments favoring one phoneme see e.g., Harris, 2002; for the two-phoneme analysis see e.g., Bonet & Mascaró, 1997; Quilis, 1993). This highlights the fact that even the prescriptive tap-trill contrast of canonical Spanish cannot be neatly defined.

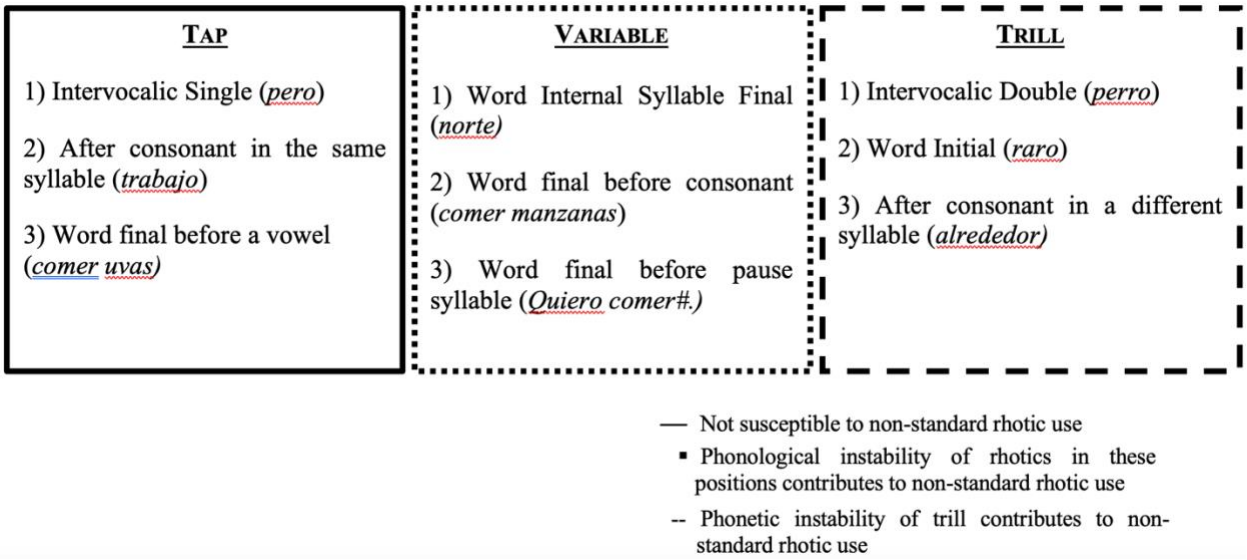
An alternative explanation is that phonemic contrasts can be partially neutralized, meaning they only operate in certain contexts. For prescriptive Spanish, this is evident as the phonemic opposition between tap and trill only appears in intervocalic position while in other positions taps or trills appear in complementary distribution. Furthermore, even in canonical varieties, pre-consonantal and pre-pausal positions display variability. These facts led Hualde to the conclusion that the tap and trill are "clearly more closely related than other pairs of phonemes" (2004:19). This relationship is one example of what he terms "quasi-phonemic contrast", a concept that argues for gradient distinctions between some phonemes. Through this view, instead of two entirely discrete phonemes, Spanish sounds would be organized in categories. Thus, there would be a "rhotic" category that contains two other categories, "tap" and "trill", within it (Hualde, 2004: 20). Essentially, the relationship between categories "tap" and "trill" would be less well defined when compared to categorical phonemes that can be contrastive in all positions.

Interestingly, this is not the only phonemic relationship in Spanish that seems to operate in this way. Early phonological analysis of Spanish suggested a general principal that phonemic contrasts in syllable initial position are often neutralized in syllable final position (Alonso, 1945). Nasal consonants represent the main example of this phenomenon. In syllable initial position, three nasal phonemes are contrastive ([n], [ŋ], and [m], as in the words *cana* 'grey/white hair', *caña* 'cane', and *cama* 'bed'). Meanwhile, syllable final nasals undergo assimilation by matching the place of articulation of the following consonant resulting in the use of at least 6 different phonetic variants. In word final position, only [n] is used canonically, though dialectal cases of velarization also occur. This phonemic arrangement provides further evidence that the instability of rhotics in syllable final position can be linked to broader language internal phonological principles.

Results presented above introduce an extra level of complexity to the quasi-phonemic contrast approach while also lending support to it. Figure 4.8 shows the relationship between rhotic categories in canonical Spanish and their relative susceptibility to non-standard variants. First, the fact that the retroflex does not operate solely as an allophone of one rhotic or the other, except in intervocalic position, demonstrates the indistinct nature of the contrast in most contexts. In other words, the retroflex appears as an allophone of the trill only where the contrast is operating (intervocalic). It also appears in word initial position, another place where the trill is the exclusive variant in canonical Spanish. This is likely the result of the well-established phonetic instability associated with trills leading to susceptibility to non-standard variants. However, as evidenced in the results for word internal syllable final position, the retroflex is also free to appear in other positions not generally associated with the trill. Unsurprisingly, it appears at the highest rates where one could argue rhotic selection is least constrained. That is to say, in word internal syllable final position the phonological contrast between rhotic variants is less strongly prescribed or

perhaps not prescribed at all, making this a prime position for non-standard variant use. In sum, the findings presented here, and in similar studies of rhotic variation, suggest that a gradient phonemic contrast best describes the relationship between tap and trill in Spanish.

Figure 4.8: Spanish rhotic categories and non-standard variants



4.5 Summary and Conclusions

The analysis presented above explored the linguistic factors affecting the use of retroflex rhotics in Corozal Spanish. The results demonstrate several important advances on previous studies of rhotic use in Spanish varieties while also having implications for the organization of the Spanish phonological system. First, findings for the analysis of position in the word refute previous claims of a rhotic merger in Corozal Spanish. Instead, this data provides evidence of the maintenance of phonemic contrast in intervocalic position.

Further analysis of the non-standard retroflex rhotic indicates that it occurs in many positions in the word. This result matches those of other Spanish varieties with non-standard rhotics, including assibilated or retroflex variants. These findings suggest that the retroflex of

Corozal Spanish is not an allophone of the canonical tap or trill, but rather operates as a third rhotic in the system. Generally, such findings support the notion that the rhotic contrast in Spanish is partially neutralized or "quasi-phonemic" (Hualde, 2004) as such a relationship would allow for variable patterns across different positions in the word.

Another important finding of the present work is that the retroflex rhotic does not seem to be a locus of change in progress. Previous studies suggest that the retroflex rhotic represents an incoming variant from contact with English (Hagerty, 1996). However, the findings presented in Section 4.3.3 show that frequency does not have the anticipated effect for a variable undergoing change. Instead, the results indicate that, while other parts of the rhotic system may be changing, the retroflex is a stable variant.

Relatedly, the results presented here indicate a language internal process as the most likely source of the retroflex rhotic. The first assertion is supported by the fact that the linguistic factors constraining retroflex use in Corozal Spanish are the same factors found to constrain non-standard rhotic use in other varieties. The development of retroflex rhotics in other varieties, such as Yucatán or Costa Rican Spanish, with no plausible English source further diminishes the credibility of a language external explanation. Additionally, the broad range of cross-linguistic variation examined in the previous chapters for monolingual language varieties demonstrates the unpredictable and transient nature of rhotic variation and supports a language internal explanation.

Chapter 5: Analysis of Social Factors

5.0 Introduction: Language use and social context

In addition to linguistic content, speech conveys a wide variety of extra-linguistic, or indexical, information. In other words, spoken communication is an inherently social act which simultaneously provides semantic meaning and indicates certain characteristics of a speaker's social identity. As basic as these observations may seem, prominent linguistic theories have often failed to account for the social aspect of language. To better understand the development of sociolinguistics and its place in the field more broadly, it is instructive to begin with an examination of some previous theories.

One of the fundamental figures in the development of modern linguistics, Ferdinand de Saussure, recognized "both an individual and a social side" of speech (1916: 8). However, he also drew a distinction, *langue* versus *parole*, that would define his own work in Structuralism as well as that of subsequent generations of linguists. Saussure's main interest included only what he termed *langue* ('language'), an idealized representation of language. Consequently, linguistic study in this tradition focused on uncovering the abstract underlying structure of language and eschewed the study of *parole* ('speech'), or language as used in everyday life. The very notion that *parole* could serve as a topic of inquiry would not emerge as a subfield of linguistics for at least another half century. In fact, the idea that *langue* serves as the proper object of linguistic study continues as a major force in the field to the present day.

The survival of this idea was undoubtedly aided by Noam Chomsky, one of the most influential linguists of the twentieth century. Nearly fifty years after Saussure, Chomsky offered a similar two-part distinction of language between *competence* and *performance*. Analogous to Saussure's *langue*, Chomsky defined *competence* as "the speaker-hearer's knowledge of his

language". On the other hand, *performance* included "the actual use of language in concrete situations", similar to *parole* as envisioned by Saussure. Leaving no doubts on his preferred direction of linguistic inquiry, Chomsky goes on to state, "observed use of language…surely cannot constitute the actual subject matter of linguistics, if this is to be a serious discipline" (1965: 4). Prioritizing abstract categorization of language in this way has dominated throughout the various historical iterations of language analysis, from ancient Greek philosophers to the more modern fields of Structuralism and Generative Grammar. However, perhaps even more interestingly, the notion of everyday language as a viable object of study can also be found in antiquity.

The Roman polymath Marcus Terentius Varro (116-27 BC) was likely the first scholar to emphasize the importance of both variation and vernacular usage in the study of language. Though most of his prolific writings are lost to history and no ancient school of language study followed his teachings, his concept of *consuetudo* bears special significance for sociolinguistics. Much like the linguistic theories outlined above, Varro differentiated *consuetudo*, language usage, from *ratio*, language as a system. However, he emphasized the importance of *consuetudo*, conceptualized as variation in different sectors of society, and acknowledged its effects on the language system. This is perhaps best exemplified in his maxim *consuetudo loquendi est in motu* ('the usage of language is in motion') that matches the basic observations of modern variationist sociolinguistics by centering language use, variation, and social context (see Taylor, 1975: 50-51 for more on Varro and *consuetudo*).

While other philosophers and language scholars acknowledged the social basis of language in intervening centuries, a subfield explicitly focused on examining language in social context would not arise until the mid-twentieth century. Labov (1963), which examined a vowel change

in Martha's Vineyard, Massachusetts, is widely recognized as the founding work of variationist sociolinguistics and has served as the basis of the field for the past six decades. The key insight of variationist sociolinguistics, as compared to preceding studies (e.g., Hubbell, 1950), is that linguistic variation is not random or unpredictable. On the contrary, variation exhibits structured heterogeneity (Weinreich, Labov, & Herzog, 1968) meaning that given social characteristics of a speaker correlate with higher usage rates of specific linguistic variants. Thus, the purpose of sociolinguistic research, including the analyses presented in this chapter, is to better understand correlations between social identity and linguistic variant selection. The following section will provide an overview of the trends found in previous studies regarding common factors that are tested in the present dataset.

5.1 Basic demographic factors impacting variation

5.1.1 Age

Examining how age impacts linguistic variation often connects to proposals regarding language change over time. This can be observed in the earliest sociolinguistic studies (e.g., Labov, 1966) which take speech from individuals in different age groups as a proxy for historical time. In other words, it is assumed that each speaker represents the community patterns at the time they reached early adulthood and that their speech patterns have not undergone change at the individual level since that time. Such studies rely on the notion of apparent time to capture change in the community as opposed to longitudinal trend or panel studies that can provide real time evidence of change at the community or, in the case of panel studies, individual level.

For example, in Labov's (1966) New York City study of post-vocalic r, he observed that the younger generations utilized more r-ful pronunciation while r-lessness increased with age. Combining this synchronic state of the language with the assumptions above leads to the

conclusion that there is a change in progress, from r-less to r-ful pronunciation. This type of age-related change is termed generational change and is defined by an apparent shift in linguistic variant selection at the level of the community. This contrasts with age grading, in which community patterns remain stable over time while individuals change their usage of a given variant as they age (for examples of age graded variation and change across the lifespan see Labov, 2001; Trudgill, 1974; Wolfram and Fasold, 1974)[16]. While recent some recent studies continue to explore changes in individual speakers across the lifespan (Sankoff & Blondeau, 2007; Wagner & Sankoff, 2011) it has been noted that the 'default' interest of sociolinguistics typically includes cases of generational change (Wagner, 2012: 373).

A collection of works within the paradigm of apparent time and generational change have revealed a few common tendencies. First, younger generations tend to use more innovative variants while older generations are more conservative. Additionally, middle-aged speakers tend to use more prestigious or standard forms. Despite the existence of these general patterns, unique community level variant use has been found in many instances due to different cultural views toward age (see Eckert, 1997: 154-158 for more) or based on the interaction of age with other social factors such as socio-economic status or gender (see Labov, 2001: 74-78 for more).

Studies of Spanish rhotics are no exception to the general complexity of the impact of age on linguistic variation. For example, two studies of rhotics in Puerto Rican Spanish that were conducted 14 years apart, revealed opposing trends. López-Morales (1983) found higher probability of lateralized rhotics in syllable final position for older Puerto Rican speakers and

[16] It should be noted that there is some disagreement regarding the precise definition of age grading. This has led to inconsistency in the use of the term due to the methodological difficulties of separating it from other types of age-related language change patterns (see Sankoff, 2005; Wagner, 2012).

predicted a possible decline in the rate of lateralization in the future. However, in data collected later, Medina-Rivera (1997:77), found higher rates among the younger generation when compared to the older. This apparent reversal of a trend demonstrates the need for continued study of age as a factor in variation and change.

Within the specific context of northern Belize, previous research provides only traces of the possible influence of age on rhotic variation. The only previous major phonological study of the phenomenon (Hagerty, 1979) proposed a possible merger of tap and trill rhotics in intervocalic position. In his anecdotal account, he notes that some younger speakers failed to make the distinction between minimal pairs such as *caro* (expensive) [ka.ɾo] and *carro* (car) [ka.ro], instead using the retroflex articulation, [ka.ɻo], for both (Hagerty, 1979:81). This observation could suggest one of two possible options: either community change in the direction of retroflex rhotics, or individual age graded change, in which individuals begin to distinguish such minimal pairs as they age. The findings presented below will be able to provide insight on community change while more detailed longitudinal study would be necessary to give evidence of age graded change.

5.1.2 Gender

The effects of gender on language variation and change in monolingual communities are well documented (Eckert, 1989; Labov, 2001; among many others). Approaches to the study of gender in most sociolinguistic work rely on the man/woman biological sex distinction to categorize speakers, though their explanations typically appeal to socially constructed factors such as power

or prestige, socialization, social networks). These studies have contributed many interesting insights on the nature of socially constrained patterns of variation and change[17].

The first of these findings is what Labov (2001: 266) termed "the general linguistic conformity of women". This principle dictates that women use stigmatized variants at lower rates when compared to men in cases of stable sociolinguistic variables. This tendency has been demonstrated in several cities and in analyses of myriad variables. For example, unstressed /ing/ in English alternates between the less prestigious non-velar nasal [n] and the more prestigious [ŋ]. Across English dialects in New York City (Labov, 1966), Norwich (Trudgill, 1974), Australia Shopen & Wald, 1982), Ottawa (Woods, 1979) and many other places, women have been shown to utilize the prestige form [ŋ] at higher rates than men[18]. In addition to stable variables, situations of language change have shown gender stratification.

One general trend is that women adopt prestige forms at a higher rate and earlier than men during linguistic change from above (Labov, 2001: 274). Changes from above include linguistic variables above the level of consciousness. Examples may be adoption of a prestige variant from outside the community or redistribution of variants with known linguistic value from inside the community. Variants undergoing a change from above share many characteristics with stable variants such as taking place at a high level of social consciousness and sometimes forming overt stereotypes. Thus, it is unsurprising that the role of women as higher users of prestige forms remains consistent in both situations. However, not all changes include variants with recognized social status.

[17] For studies that move beyond the traditional gender binary see e.g., Bamman, Eisenstein, & Schnoebelen, 2014 or select chapters in Holmes & Meyerhoff, 2003.
[18] For extensive examples of variation impacted by gender differences in many languages see Labov, 2001: 266-268.

In fact, the main mechanism of linguistic change is change from below, which operates on variants below the level of social awareness and shows broadly consistent patterns of variation impacted by gender. In most instances of change from below, women employ innovative variants at higher rates than men[19]. However, viewing the entire process of these changes, whether in real or apparent time, reveals that women's higher usage rates are not maintained over time. Instead, with a broader view of the community change, it is often clear that women play a role in initiating change from below and men come to adopt these forms in later generations.

Comparing general patterns of gender differentiation across types of variation and change reveals what Labov (2001: 292) terms a "Gender Paradox". Specifically, when sociolinguistic norms are overtly prescribed women conform more closely than men; however, when those norms are not overtly prescribed and instead come from below the level of social consciousness, women conform less than men. The changing effect of gender in different situations highlights the fact that, like any other single factor, gender cannot be used as a sole explanation for variation or change. Instead, it is important to view gender in relation to other factors and to consider the social structure of the specific community.

Corozal Town presents an interesting case of social awareness, stigmatization, and stable variation. First, previous research (Balam, 2013a) and some anecdotal evidence from the present data set both indicate that Belizean Spanish does not generally carry a negative stigma within the country. However, some speakers describe Mexican Spanish as "more educated", "more refined", or "more correct" when compared to Belizean Spanish[20]. Moreover, the main characteristic cited

[19] For an overview of various studies showing women in advance of men see Labov (2001; 282). For counterexamples of changes with men in advance see Labov (1963) or Milroy and Milroy (1978).
[20] See Chapter 3, Section 3.4.3 for more on speaker's evaluations of Belizean Spanish and comparisons to other varieties.

by speakers that differentiated the two dialects was the use of rhotics, demonstrating an overt community awareness of the variable examined in the present study. Finally, findings for the effect of frequency presented in Chapter 4 Section 4.4.3, whereby the retroflex variant appeared at similar rates in both high and low-contact words, suggest that the retroflex rhotic may not currently be part of a community-wide change in progress. In sum, the retroflex rhotic of Corozal seems to be a stable variant that is above the level of social consciousness and remains somewhat ambiguous in terms of stigmatization. Understanding how gender impacts rhotic variation in Corozal, as well as how it interacts with other social variables, will provide a new perspective on this heavily studied factor.

5.2 Contact and language change

5.2.1 Language contact as a source of change

In addition to the basic demographic factors of age and gender, contact with another language or dialect has been shown to affect language variation and change. In fact, language contact was especially prevalent as an explanation in early studies of language change, and in many studies "the implicit assumption is that change is an almost inevitable result of language contact" (Poplack and Levey, 2010). However, more recent work places an emphasis on explicitly demonstrating the presence of social and linguistic factors that would trigger a change. Such factors may include the presence of community wide bilingualism or plausible cognitive mechanisms underlying a change[21].

[21] For further discussion of factors affecting change in language contact situations see Bybee (2016: 249), Thomason (2001), and Poplack and Levey (2010).

One early example of a proposed contact induced change involving rhotics was Trautmann's Hypothesis (Trautmann, 1880). He claimed that the uvular trill [ʀ] entered German via French in the 17th or 18th century. According to this hypothesis, the uvular trill first spread through French due to the high prestige associated with the speakers who employed the variant. Thus, when French influence grew in the upper classes of German society, the uvular trill was associated with prestige and later imitated by all German speakers. While prestige can affect language use, Trautmann's Hypothesis can easily be discredited through closer analysis. Specifically, the change is shown to occur in some German dialects as early as two centuries before French prestige could have played a part. Furthermore, no analysis of this change demonstrates the possibility for widespread bilingualism at the proposed time. Therefore, the social structure at the time of the change does not support a contact explanation.

Similarly, studies in the early 20th century proposed contact with other languages as the explanation for many non-standard rhotics in Spanish. These included contact with French, Basque, English, as well as many African and Indigenous languages. In the specific case of northern Belize, contact with English has been cited as a likely source of the retroflex rhotic (Hagerty, 1979). However, the analysis of linguistic factors in the present data (see Chapter 4) reveals patterns of variation mirroring those found for non-standard rhotics in other Spanish varieties that have no such contact with English or any other language. Thus, the linguistic conditioning of rhotic use in Corozal suggests that English contact is not a factor in determining variation or the source of the retroflex rhotic. Moreover, evidence from the content analysis of interviews and national Belizean census data revealed more evidence to oppose the case for English influence. Namely, speakers in the current data set report idiosyncratic use of English varieties, often only resorting to them in highly restricted contexts in the public sphere. Broader

patterns of language use demonstrated in the census data confirm that relatively few residents of Corozal routinely utilize Belize Kriol or English when compared to the national average (see Section 3.2). Although proving a contact-induced change can be difficult, the importance of contact between speakers who use different languages or use different varieties of the same language, should not be minimized. In fact, one especially interesting line of research demonstrates that contact between dialects of the same language can also provide an impetus for change.

5.2.2 Dialect contact and change

While many studies focus on contact between two or more distinct languages, situations in which dialects of the same language come into contact can be equally insightful for elucidating the factors that influence change. The contact of various dialects can have several distinct outcomes. At one end of the spectrum lies koineization (Siegel, 1985; Kerswill, 2013), also referred to as new dialect formation (Trudgill, 2004), in which speakers of two mutually intelligible dialects come together and form an entirely new language variety (koine). Features comprising the koine are often sourced from the most frequent or most salient variants of the pre-koine dialects. However, not all features will necessarily derive from the previous dialects as new variants may arise to mark new identities or through other natural processes of language change (Tuten, 2003: 258). While some koines have served a role like that of a lingua franca, such as the Greek variety of the Hellenistic and Roman periods, other historical koines are thought to have developed into modern-day languages (see Tuten, 2003 for the impact of koineization on the formation of Modern Spanish). In addition to historical koines, studies of the process in modern varieties can be found for Indian languages (e.g., Moag, 1977; Mesthrie, 1993), British English (Kerswill & Williams, 2005), French (Mooney, 2011), and many other languages.

Aside from koineization, dialect contact can result in more subtle changes like dialect leveling or supralocalization (Kerswill, 2003). These terms refer to processes that result from mobility and dialect contact and through which linguistic variants with broader regional and social importance are adopted at the expense of locally specific forms (Britain, 2010). Widesrepad societal changes in twentieth century Europe, such as increased access to education, mass media, and urbanization, dramatically increased dialect contact and, in many cases, led to leveling of local features in favor of regional or national linguistic variants. For these reasons, many studies of this phenomenon have focused on northern European languages (e.g., Auer & Hinskens, 1996; Hinskens, 1996; Sandøy, 1998; Hornsby, 2009; Regan, 2020; among many others). Notably, other situations conducive to dialect contact, such as Spanish speaking immigrant communities in the United States, have also been the subject of several studies (Otheguy, Zentella, & Livert, 2007; Hernández, 2009; Risso, 2010; Erker, 2016).

For the present work, the most relevant instances of possible dialect contact and leveling are those found in Mexico. For example, Lipski (1994: 282-283) noted that some regional dialects shifted to mirror the prestigious dialect of Mexico City. Michnowicz (2006) narrows the focus further to the Yucatan region of Mexico and provides convincing evidence of possible dialect leveling. As he states, "…increased contact with other dialects of Spanish (especially central Mexican dialects) and enhanced opportunity for education, have had the effect of imposing pan-Hispanic norms for most variables on the regional variety of Yucatan." (Michnowicz, 2006: 183). Interestingly, he also notes that speakers in Yucatan are not adopting central Mexican features, instead opting for pan-Hispanic linguistic variants due to other social factors. Most importantly, this analysis shows that speakers in contact with other dialects, especially those that carry social value or prestige, may change their speaking patterns to mirror those dialects more closely.

In the present study, a parallel process may be occurring in Corozal Spanish. Though all speakers interviewed for this data set live roughly the same short distance from the Mexican border town of Chetumal, their contact with speakers of Mexican Spanish can vary based on several factors. These may include whether they have family or friends living on the Mexican side of the border, whether they choose to seek economic or educational opportunities in Mexico, or whether they prefer to spend their leisure time in the more active city of Chetumal (population ~170,000) as opposed to the relatively tranquil Corozal Town (population ~10,000). Based on responses from several interviewees (see Chapter 3, Section 3.4.3) the Spanish of Chetumal does carry a higher level of social prestige when compared to Corozal Spanish and mastery of a Mexican dialect certainly could provide easier access to the more abundant economic and educational opportunities in Mexico. Thus, the final part of the analysis in this chapter will examine the effects of dialect contact with the expectation that high levels of contact with Mexican Spanish lead to lower use of linguistic variants specific to Corozal.

5.3 Methodology for social factor analysis

Data for the analyses presented below will primarily include rhotics in word internal syllable final position, as in *norte* 'north' or *importante* 'important'. Only 5 speakers showed variation in initial position, including one female and four males. This led to low token counts and an inability to reliably test initial position for any effects of age and gender. However, analyses of initial position provide interesting insight on the question of change over time and influence of Mexican Spanish. To explore this angle, some of the data included here come from interviews originally conducted in the late 1970s and analyzed in Hagerty (1979). Though that study includes speakers from many

parts of Belize, only those speakers that Hagerty indicated in his original field notes as being born and raised in Corozal were included in the present analyses[22].

5.3.1 Age

The data analyzed in this chapter include 19 speakers with ages ranging from 20-70 and a mean age of 41. To examine trends of possible change over time, the speakers were split between two groups. The first includes 10 speakers below 40 years of age and the other includes 9 speakers over 40. In addition to dividing speakers based on their relation to the mean age, there are also nearly equal numbers of men and women in each of these groups. This has the added benefit of controlling for gender in analyses of age to the extent possible.

5.3.2 Gender

To examine patterns of variation based on gender, speakers were grouped as men or women based on their responses to a self-completed questionnaire. The dataset includes 9 women and 10 men. Independent analysis of gender is also controlled for age to the extent possible as the data includes 5 women and 5 men in the younger group along with 4 women and 5 men in the older group.

5.3.3 Measuring contact with Mexican Spanish in Corozal

Each interview included questions regarding opinions of the interviewee on Mexican and Belizean Spanish varieties. Responses ranged from speakers stating they had little or no knowledge of Mexican Spanish to providing specific examples and extended anecdotes illustrating the

[22] I would like to thank Dr. Timothy Hagerty and Dr. John Lipski for their help in gaining access to Dr. Hagerty's original recordings and field notes.

differences between Mexican and Belizean speakers. These responses provided important insight on the perceptions of different speakers based on various factors. More importantly for the analyses presented below, these details elucidated the amount and type of interaction between each interviewee and Mexican Spanish speakers.

Drawing on observations from the content analysis (see Chapter 3), speakers were labeled as having high or low contact with Mexican Spanish. The low-contact group included 8 speakers (5 women) that mentioned only intermittent, short duration trips to Mexico. They also do not report working or studying in Mexico at any point in their lives, which is a common occurrence for many people in Corozal. Finally, low contact speakers express little knowledge of similarities or differences between Mexican and Belizean Spanish.

Alternatively, the high contact group included 11 speakers (4 women) that report frequent travel to Mexico, often to the nearest city, Chetumal, but also including other areas of the country in some instances. Many speakers in the high-contact group mention family ties to Mexico, whether a parent was originally from Mexico, or cousins, siblings, or other family members now live there. Other possible experiences for high contact speakers include living, studying, or working in Mexico for an extended period at some point in their lives. Finally, speakers in this group demonstrate a keen awareness of the major differences between Mexican and Belizean Spanish. They are often able to articulate key characteristics that distinguish the dialects or offer a language related anecdote or opinion that demonstrates knowledge of how these varieties differ.

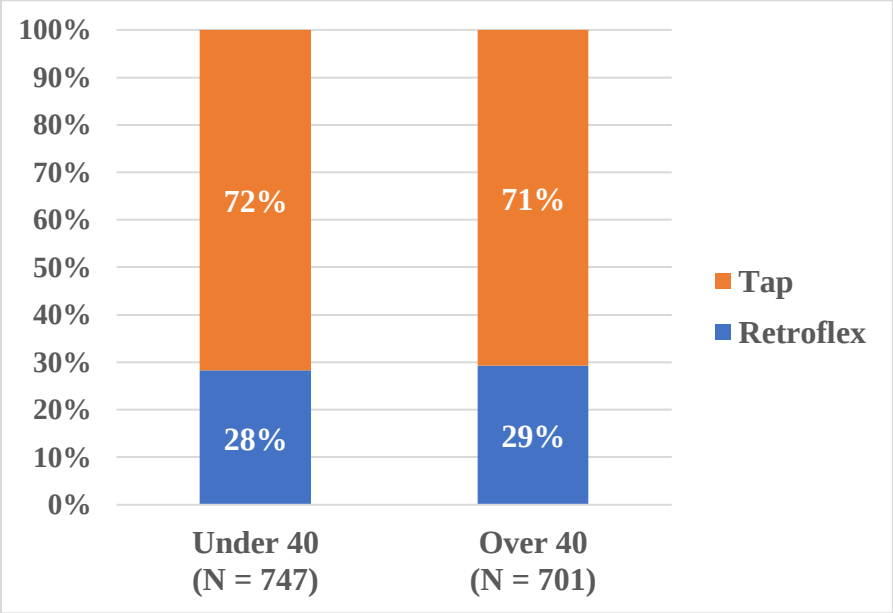
5.4 Results

5.4.1 Age

Figure 5.1 shows the results of word internal rhotic use by each age group of participants. Comparing the two bars shows that retroflex rhotics in this position are utilized at equal rates for

speakers of both age groups across the community. Speakers younger than 40 years old employ the retroflex at a rate of 28%, while older speakers use it at 29%. Results of a chi-squared test show that this difference is not significant χ^2 (1, N=1448) = .13, p-value = .72. This pattern provides evidence that the retroflex in this position is not a locus of change over time. Further implications for these results will be discussed below.

Figure 5.1 Word internal syllable final rhotics by speaker age

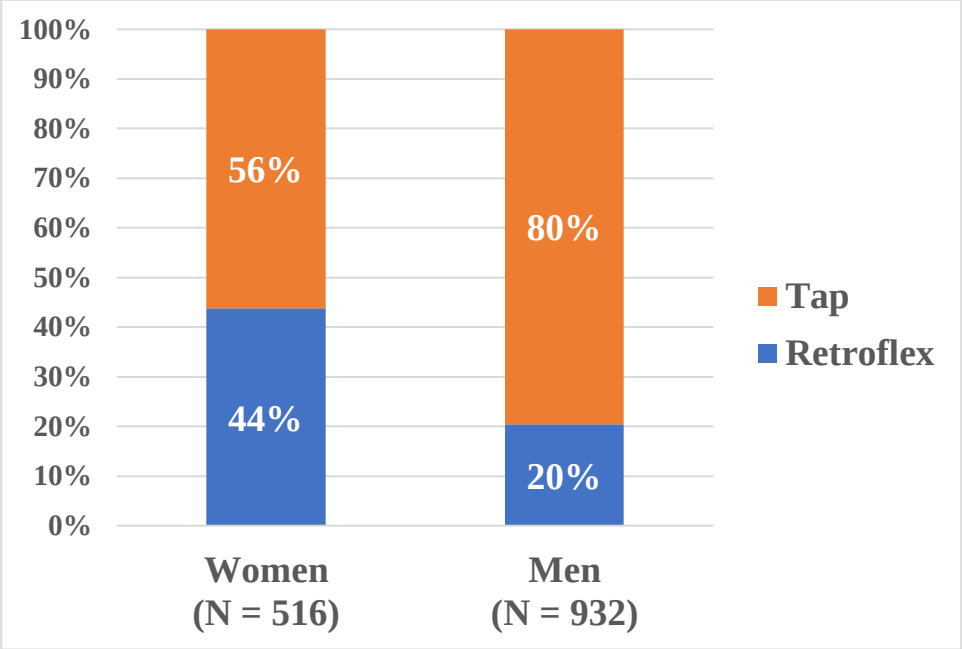


5.4.2 Gender

Figure 5.2 shows usage rates of word internal rhotics by speaker gender. Results indicate that women use the retroflex in this position at more than twice the rate of men (44% vs. 20%). Results of a chi-squared test show that this difference is significant χ^2 (1, N=1448) = 87.8, p-value < .001. Given the evidence that the retroflex rhotic is in stable variation (i.e., not a current locus of change), the expected role of women would be to use stigmatized variants at a lower rate. However, as mentioned above, the stigmatization of retroflex rhotics in Belize is a complex issue. While some individuals who have frequent contact with Mexican Spanish may view this feature

as less prestigious, others with little to no contact with Mexican Spanish likely don't hold the same views. Additionally, exploring how gender interacts with other social factors like age, can often reveal important insights on patterns of variation.

Figure 5.2: Word internal syllable final rhotics by speaker gender

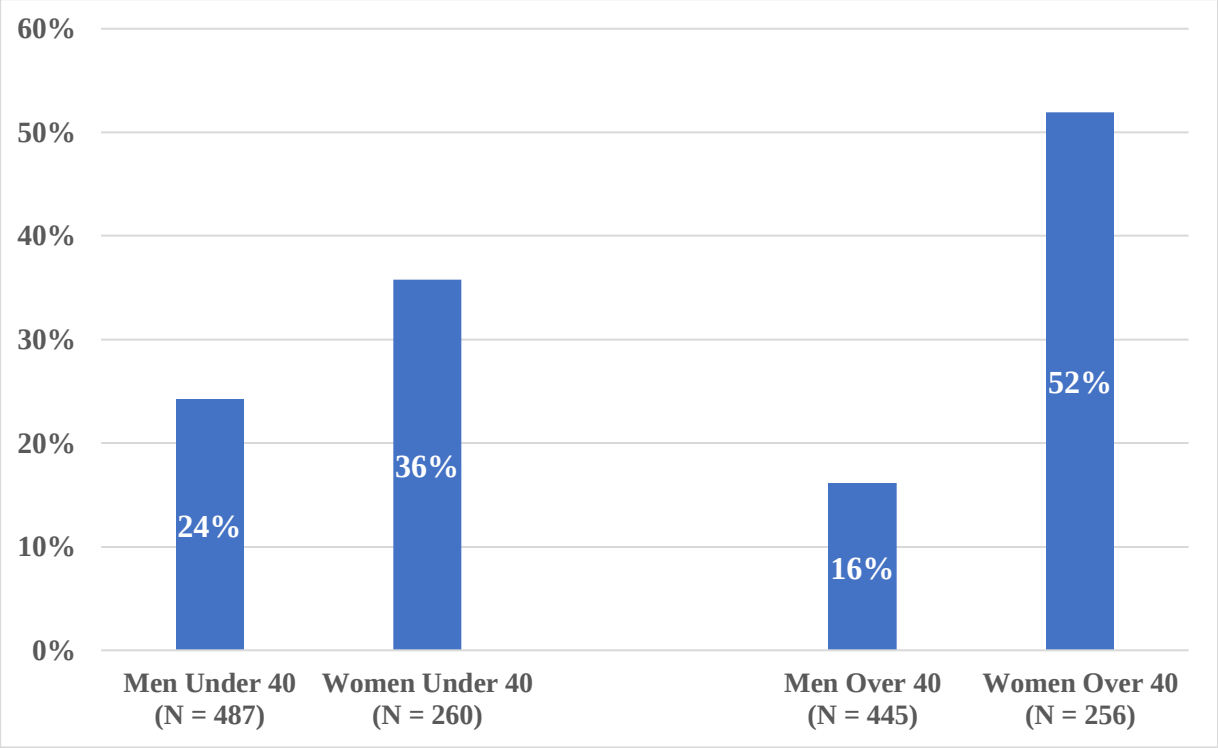


5.4.3 Interaction of Age and Gender

Figure 5.3 shows rates of retroflex use across age and gender groups. As in previous studies, the interaction of these two variables provides some intriguing insight into the effects of social factors on variation. Given the complexity of the interaction between these variables and the lack of a clear hypothesis this is an exploratory, rather than confirmatory, analysis (see Roettger, Winter, Baayen, 2019 for more on the role of each type of analysis). Beginning with results for women, there is an overall rise in the use of retroflex when comparing the younger women group (36% retroflex use) to the older women group (52% retroflex use). This pattern could suggest that younger women are moving away from the traditional Belizean Spanish dialect and toward a more

standard dialect. However, at the same time, we see a slight rise in the opposite direction for men. Thus, younger men are using the retroflex at higher rates than older men. Given the high salience of retroflex rhotics as a defining feature of Corozal Spanish, this trend could indicate younger men employing it as an expression of their Corozal identities. In sum, younger men may be using the retroflex to highlight their local identities while younger women are decreasing their use, relative to older women, to approximate a more standard Spanish variety. Results show that the gender difference narrows in younger speakers. The size of the age difference within each gender is maintained, but the direction of the difference is the opposite across the two genders. Perhaps the clearest result is that the stronghold of the retroflex is older women. A further exploration of these trends and their possible impact on future variation and change in the community will be offered in Section 5.5.

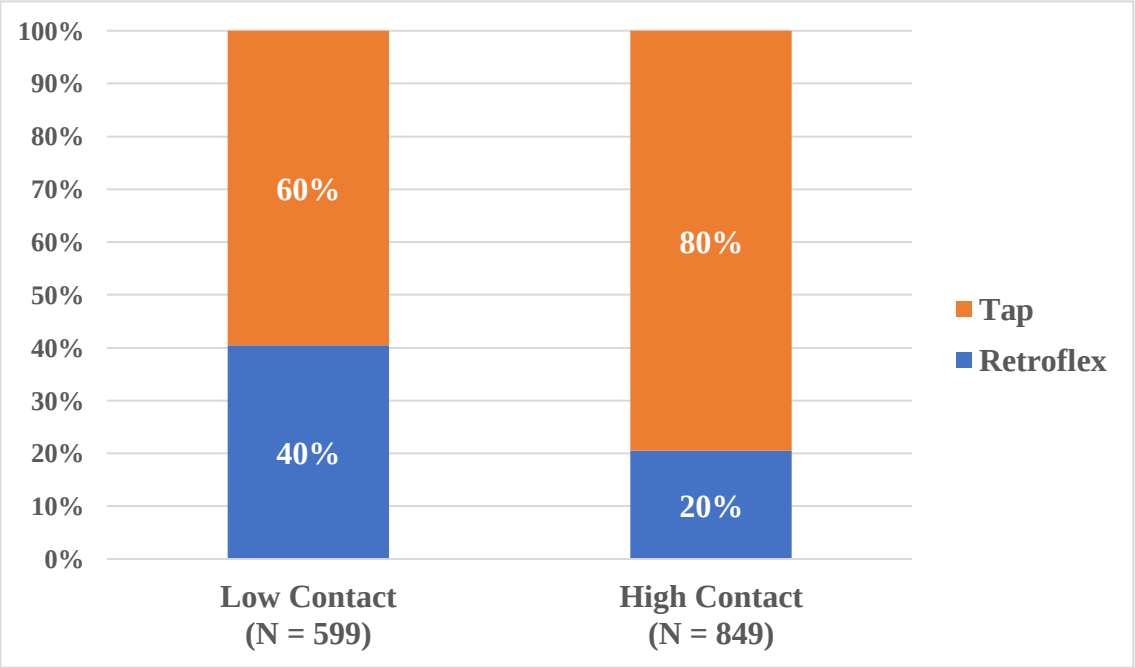
Figure 5.3: Retroflex usage rate of word internal syllable final rhotics across age and gender



5.4.4 Contact with Mexican Spanish

The next social factor tested in this data is contact with Mexican Spanish. While the close geographic proximity to Mexico is common to all interviewees in this data, individual levels of contact with Mexican Spanish speakers vary based on several factors (for more see Section 5.3.3 above and Chapter 3 Section 3.4.3). To better understand this phenomenon, Figure 5.4 shows usage rates of word internal syllable final rhotics for high and low-contact speakers. This data included the 8 low-contact speakers (5 women) and 11 high-contact speakers (4 women). Overall, these results evince higher rates of retroflex use among low contact speakers. Results of a chi-squared test reveal this difference to be significant χ^2 (1, N=1448) = 67, p-value < .001.Taken together, these figures present strong evidence that contact with Mexican Spanish does play a role in rhotic variant use.

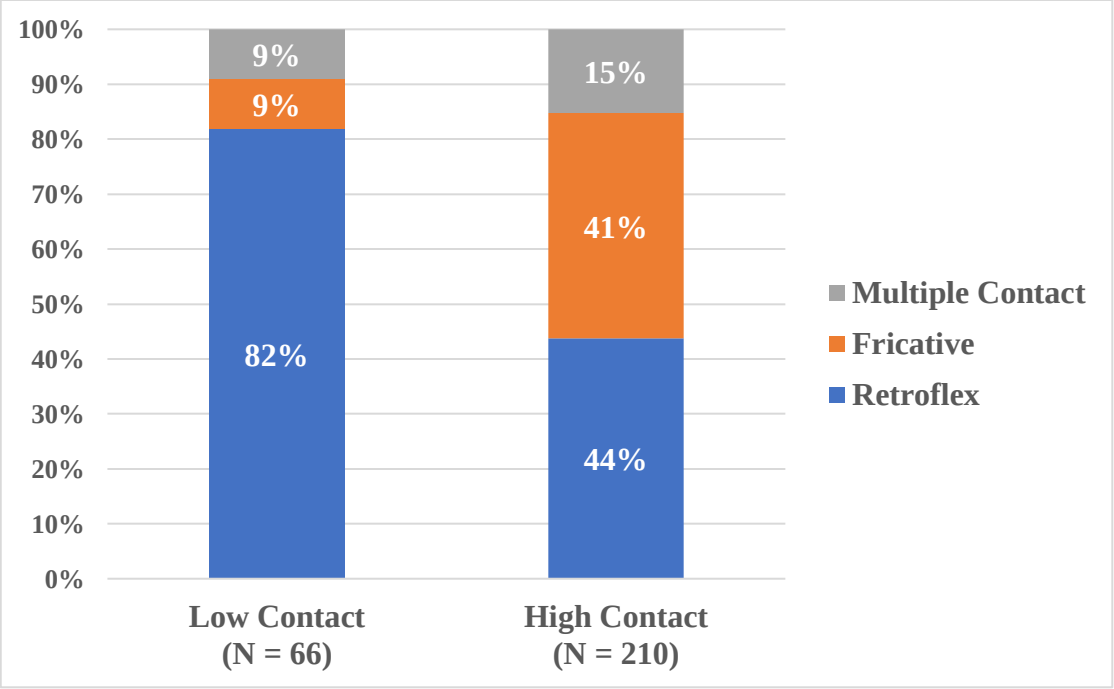
Figure 5.4: Word internal rhotics by Mexican Spanish contact level



5.4.5 Initial rhotics, contact, and change over time

In addition to word internal syllable final position, the present data provides insight on the effects of contact for initial rhotics. Figure 5.5 shows results for the subset of five speakers that demonstrated variation in their use of initial rhotics. These speakers were assigned contact scores based on the methodology described above in Section 5.3.3. It is important to note that this preliminary sample size is relatively small and skewed by the fact that the lone speaker in the "Low Contact" column is a woman, while the "High Contact" category combines four men. Thus, this analysis is exploratory (Roettger et al., 2019) and would require further analysis in a larger, more balanced data set. Despite these caveats, there seems to be a higher rate of retroflex use in the low contact group as compared to high contact. In light of this finding, it is important to further investigate the impact of dialect contact and the possibility of change with other data.

Figure 5.5: Word initial rhotics by Mexican Spanish contact level



As mentioned above, numerous results from the present data suggest that the retroflex rhotic in word internal syllable final position is not the locus of a current change in progress.

However, this need not lead to the conclusion that the rhotic system of Corozal is entirely stable or that it has not changed over time in other ways. Figure 5.6 shows the results for analyses of word initial rhotics in two different data sets. The left-side bar shows results from an original analysis using a subset of data collected in the late 1970s for the first quantitative analysis of Belizean Spanish (Hagerty, 1979). This included the seven speakers that could be identified as being born and raised in Corozal based on Hagerty's field notes. All initial rhotics were extracted from these recordings and coded for the variant utilized by the speaker. Again, the lack of a hypothesis to test makes this an exploratory analysis (Roettger et al., 2019). In this sample, the retroflex rhotic is present at a rate of 40% while the other 60% of initial rhotics are realized as fricatives[23]. This finding highlights the possibility that a canonical multiple contact alveolar trill was never part of Belizean Spanish. Drawing on observations from Widdison (1998) and Hammond (1999), the absence of this particular variant would align Belizean Spanish with much of the Spanish speaking world, where canonical trills remain relatively rare. While some previous studies of Belizean Spanish in the past decade report trill variants being used at exceptionally low rates in other areas of northern Belize (e.g., Balam, 2013b in Orange Walk), the data analyzed here show no trills in use in this sample of speakers from late 1970s Corozal.

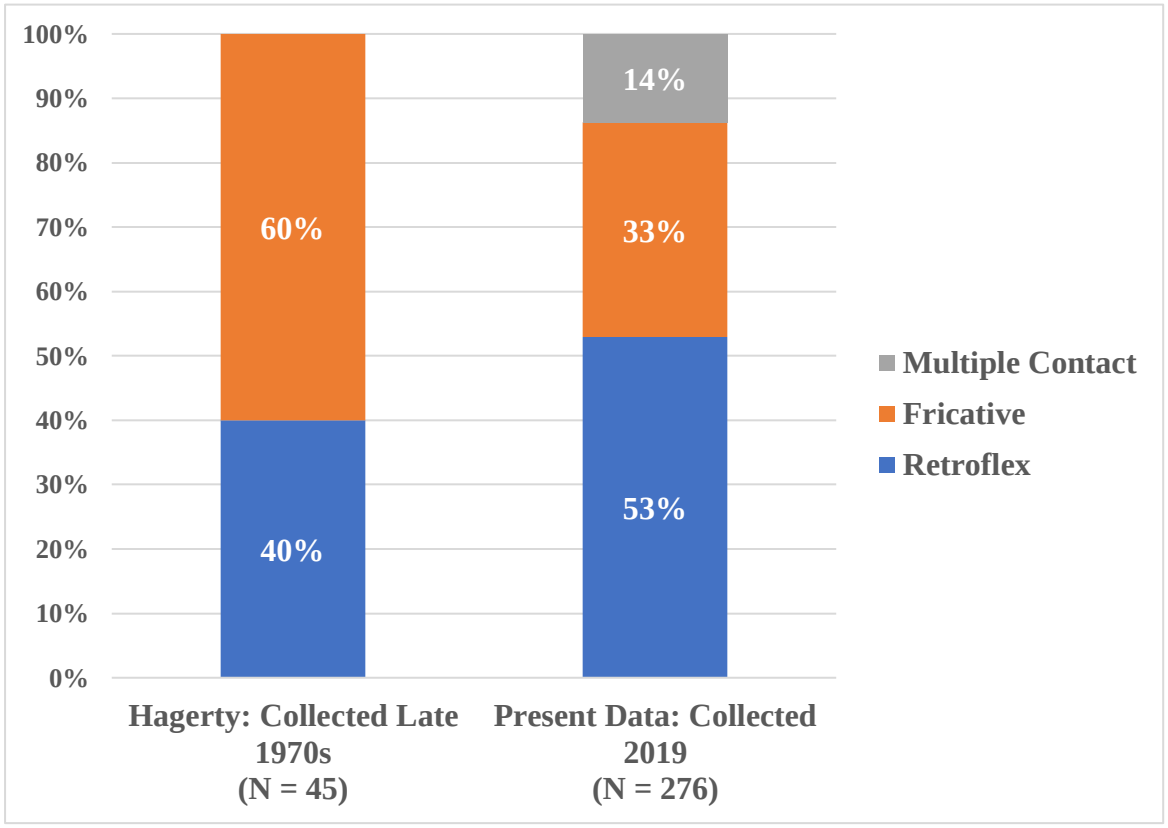
The right-side bar shows results from a subset of the data collected for this dissertation in the summer of 2019. This includes only the five speakers who showed variation in their use of initial rhotics. As noted previously, all other speakers opted for the retroflex categorically in initial

[23] Fricatives are commonly found in both Spanish and other languages in variation with a trilled rhotic. In Yucatan Spanish, fricatives have been reported to occur in syllable and word final position, though social and linguistic factors affecting their use are unclear (Lope Blanch, 1975; 1982). For further evidence of this phenomenon in other languages see Demolin, 2001; Verstraeten & Van de Velde, 2001; Russell Webb, 2009. For further evidence in Spanish, see Calvo Shadid & Portilla Chavez, 1998; Bradley, 1999; Bradley & Willis, 2012; among others.

position. Two interesting patterns emerge when examining the differences across time in these two data sets. First, there is an increase in the use of retroflex rhotics in this position from 40% to 53%. However, given the small sample size, further analysis revealed that this increase was likely driven by individual differences. Specifically, one of the five speakers in this group, Isabel, utilized the retroflex variant at a rate of 82%. She is also the only speaker in this group to receive a low Mexican contact score (see left-side bar of Figure 5.5 above). Eliminating her tokens reduces the group rate of retroflex use to 44% (see right-side bar of Figure 5.5 above), much closer to the rate found in Hagerty's data.

The other obvious difference between bars is the use of multiple contact trills by speakers in the present data, as opposed to the complete absence in Hagerty's interview sample, and in tandem with the decline of the fricative. Unlike the increase in retroflex use, this change does not seem to be dependent on individual differences as four of the five speakers utilize multiple contact trills at varying rates. One possible explanation for this finding could be contact with Mexican Spanish. Though there was undoubtedly contact between Mexicans and Belizeans in the 1970s when the original study was conducted, it was likely on a much smaller scale than today due to less developed methods of transportation and mass communication. As shown in the previous section, increased contact with Mexican Spanish appears to suppress rates of retroflex use. This factor could also be contributing to the spread of more canonical trill variants in initial position, a feature associated with the more standard Mexican Spanish variety.

Figure 5.6: Word initial rhotics across data sets



5.5 Discussion

5.5.1 Connecting age, gender, and contact with Mexican Spanish

Results presented in Section 5.4 suggest that no single social factor best explains the use of retroflex rhotics. However, further examining each factor independently before considering them in combination can still elucidate impacts of social structure on rhotic variation in Corozal. For example, Figure 5.1 shows that age does not play a major role in determining use of the retroflex variant in Corozal Spanish. However, this analysis can still provide interesting insight into the nature of the variation. Based on results of many previous studies, Sankoff and Blondeau (2007: 561–562) argue that equal use of a variant across age groups could be evidence of two different patterns. First, this could mean that both the community as a whole and individual speakers are stable, meaning that no change is occurring. Alternatively, it could be that all speakers in the community are changing at the same rate, meaning both generations are at the same stage in

a change affecting them equally. However, Labov (1994) notes that the latter possibility is usually limited to lexical innovations and that a flat synchronic pattern suggests stability in real time for most phonological and grammatical features. It is important to note that the results of the present study only offer preliminary evidence of community wide stability. Further research, including longitudinal study designs, would be necessary to ensure other possible patterns of individual change are not being obscured by this relatively coarse grained, group level analysis.

Unlike age, there are notable differences in retroflex use based on gender groupings. According to Labov's (2001) principle of "the general linguistic conformity of women", the prediction is that women should use a stigmatized rhotic variant at a lower rate than men. However, as discussed above in Section 5.1.2, stigmatization is not a straightforward concept in Corozal Spanish. Though some speakers may consider the retroflex less prestigious when compared to the standard tap of Mexican Spanish, other speakers with little or no contact would likely not hold the same view due to their lack of a relevant comparison. In the present data, men in Corozal are more likely to have high levels of contact with Mexican Spanish, with 70% falling into that category as opposed to a mere 44% of women. Therefore, the higher rate of retroflex use in women, which is more than twice the rate of men, could be a byproduct of generally lower levels of contact with Mexican Spanish and a resulting lack of stigmatization of the variant. In other words, some women would be operating with linguistic norms that do not stigmatize the retroflex thereby not inhibiting their use.

Similarly, this finding could be framed within the context of Labov's "Gender Paradox". This principle states that women conform more closely than men to overtly prescribed sociolinguistic norms; however, when those norms are not overtly prescribed and instead come from below the level of social consciousness, women conform less than men. The retroflex rhotic

is certainly above the level of consciousness for many Corozal Spanish speakers and its use could be considered an overtly prescribed sociolinguistic norm within the community, especially among women. Conversely, the tap rhotic as a specific dialect feature likely remains below the level of consciousness which would facilitate its use by men. While the separate effects of age and gender highlight the impact of social factors on rhotic variation in Corozal, the intersection of both factors provides even further insight into the dynamic nature of variation within the community and directions of possible future changes.

Overall, women use the retroflex more than men across both age groups. However, a closer analysis shows different trends across time based on speaker gender. Men show a slight increase in retroflex use when comparing older generations (16%) to younger generations (24%). Meanwhile, women show a marked decrease between older (52%) and younger (36%) speakers. These differences highlight possible trends for future change. As explained by Labov (2001:271), the fact that women are often seen as catalysts for linguistic change means that tendencies based on gender are generally framed in terms of women's role in the speech community. Applying this reasoning to Corozal, the pattern observed here may indicate that younger women are in the process of more closely approximating standard or Mexican Spanish varieties by increasing their use of the tap rhotic. This could be an outcome of increased awareness among younger women that the tap variant carries higher regional prestige. A similar instance of change toward a more standard dialect has been documented in nearby Yucatan Spanish. Michnowicz proposed that increased educational opportunities, higher levels of immigration from other parts of Mexico, and a rise in tourism have all contributed to the use of more standard Spanish dialect features by younger speakers in Yucatan (2006: 180). In Belize, the promise of educational and employment

opportunity across the border in Mexico could be applying similar pressure on young women to adopt standard variants with broader regional appeal.

Conversely, the fact that younger men use retroflex at a higher rate than older men could represent an attempt to reclaim local identities through non-standard variant use. Such attempts to establish identity through non-standard language were documented in some of the earliest sociolinguistic studies (e.g., Trudgill, 1972). If this trend continues, it could result in the retroflex rhotic serving to mark a non-standard dialect with covert prestige in Corozal in the future, while the standard regional dialect that favors the tap variant would carry overt prestige.

One final way to interpret the interconnected findings of gender and contact with Mexican Spanish is through the structure of social networks in the community. Generally, older women and women living in the majority Mayan communities surrounding Corozal maintain closely knit social networks. This includes having numerous connections through family, friends, and local institutions and has been shown to promote the maintenance of traditional behaviors, including speech (Penny, 2000: 64). Similarly, other studies have shown that membership in a particular social network reinforces common behaviors, including language forms (Eckert, 2000), and that strong connections to a community are reflected in preferences for local dialect features (Milroy, 1987). These trends show that the higher usage rates of retroflex variants by older women follows from their position in the community which affords them the least opportunity of any group to encounter Mexican Spanish speakers. Relatedly, this social structure means older women remain less likely to encounter English speakers as well. If English contact played a role in retroflex use, it would be expected that low-contact groups would present low retroflex usage rates. Thus, the fact that older women maintain low English contact and high retroflex variant use is consistent with the findings from linguistic factors that suggest English contact does not impact this variation.

5.6 Summary and Conclusion

The analysis presented above examined social factors affecting the use of retroflex rhotics in Corozal Spanish. First, the results for well-tested factors like age and gender reveal present-day patterns of variation. Specifically, these results demonstrate that the retroflex is used most by older women. Additionally, the findings for the effect of contact with Mexican Spanish and the use of an incoming trill variant in initial position suggest the possibility that an incipient supra-regional dialect more closely resembling standard Spanish is spreading. As expected, this is most evident in speakers that have higher levels of contact with Mexican Spanish and are therefore more perceptive of the prestige associated with regional dialect features.

While results for each factor can provide insight individually, the best way to understand the impact of social factors is through interactions. For example, the interaction between age and gender reveals opposing trends whereby women decrease their use of the retroflex in younger generations while younger men show a slight increase when compared to older men. Considering the overlap between measures of contact and gender also demonstrates more than either factor in isolation. Understanding how distinct gender roles within the community can lead to different levels of contact and how the possibility of changing gender roles may lead to future changes is only possible when combining the two analyses. Thus, viewing results as overlapping and reinforcing evidence of general social patterns provides a more holistic understanding of community wide trends in retroflex use.

Chapter 6: Conclusions

6.0 Overview of chapters

The preceding chapters explored separate elements of the research undertaken in this dissertation. The aim of this chapter will be twofold. First, it will provide a summary of the background and findings presented in Chapters 1 through 5. Second, it will combine the insights from each individual analysis to offer a more holistic explanation of rhotic use in Corozal Spanish.

Chapter 1 provided an overview of general questions regarding the nature of rhotics, variation, and change. It also demonstrated why Corozal Town served as an ideal site to explore these questions. This included outlining the contribution of each chapter and introducing the goals and major research objectives of the study.

Chapter 2 examined the use of rhotics from a crosslinguistic perspective to explore broader patterns of variation and change. The major cross-linguistic tendency associated with rhotics is a high degree of phonetic variability. This is displayed across many different types of languages and exemplified by the fact that no single phonetic correlate can reliably identify a given sound as a rhotic. Instead, the various sounds in this class are generally linked by abstract notions, such as the choice of the letter 'r' as representation (Ladefoged & Maddieson, 1996: 245). In addition to phonetic instability, discrete phonological categorization of rhotics also presents challenges. While most languages are thought to have only a single rhotic phoneme, these phonemes often have several allophones each with distinct articulatory properties. Perhaps due to phonetic variability and phonological complexity, rhotics are implicated as important factors in variation and change across many languages.

Spanish is no exception to these cross-linguistic tendencies as shown in the second portion of Chapter 2. At the phonological level, Spanish is one of the rare languages that prescriptively

has two distinct rhotic phonemes: an alveolar tap and an alveolar trill. Important to note is that these phonemes are only contrastive in about 30 pairs of words in the entire language. Considering the highly restricted contexts of the distinction, some research explores the possible loss of phonemic contrast in Spanish rhotics (see Hualde, 2004 for more). In terms of phonetic variation, a wide range of variants has been documented across all major dialect zones from Spain to the Americas. Most variation is reported for the trill, which is the more complex phoneme in terms of articulation. Reported non-standard variants include assibilated or fricative rhotics as well as velar and uvular trills, among several others. Variation for the tap is less common, although approximant, elided, and retroflex variants have been reported.

Finally, Chapter 2 examined previous studies of rhotics in Belizean Spanish dialects. Once again, widespread variation is reported. These studies include qualitative and small quantitative analyses that elucidate some general trends. First, the presence of a retroflex rhotic variant is a defining characteristic of Belizean Spanish, especially in northern regions of the country (Corozal and Orange Walk Districts). Though some studies attribute this variant to contact with English or the English based Belize Kriol, such explanations offer no evidence aside from the long-term contact between the languages. Second, linguistic factors, such as position in word and surrounding phonetic context, constrain the variable use of the retroflex. Finally, there are conflicting findings regarding the nature of the phonemic contrast in Belizean Spanish. One study suggests the possibility of merger toward use of the retroflex (Hagerty, 1979), while another argues for maintenance of a contrast, with the retroflex replacing the canonical trill (Balam, 2013b). Overall, the findings for rhotics in Belizean Spanish mirror broader trends of variation and possible change in other languages and Spanish dialects. These findings were further tested and explored in the present data set.

Chapter 3 considered the historical, cultural, and linguistic context that makes Corozal Town, Belize an ideal site for the study of non-standard rhotic use in Spanish. This chapter highlighted previous studies of language use throughout Belize, which almost exclusively emphasize language contact or Belize Kriol and minimize monolingual Spanish speech. This trend is understandable given that descendants of free and enslaved Africans who speak Belize Kriol, collectively referred to as "Creoles", make up the ethnic and linguistic plurality of Belize. In addition, they make up the dominant cultural influence through the central and southern regions of the nation. On the other hand, a majority mestizo and Spanish speaking population characterize the demographic and linguistic make-up of the northern districts.

In fact, historical analysis reveals that considerable populations of Spanish speakers have inhabited the northern regions of Belize for more than 150 years. Many Spanish speakers in modern day Corozal descend from immigrants who fled the nearby region of the Yucatan Peninsula, Mexico in the mid-1800s. Interestingly, analysis of the social structure of the community shows that modern day residents of Corozal still maintain close contact with Mexican Spanish speakers from that same region. This is evident in their connections with the border town of Chetumal, Quintana Roo, Mexico. Further analysis of the social, cultural, and linguistic attitudes of the speakers in this data set was undertaken in a content analysis in the final part of Chapter 3.

The content analysis revealed several perspectives on a range of topics including the use of different languages in Corozal, English-Spanish language mixing, and evaluations of Belizean Spanish and comparisons to other dialects. Most importantly for the current research, the content analysis revealed that many speakers evaluate their own dialect of Corozal Spanish as "incorrect Spanish". This is especially the case when comparing Corozal Spanish to nearby Mexican Spanish in Chetumal, which some speakers regarded as "sophisticated" or "more refined". Despite this

fact, Corozal Spanish does not have a negative connotation for all speakers, which highlights the importance of individual experience for creating language attitudes. For those speakers that do emphasize dialect differences, the main linguistic feature they cite is use of the retroflex rhotic in Corozal Spanish in place of a trill in Chetumal Spanish. This demonstrates a high level of community awareness regarding the feature analyzed in the present work, which may impact patterns of variation and change. Overall, this chapter explores the historical and socio-cultural dynamics underlying language use in Corozal to provide more necessary context for the analysis.

Analyses presented in Chapter 4 explored the linguistic factors impacting rhotic variation in Corozal by testing the effects of position in the word, phonetic environment, and frequency. Findings indicate an overall usage rate of 11% (overall N = 1918) for the retroflex rhotic. Higher rates of use occur in four positions: Word Internal Syllable Initial (25%, N = 4), Word Internal Syllable Final (28%, N = 284), Intervocalic Double (45%, N = 60), and Word Initial (71%, N = 120). In addition to revealing the positions in which the retroflex is most prevalent, these findings demonstrate that there is no evidence of phonemic merger in this data set. Further analysis includes those positions with sufficient token counts, Word Internal Syllable Final and Word Initial, with Word Initial data being drawn from a subset of the five speakers that showed variation.

Effects of phonetic environment appear in both positions. For word initial rhotics, findings for preceding context mirror patterns for word internal syllable initial rhotics in canonical Spanish. Specifically, a preceding consonant raises the likelihood of a trill, while a preceding vowel favors the tap in canonical Spanish and the retroflex in Corozal Spanish. Analysis of following context for word initial rhotics reveals that a following front vowel raises the likelihood of retroflex use, while non-front vowels decrease it. A similar effect is found in Catalan, in which rhotics preceding a high front vowel are more susceptible to variation.

As in previous studies of Spanish rhotic variation, the place of articulation of the following consonant was examined for word internal syllable final rhotics. Results of this data exhibit patterns that mirror other dialects. When rhotics are followed by labiodental, velar, or bilabial consonants there is categorical use of tap variants. Alternatively, a following alveolar or dental consonant provides a favorable context for the use of the retroflex. Importantly, the same contexts have been shown to favor use of other non-standard rhotic variants in Spanish dialects of Ecuador (Bradley, 1999), Perú (Kim, 2019), and New Mexico (Vigil, 2008). This finding has important broader implications. First, it shows that the retroflex is not operating simply as an allophone of the trill since this position is a tap in canonical Spanish. Second, the fact that findings from this study match those of other non-standard Spanish rhotics (whereas the English retroflex is not sensitive to a following consonant) suggests that use of this variant in this position results from a language internal process, not language contact.

Finally, effects of frequency provide further insight on the possible origin and patterns of change for the retroflex in Corozal Spanish. If appearance of the retroflex is an external, contact-induced change, this should affect low-frequency (less entrenched) words first. For word internal syllable final rhotics, the frequency of the word within the present data set did not influence retroflex use. This is evident in the approximately equal use of retroflex in both low and high frequency words. Similarly, examinations of word initial rhotics shows no effect of frequency in a favorable context. Together, these results refute the hypothesis that the retroflex is a locus of change (from above) in progress, instead providing evidence of stable variation. More broadly, results indicate the need to move beyond a contact induced explanation for the origin of the retroflex. Previous studies of Belizean Spanish focus almost exclusively on the idea that external influence from English or Belize Kriol contributed to an ongoing change toward use of a retroflex

rhotic (e.g., Hagerty, 1979; 1996). Instead, results presented in this work suggest contact induced change as a less likely explanation and raise possible points of support for a language internal account to explain retroflex rhotic use. Nevertheless, the absence of frequency effects does not preclude the possibility that the Corozal Spanish rhotic system has undergone change involving the retroflex earlier or is currently undergoing a different change. Chapter 5 explored this idea further by investigating the trill as a possible incoming variant and locus of change, taking social factors into consideration.

Overall, the results presented in Chapter 4 provide support for the notion of gradient phonemic contrast in Spanish, similar to Hualde's notion of a "quasi-phonemic contrast" (2004). The fact that the retroflex does not operate solely as an allophone of one rhotic or the other, except in intervocalic position, demonstrates the indistinct nature of the contrast in most contexts. As evidenced in the results across positions in the word, the retroflex appears in positions generally associated with either canonical allophone. Unsurprisingly, it appears at the highest rates where one could argue rhotic selection is least constrained. That is to say, in word internal syllable final position the phonological contrast between rhotic variants is less strongly prescribed or perhaps not prescribed at all, making this a prime position for non-standard variant use. As for word initial position, the relatively high rate of retroflex use is likely due to the well-established phonetic instability of trills, as opposed to a phonological explanation. Thus, combining the findings presented here and in similar studies of rhotic variation suggests that a gradient phonemic contrast best describes the relationship between tap and trill in Spanish.

Chapter 5 examined the impact of social factors on the use of retroflex rhotics and on a possible change in progress involving multiple contact trills in initial position. The effects of basic demographic factors, age and gender, as well as each speaker's level of contact with Mexican

Spanish, reveal important patterns of variation and change. At the aggregate level, the two groups of speakers split based on age use the retroflex in word internal syllable final position at approximately equal rates. This suggests stable variation as opposed to a change in progress.

Results for the effect of gender reveal that women use the retroflex at higher rates than men, an outcome that is more easily understood in the context of the other social factors. The interaction of age and gender shows that this trend is largely driven by older women, while younger women tend to use the retroflex at rates nearer to their male counterparts. A key difference between many of the older and younger women is their relative levels of contact with Mexican Spanish. Generally, older women, especially those living in the more remote Mayan villages, have little contact with Mexican Spanish. The lack of experience with this dialect also likely leads to a lack of stigmatization of the retroflex in this section of the population, further reinforcing the use of the retroflex. Thus, the intersection of age, gender, and levels of contact with Mexican Spanish explains the higher rates of retroflex use by older women.

The final section of this chapter further explored levels of contact with Mexican Spanish in light of a possible change in progress in word initial position. This analysis included the data of five speakers demonstrating variation in this position from the interviews collected for this dissertation as well as seven speakers interviewed in the late 1970s (Hagerty, 1979). Comparing these two data sets showed that the present data include a multiple contact trill rate of 14%, while the late 1970s speakers never employed the trill. Instead, they utilized the retroflex along with a fricative variant. Though the fricative still occurs in the data analyzed here, its overall rate has been reduced by the intrusion of the multiple contact trill. Further analysis of the present data set revealed that this trend was largely driven by speakers that had high levels of contact with Mexican Spanish. It is important to note that speakers in Corozal that frequently have contact with Mexican

Spanish often place a lower value on their own dialect (See content analysis Chapter 3, Section 3.4.3). In this way, they are pushed by social pressures and pulled by the greater educational and economic opportunities offered across the border. These forces combine to encourage use of variants that approximate Mexican Spanish and suggest the multiple contact trill in initial position as a possible locus of change based on dialect contact. In sum, the results for Chapter 5 highlight the importance of understanding the intersection of social factor impacts on linguistic variables while demonstrating the possibility of change in the Corozal Spanish rhotic system.

With an understanding of the contribution of each chapter, it is instructive to refocus attention on the main questions addressed in this dissertation and provide answers suggested by the evidence presented above. The first two questions address specific results from the present data set.

Research Question 1: What linguistic and social factors constrain the use of retroflex rhotics in Corozal Spanish?

The principal linguistic factors constraining the use of retroflex rhotics in Corozal Spanish include the position in the word and surrounding phonetic context. The social factors influencing this variation include age, gender, and level of contact with Mexican Spanish. The effects of these factors are best understood in combination.

Research Question 2: Is the retroflex a current locus of change in Corozal Spanish, or is it in stable variation?

The evidence suggests that the retroflex rhotic is not currently a locus of change in Corozal Spanish, though definitive evidence would require further data collection and apparent or real time analyses. Interestingly, the multiple contact trill does seem to be a possible locus of change, though further analysis would also be prudent.

6.1 Impacts and implications of rhotic use in Corozal Spanish

In addition to providing important insight on the understudied dialect of Corozal Spanish, the present data serve to advance understanding of broader patterns of rhotic variation and change. Overall, comparison to other studies of rhotic use in Spanish revealed common patterns of variation within several dialects. Therefore, Research Question 3 addressed the implications of these findings for the overall structure of the Spanish rhotic system.

Research Question 3: What implications do the findings of this dissertation have in the broader context of variation in Spanish rhotics?

Studies of Spanish rhotics tend to focus on the phonological level of analysis. This is evident in the framing of phonetic variation within the phonological question of contrast maintenance between tap and trill. While some dialects seem to present non-standard variants that operate as allophones of one phoneme or the other, a broader examination of Spanish rhotics reveals the need to reconsider discrete phonemic separation. The present findings reaffirmed this need but were not the first to propose such an idea. In fact, disagreement already existed among phonologists as to whether Spanish has one or two distinct rhotic phonemes (for arguments favoring one phoneme see e.g., Harris, 2002; for the two-phoneme analysis see e.g., Bonet & Mascaró, 1997; Quilis, 1993).

As explained further in Chapter 4, Section 4.4.4, an alternative to the discrete separation of phonemes is a partially neutralized contrast. This type of phonemic relationship has been proposed as a possible description of the rhotic system in canonical Spanish (see Hualde, 2004 for more on the idea of "quasi-phonemic contrast"). This stems from the fact that there is only a single position in which the contrast between rhotics operates. Furthermore, the entire contrast is predicated on about 30 minimal pairs, an exceedingly small portion of the lexicon. Given these facts, Hualde

concludes that the two Spanish rhotic phonemes are "clearly more closely related than other pairs of phonemes" (2004:19).

This dissertation supports an account of a gradient distinction between rhotic phonemes, as opposed to a stricter separation. This is evident in the results for the retroflex rhotic, which does not operate solely as an allophone of one phoneme or the other. Instead, the retroflex appears across many positions in variation with both the tap and the trill. By further exploring where this variant appears, the results provided deeper understanding of the fundamental organization of this gradient phonemic contrast. Specifically, the analysis presented above demonstrated the positions in which the contrast operates more strictly versus those that are more susceptible to variation.

Findings indicate that the retroflex appears as an allophone of the trill only where the contrast is operating (intervocalic). It also appears in word initial position where the trill is the exclusive variant in canonical Spanish. This position is likely susceptible to encroachment of the retroflex given the well-established phonetic instability of trills. Additionally, as evidenced in the results for word internal syllable final position, the retroflex also appeared in other positions not generally associated with the trill, meaning phonetic instability cannot explain all occurrences. Unsurprisingly, it appears at the highest rates where rhotic selection appears to be least constrained. In this view, word internal syllable final position represents a context in which the phonological contrast between rhotic variants is less strongly prescribed or perhaps not prescribed at all. Thus, it is the ideal position for non-standard variant use. This idea is corroborated in many other studies cited throughout this dissertation that find a variety of similarly constrained non-standard rhotic variants in the same position.

In combination, these findings suggest a necessary reorganization of the Spanish rhotic system. As opposed to arguing for one, two, or even three Spanish rhotic phonemes, the current

study favors an analysis that conceptualizes rhotics belonging to "categories", an idea that draws heavily on the notion of "quasi-phonemic contrast" (Hualde, 2004). This approach organizes rhotic positions by categories based on susceptibility to variation and non-standard rhotic use (see Figure 4.8).

The 'Tap' category remains least susceptible to non-standard rhotic use across dialects and includes intervocalic single rhotics, rhotics after consonants in the same syllable, and word final rhotics before a vowel. Second, the 'Trill' category includes word initial rhotics, intervocalic double rhotics, and rhotics following consonants in a different syllable. This category remains open to the incursion of non-standard variants across dialects due to general phonetic instability and articulatory complexity associated with the trill which contribute to the notable observed variation. The inclusion of these categories matches the analysis offered by Hualde (2004); however, the results here suggest the addition of a third category. This 'Variable' category represents several non-standard rhotics across dialects and includes the following positions: word internal syllable final, word final before consonant, and word final before pause. Studies across dialects indicate phonological instability and susceptibility to non-standard variant use in these positions as evidenced by the high prevalence of non-standard rhotics in several dialects. Thus, while both the 'Trill' and 'Variable' categories remain open to non-standard variants, the underlying cause is distinct for each category. The main purpose of this analysis is to highlight the uniquely close relationship between rhotic sounds, which runs counter to the idea of discrete phonemic separation.

As mentioned above and in previous chapters, rhotics have been implicated in a wide variety of changes across many languages. This includes changes in rhotic sounds and sounds that frequently appear with rhotics, such as vowels. In fact, one study of German rhotic change in the

Post WWII era concludes "changes in the pronunciation [of rhotics] are the *expected event*: nothing in a sound system of a language is as elusive as the pronunciation of the r-sound" (Wiese, 2001: 14, emphasis added). Changes in different languages and dialects are commonly attributed to various sources. These motivations for change can be language internal, such as phonetic instability, or language external, as in the imposition of a socially prestigious variant from another dialect or language.

The case of retroflex rhotics in Corozal Spanish has been regarded as an instance of externally motivated change. Specifically, the retroflex has been argued to be evidence of English influence on Spanish dialects throughout northern Belize. Though the two languages have certainly been in prolonged contact in the region, definitive evidence of language contact as the source of this change has remained unclear at best. Thus, Research Question 4 used the present data to gain a better understanding of the effects of language and dialect contact on the rhotic system in Corozal Spanish.

Research Question 4A: Given previous claims regarding the effects of contact with English, what does the evidence provided by this data suggest about a possible link between language contact and changes in the rhotic system of Corozal Spanish?

As previously explained, most studies of Spanish in Belize focus on language contact. This is a reasonable outcome given the multiple linguistic, ethnic, and cultural groups within the nation. However, demonstrating effects of language contact can prove challenging for a number of reasons. First, language contact has often been utilized as an explanation of last resort in linguistics. As Poplack and Levey (2010:392) note "the implicit assumption is that change is an almost inevitable result of language contact". Relying on this assumption, as opposed to using principled quantitative analysis to explore the likelihood of contact induced change, is common in many studies of rhotics across languages. To address this issue, a principled comparison to other Spanish

dialects, when paired with a general view of rhotic variation, offers evidence that English contact is not the source of the retroflex in Corozal Spanish.

While similarities certainly exist between the English rhotic and that of Corozal Spanish, the case for contact induced change is especially weakened when considering the relationship between the retroflex of Corozal Spanish and rhotics in other Spanish varieties. For example, a retroflex rhotic has been documented in both Yucatán Spanish (Lope Blanch, 1975), which has no plausible basis for an English source, and Taos New Mexican Spanish (Bills, 1997; Vigil, 2008). Importantly, Vigil (2008: 231) suggests language internal development as the source of the retroflex in Taos New Mexican Spanish. This case is strengthened by the use of a retroflex in the same position in Costa Rican Spanish and by the fact that the present data shows the same conditioning environments and factors affecting use of the retroflex in Corozal Spanish. It is important that no such phonetic conditioning (i.e., with following alveolar or dental consonants) of the English retroflex has been reported. Additionally, results indicate that the sector of the population that currently uses the retroflex at the highest rates, older women, tend to have the lowest levels of contact with English. Overall, findings for the present data and other studies are consistent with the notion that retroflex rhotics may emerge organically in Spanish dialects and need not result from language contact.

Relatedly, results of previous studies show that change in rhotics should likely be considered the expected outcome, regardless of language contact. Most studies examined above find several rhotic variants present within any given language or dialect. Taken together, these findings support the notion that explaining changes in rhotics need not resort to external factors such as language contact. Rather, the phonetic and phonological nature of the class makes these sounds especially susceptible to change from internal sources.

Research Question 4B: How have prolonged contact with Mexican Spanish and the distinct social status of these dialects contributed to possible change?

The fact that English does not appear to be the source of the retroflex does not entirely rule out change in the Corozal rhotic system. Nor does it exclude the possibility that another outside influence, in this case Mexican Spanish, may be playing a role in a potential change. The first evidence that a change may be in progress comes from the comparison of speech data collected in the late 1970s in Corozal (Hagerty, 1979) to the data in this dissertation. My own auditory analysis of rhotics in initial position found no instances of multiple contact trill variants in the 1970s data. My analysis of the present data showed an overall trill rate of 14% in the same position. Importantly, the present data set only included 5 speakers that showed variability in initial rhotics. Nonetheless, focusing on this subset of speakers can elucidate factors that may influence their rhotic use.

Four of the five speakers with the highest combined rate of retroflex use were scored as having high levels of contact with Mexican Spanish, based on their responses to interview questions and background information. Though there was contact between Mexicans and Belizeans in the 1970s, it was likely on a much smaller scale due to less developed methods of transportation and mass communication. Today, many residents of Corozal routinely cross the border for a variety of reasons, ranging from better economic and educational opportunities to more offerings of goods, services, or leisure activities. This increased contact is paired with a conscious recognition of the differences between Mexican Spanish and Corozal Spanish, especially for the speakers with more frequent contact. As a result, the high contact speakers may be shifting their speech away from the retroflex variant, known by most Belizeans and many Mexicans as a marker of Belizean identity. By increasing their use of the trill, the higher contact

speakers are shifting toward a variety that has greater regional appeal and would provide more access to opportunities across the border.

6.2 Areas for future research

The most immediate goal for future research should be the collection of more spontaneous speech interviews with speakers of Corozal Spanish. This is one of a handful of studies that includes any speakers of this dialect and, to my knowledge, is the first to focus only on speakers from Corozal which is uniquely situated within Belize to have contact with English varieties as well as Mexican Spanish. Additional data collection in Chetumal, Mexico would provide more potential to expand the impact of this work. Such a data set could further explore questions of dialect contact and better answer whether contact with Mexican Spanish may be influencing change in Corozal Spanish rhotics. As alluded to above, Belizean Spanish varieties are vastly understudied, especially in unilingual speech or with monolingual speakers, leaving ample space for almost any type of future study.

Considering the results of following phonetic context for both word initial and word internal rhotics, future studies could draw on aspects of feature geometry to help explain variable patterns. Specifically, the notion that front vowels and coronal consonants are best viewed as members of the same natural class (Clements, 1976) could provide insight on the results presented here and in similar future studies. As shown in Figures 4.4 and 4.5 above, following contexts of front vowels and dental or alveolar (i.e., coronal) consonants all raise the usage rates of retroflex rhotics. This provides preliminary evidence of similarities between these two types of sounds. In fact, relationships between front vowels and coronal consonants are recognized across many disparate languages and through examination of several phonological processes (see Hume, 1996: 172-176 for further discussion and evidence of this relationship). Thus, if similar studies reproduce

the findings presented here, it could prove useful to situate them within the broader context linking coronal consonants and front vowels as proposed in feature geometry analyses.

Finally, future studies exploring rhotic change should avoid the assumption that the trill serves as a target pronunciation in all Spanish varieties. As demonstrated in previous studies (Hammond, 1999; Widdison, 1998) the canonically described alveolar trill is rarely utilized. Many dialects favor the use of assibilated, fricative, or other variants with low, sometimes zero, use of the trill. Yet, most studies of rhotic change begin with the assumption that a trill once served as the standard pronunciation of the dialect. This misrepresentation of observable variants has unnecessarily hindered the study of Spanish rhotic change by implying that a plausible articulatory path must be provided beginning with a trill and ending with the non-standard variant of interest. Instead, by recognizing the rarity of the trill and highlighting the likelihood that other variants almost certainly occur in that position in any given dialect, new variants may be more readily accepted and more intuitively explained.

References

Almeida, M. M. S. (2004). As Consoantes do Português Falado no Vale do Cuiabá. *Signum - Estudos da Linguagem*. Londrina: UEL, 7: 149-163.

Argüello, F. (1980), El rehilamiento en el española hablado en la region andina del Ecuador. *Lexis* 4. 151-155.

Auer, P. and Hinskens, F. (1996) The convergence and divergence of dialects in Europe. New and not so new developments in an old area. *Sociolinguistica* 10: 1–30.

Balam, O. (2013a). Overt language attitudes and linguistic identities among multilingual speakers in Northern Belize. *Studies in Hispanic and Lusophone* Linguistics 6(2): 247-277.

Balam, O. (2013b). Variable neutralization of the intervocalic rhotic contrast in northern Belizean Spanish. *Borealis—An International Journal of Hispanic Linguistics*, 2(2), 285–315.

Balam, O. (2014). Notes on the history and morphosyntactic characteristics of Spanish in northern Belize. *Kansas Working Papers in Linguistics*, 35: 95-111.

Balam, O. (2015). Code-switching and linguistic evolution: the case of 'Hacer + V.' *Lengua y Migración*, *7*(1), 83–109.

Balam, O. (2016). Semantic categories and gender assignment in contact Spanish: Type of code-switching and its relevance to linguistic outcomes. *Journal of Language Contact*, 9(3), 405-435.

Balam, O., de Prada Perez, A., and Mayans, D. (2014). A Congruence Approach to the study of Bilingual Compound Verbs in Northern Belize Contact Spanish. *Spanish in Context* 11: 243-265.

Balam, O. & de Prada Perez, A. (2017). Attitudes Toward Spanish and Code-Switching in Belize: Stigmatization and Innovation in the Spanish Classroom. *Journal of Language, Identity & Education 16*(1), 17-31.

Bamman, D., Eisenstein, J., & Schnoebelen, T. (2014). Gender identity and lexical variation in social media. *Journal of Sociolinguistics*, 18(2), 135-160. https://doi.org/10.1111/josl.12080

Becker, K. (2009). /r/ and the construction of place identity on New York City's Lower East Side. *Journal of Sociolinguistics* 13(5). 634-658.

Bills, G. D., (1997). New Mexican Spanish: Demise of the earliest European variety in the United States. *American Speech 72*, 154-171.

Blecua, B., (2001). *Las vibrantes del español: Manifestaciones acústicas y procesos fonéticos*, Tesis doctoral, Bellaterra: Universidad Autónoma de Barcelona.

Bolland, N. O. (1977). *The Formation of a Colonial Society*. Baltimore, Johns Hopkins University Press.

Bonet, E. & Mascaró, J. (1997). On the representation of contrasting rhotics. In Morales-Front, A. & Martínez-Gil, F. (eds.) *Issues in the phonology and morphology of the major Iberian languages*. Washington, DC: Georgetown Univ. Press, 103-126.

Boynton, S. (1981). A Phonemic Analysis of Monolingual Andean (Bolivian) Spanish. *The Aymara Language in Its Social and Cultural Context* ed.by M.J. Hardman, 199-204. Gainesville: University Presses of Florida.

Bradley, T. G. (1999). Assibilation in Ecuadorian Spanish. In J. Authier, B. Bullock & L. Reed (eds.), *Formal Perspectives on Romance Linguistics. Selected Papers from the 28th Linguistics Symposium on Romance Languages.* Amsterdam, John Benjamins Publishing Company, 57-71.

Bradley, T. G. (2004). Gestural timing and rhotic variation in Spanish codas, in T. L. Face (ed.), *Laboratory Approaches to Spanish Phonology.* Berlin, Mouton de Gruyter, pp. 195-220.

Bradley, T. (2006). "Phonetic Realizations of /sr/ Clusters in Latin American Spanish." In (ed.) Manuel Díaz-Campos, *Selected Proceedings of the 2nd Conference on Laboratory Approaches to Spanish Phonetics and Phonology,* 1–13. Somerville, MA: Cascadilla Proceedings Project.

Bradley, T. G. & E. Willis. (2012). Rhotic Variation and Contrast in Veracruz Mexican Spanish. *Estudios de Fonética Experimental* 21, 43-74.

Britain, D. (2010) Supralocal regional levelling. In Llamas, C. & Watt, D. (eds.), *Language and Identities*. 193–204. Edinburgh: Edinburgh University Press.

Broce, M., & Torres Cacoullos, R. (2002). "Dialectología urbana" rural: la estratificación social de (r) y (l) en Coclé, Panama. *Hispania* 85 (2), 382-395.

Brockmann, T. (1979). Language, communication and ethnicity in British Honduras. In William F. Mackey & Jacob Ornstein (eds.), *Sociolinguistic Studies in Language Contact: Methods and Cases.* The Hague: Mouton Publishers. 161-80.

Brown, Esther L. (2004). *Reduction of Syllable-Initial /s/ in the Spanish of New Mexico and Southern Colorado: A Usage-Based Approach*. [Ph.D. dissertation]. University of New Mexico.

Bybee, J. (2000). “The Phonology of the Lexicon: Evidence from lexical diffusion”. In Barlow, M. & Kemmer, S. (eds.) *Usage-Based Models of Language*, 65–85. Stanford: CSLI.

Bybee, J. (2002a). Word Frequency and Context of Use in the Lexical Diffusion of Phonetically-Conditioned Sound Change. *Language Variation and Change* 14.261–290.

Bybee, Joan. (2002b). Phonological evidence for exemplar storage of multiword sequences. Studies in Second Language Acquisition 24. 215-21.

Bybee, J. (2006). From usage to grammar: The mind’s response to repetition. *Language* 82 711–733.

Bybee, J. (2010). *Language, Usage and Cognition*. Cambridge: Cambridge University Press.

Canfield, D.L. (1962). La pronunciación del español en América, Vol. 17, *Publicaciones del Instituto Caro y Cuervo*. Bogotá.

Calvo Shadid, A. & Portilla Chaves, M. (1998) Variantes retroflejas de /ɾ/ y /r/ en el habla culta de San José. *Revista Káñina*. 22 (1): 81- 86.

Camille, M. (1996). Population and Ethnicity of Belize, 1861. In Michael D. Phillips (ed.), *Belize: Selected Proceedings from the Second Interdisciplinary Conference*. Lanham, MD, University Press of America. 45-64.

Cárdenas, D. (1958). "The Geographic Distribution of the Assibilated R, RR in Spanish America". *Orbis* 7. 407-410.

Cardona Ramirez, M.A. (2010). La Fonética del Español en Belice. In (ed.) M.A. Quesada Pacheco, *Lingüística Iberoamericana El español hablado en América Central: Nivel Fonético*. 39, 20-54.

Cayetano, S., and Cayetano, F. (1997). *Garifuna History, Language and Culture of Belize, Central America and the Caribbean. Bicentennial Edition (April 12th 1797 – April 12th 1997)*. Belize: BRC.

Cedergren, H. (1988). The spread of language change: Verifying inferences of linguistic diffusion. *Language spread and language policy: Issues, implications, and case studies* (Georgetown University Round Table on Languages and Linguistics 1987), ed. by Peter H. Lowenberg, 45–60. Washington, DC: Georgetown University Press.

Chabot, A. (2019). What's wrong with being a rhotic? *Glossa*, 4(1), 1-24. doi:http://dx.doi.org/10.5334/gjgl.618

Chomsky, N. (1965). *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.

Church, M. C., Yaeger, J. and Dornan, J.L. (2011). The San Pedro Maya and the British Colonial Enterprise in British Honduras. In Matthew Liebmann and Melissa S. Murphy, (eds.), *Enduring Conquests: Rethinking the Archaeology of Resistance to Spanish Colonialism in the Americas*. Santa Fe, NM, School for Advanced Research Press. 173-198.

Clements, G. N. (1976), Palatalization: Linking or Assimilation?, *Chicago Linguistic Society* 12, 96-109.

Cohen, M. A. (2006). Percurso do "r" retroflexo no português do Brasil. In: Ramos, J. M. (org.) *Estudos sociolingüísticos: os quatro vértices do GT da Anpoll*. Belo Horizonte: Faculdade de Letras da UFMG.

Cuellar, B.V. (1971). Observaciones sobre la 'rr' velar y la 'y' africada en Cuba. *Español Actual*.

Decker, K. (2005). *The song of Kriol: A grammar of the Kriol language of Belize*. Belmopan, Belize: The National Kriol Council, House of Culture.

Demolin, D. (2001). Some phonetic and phonological observations concerning /R/ in Belgian French. *Etudes & Travaux*, 4, 63-74.

Denton, J. (2001). "Phonetic insights into the articulation of early West German /r/". *Etudes & Travaux*, 4, 158-172.

Dickson, V., Hall-Lew, L. (2017). Class, Gender, and Rhoticity: The Social Stratification of Non-Prevocalic /r/ in Edinburgh Speech. *Journal of English Linguistics.* 45(3), 229-259.

Eckert, P. (1989). The whole woman: sex and gender differences in variation. *Language Variation and Change*. 1, 245-68.

Eckert, P. (1997). Age as a sociolinguistic variable. Florian Coulmas (ed.) *The handbook of sociolinguistics*. 151–67. Oxford, UK: Blackwell.

Eckert, P. (2000). *Linguistic Variation as Social Practice: The Linguistic Construction of Identity in Belten High*. Oxford: Blackwell.

Erker, D. (2017). The limits of named language varieties and the role of social salience in dialectal contact: The case of Spanish in the United States. *Langauge and Linguistics Compass*. 11, https://doi.org/10.1111/lnc3.12232

Erker, D. & Guy, G. (2012). The Role of Lexical Frequency in Syntactic Variability: Variable Subject Personal Pronoun Expression in Spanish. *Language*. 88(3) 526-557.

Escure, G. (1981). Decreolization in a creole continuum: Belize. In Arnold Highfield & Albert Valdman, (eds.), *Historicity and variation in creole studies*, 27–49. Ann Arbor: Karoma.

Escure, G. (1997). *Creole and dialect continua*. Amsterdam: John Benjamins.

Foulkes, P., & Docherty, G. J. (2000). Another chapter in the story of /r/: `Labiodental' variants in British English. *Journal of Sociolinguistics*, 4(1), 30–59.

Foulkes, P. & Docherty, G. (2001) Variation and Change in British English /r/. *Etudes & Travaux,* 4, 27-44.

Fuller Medina, N. (2016). *Language Mixing in Northern and Western Belize: A Comparative Variationist Approach* (PhD diss.), University of Ottawa

Gabbert, W. (2007). In the Shadow of the Empire - The Emergence of Afro-Creole Societies in Belize and Nicaragua. *Indiana* 24: 39-66.

Graml, C. (2009). *Puerto Rico en variación: Variation socio-phonétique et son auto- et hétérosurveillance par les locuteurs – le cas de la vélarisation du /r/ en espagnol portoricain.* Ph.D. dissertation. Ludwig-Maximilians-Universität, München.

Gregory, M., Raymond, W. D., Bell, A., Fosler-Lussier, E., & Jurafsky, D. (1999). The Effects of Collocational Strength and Contextual Predictability in Lexical Production. *Proceedings of the 35th meeting of the Chicago Linguistic Society,* 151–166. Chicago: Chicago Linguistic Society.

Guy, G. R., Hay, J., and Walker, A. (2008). Phonological, lexical, and frequency factors in coronal stop deletion in Early New Zealand English. *Paper at Laboratory Phonology 11*, Wellington, New Zealand.

Hagerty, T. W. (1979). *Phonological analysis of the Spanish of Belize*. Ph.D. dissertation. University of California, Los Angeles, CA.

Hagerty, T. W. (1992). Historical Perspective on the Spanish Language of Belize. *Belizean Studies.* Belize Institute of Social Research and Action. 20(2), 16-21

Hagerty, T. W. (1996). The influence of English on the Spanish language of Belize, in M. D. Phillips (ed.), *Belize: Selected Proceedings from the Second Interdisciplinary Conference*. Lanham, MD, University Press of America. 131-142.

Hammond, R.M. (1999). On the Non-Occurrence of the Phone [r] in the Spanish Sound System. In Javier Gutiérrez-Rexach & Fernando Martínez-Gil. *Advances in Hispanic Linguistics,* 135-151. Somerville, MA: Cascadilla Press

Harris, J. (2002). Flaps, trills, and syllable structure in Spanish. *MIT Working Papers in Linguistics 42*, 81-108.

Hay, J., & Foulkes, P. (2016). The evolution of medial /t/ over real and remembered time. *Language* 92(2):298–330.

Head, B. (1987). Propriedades fonéticas e generalidade de processos fonológicos: o caso do "r caipira". *Cadernos de Estudos Lingüísticos*. 13: 5-39.

Hernández, J.E., (2009). Measuring rates of word-final nasal velarization: The effect of dialect contact on in-group and out-group exchanges. *Journal of Sociolinguistics*. 13(5), 583-612.

Hinskens, F. (1996) *Dialect Levelling in Limburg: Structural and Sociolinguistic Aspects*. Tübingen: Niemeyer.

Holmes, J. & Meyerhoff, M. (2003). *The Handbook of Language and Gender*. Maiden: MA, Blackwell Publishing Ltd.

Hooper, J. B. (1976). Word frequency in lexical diffusion and the source of morphophonological change. In (ed.) W. Christie, *Current progress in historical linguistics*, 96–105. Amsterdam: North Holland.

Hornsby, D. (2009) Dialect convergence and divergence in France. *International Journal of the Sociology of Language* 196/197: 157–180.

Hualde, J. I. (2004). Quasi-phonemic contrasts in Spanish. *Proceedings of the West Coast Conference on Formal Linguistics 23*, 374-398.

Hualde, J. I. (2005). *The sounds of Spanish*. Cambridge, Cambridge University Press.

Hubbell, A. F. (1950). *The Pronunciation of English in New York City*. New York: King's Crown Press, Columbia University.

Hume, E., (1996). Coronal consonant, front vowel parallels in Maltese. *Nat Lang Linguist Theory* 14, 163–203. https://doi.org/10.1007/BF00133405

Izard, G. (2004). "Herencia y etnicidad entre los Garífuna de Belice." *Revista Mexicana del Caribe* 17, 95-127.

Jiménez Sabater, Max. (1975). *Más datos sobre el español en la República Dominicana*. Instituto Tecnológico de Santo Domingo. Santo Domingo: Ediciones Intec.

Kerswill, P.E. (2003) Dialect levelling and geographical diffusion in British English. In Britain, D. and Cheshire, J. (eds.) *Social Dialectology*. In Honour of Peter Trudgill. 223–243. Amsterdam: Benjamins.

Kerswill, P. (2013). Koineization. In Chambers, J. K. & Schilling, N. (Eds.), *The Handbook of Language Variation and Change*, 519-536. John Wiley & Sons, Inc. https://doi.org/10.1002/9781118335598.ch24

Kerswill, P., & Williams, A. (2005). New towns and koineization: Linguistic and social correlates. *Linguistics*, 43(5), 1023-1048. https://doi.org/10.1515/ling.2005.43.5.1023

Kim, K. (2019). La Variación de /r/ en Posición Posnuclear en el Español Andino del Perú. *Iberoamérica*. 21(1), 127-158.

Labov, W. (1963). The social motivation of a sound change. *Word*, 19, 273–309.

Labov, W. (1966) *The social stratification of English in New York City*. Cambridge, UK: Cambridge University Press.

Labov, W. (1981). *Field Methods of the Project on Linguistic Change and Variation*. Washington: Southwest Educational Development Laboratory.

Labov, W. (1982). Building on empirical foundations. In W.P. Lehmann and Y. Malkiel (Eds.), *Perspectives on Historical Linguistics*. Amsterdam and Philadelphia: Benjamins. p. 79-92.

Labov, W. (1984). Field methods of the project on linguistic change and variation. In Baugh, J. & Sherzer, J. (eds.), *Language in use: Readings in sociolinguistics.* Englewood Cliffs: Prentice Hall. 28–53.

Labov, W. (1994). *Principles of Linguistic Change. Volume I: Internal Factors*. Oxford: Blackwell.

Labov, W. (2001). *Principles of linguistic change: social factors*. Oxford, UK: Blackwell.

Ladefoged, P., & Maddieson, I., (1996). *The Sounds of the World's Languages*. Cambridge: Blackwell.

Lamy, D.S., (2015). A sociophonetic analysis of trill production in Panamanian Spanish. In Valenzuela, E., Liceras, J.M., Klassen, R. (eds.) *Hispanic Linguistics at the Crossroads: Theoretical Linguistics*. 313-335.

Lawson, E., Scobbie, J. M., & Stuart, S. J. (2011). The social stratification of tongue shape for postvocalic /r/ in Scottish English. *Journal of Sociolinguistics*, 15(2), 256–268.

Le Page, R. B., and Tabouret-Keller, A. (1985). *Acts of Identity: Creole-based Approaches to Language and Ethnicity*. New York, Cambridge University Press.

Leite, C. M. B. (2015). Study of the linguistic variation of rhotics in campinas native accent/Estudo da variacao linguistica dos roticos no falar campineiro. *Alfa: Revista De Linguistica*, 59(1), 127.

Lipski, J.M. (1990). Spanish taps and trills: Phonological structure of an isolated opposition. *Folia Linguistica* 24. 153-174.

Lipski, John. (1994). *Latin American Spanish.* New York: Longman.

Lipski, J. (2014). *El español de América, 8a edición*. (Silvia Iglesias Recuero, Trans.). Longman Group Limited. (*Latin American Spanish,* 1994).

Llamas, C. (2001). The sociolinguistic profiling of (r) in Middlesborough English. *Etudes & Travaux*, 4, 123-139.

Lope Blanch, J. M. (1975). Un caso de posible influencia maya en el español mexicano. *Nueva Revista de Filología Hispánica.* 24, 89-100.

Lope Blanch, J. (1982). Sobre la influencia maya en el español de Yucatán. *Nueva Revista de Filología Hispánica.* 31(1): 83-90.

López-Morales, H. (1983). *Estratificación social del español de San Juan de Puerto Rico*. México: Universidad Nacional Autónoma de México.

Mather P-A, (2012). The Social Stratification of /r/ in New York City: Labov's Department Store Study Revisited. *Journal of English Linguistics*. 40(4), 338-356.

Medina-Rivera, A. (1997). *Phonological and stylistic variables in Puerto Rican Spanish*. (Ph.D. Dissertation) University of Southern California.

Mesthrie, R. (1993) Koineization in the Bhojpuri–Hindi diaspora – with special reference to South Africa. *International Journal of the Sociology of Language* 99: 25–44.

Michnowicz, J. (2006). *Linguistic and Social Variables in Yucatan Spanish.* Ph.D. Dissertation. The Pennsylvania State University, State College, PA.

Milne, P. (2012). The effects of syllable position on allophonic variation in Québec French /R/. *University of Pennsylvania Working Papers in Linguistics*, 18(2), 67-76

Milroy, J. & Milroy, L. (1978). Belfast: Change and variation in an urban vernacular. In P. Trudgill (ed.), *Sociolinguistic Patterns in British English.* London: Edward Arnold, 19-36.

Milroy, L. (1987). *Language and Social Networks* (2nd ed.). Oxford, UK: Basil Blackwell Ltd.

Moag, R. (1977) *Fiji Hindi*. Canberra: Australian National University Press.

Molina Ortés, E.F. (2018) Estudio socioligüístico de la pronunciación de /-ɾ/ en el española de Granada. *Itinerarios.* 28, 219-241.

Mooney, D. (2011). Koinéization and regional french: New-dialect formation in Béarn. *French Studies Bulletin*, 32(121), 76-82. https://doi.org/10.1093/frebul/ktr026

Morgan, T.A., Sessarego, S. (2016). A phonetic analysis of intervocalic /r/ in Highland Bolivian Spanish. *Spanish in Context*. 13(2), 195-211.

Nagy, N. & Irwin, P. (2010). Boston (r): Neighbo(r)s nea(r) and fa(r). *Language Variation and Change* 22(2), 241–278.

Navarro Tomás, T. (1948). *El español de Puerto Rico: Contribución a la geografía lingüística Hispanoamericana*. Editorial de la Universidad de Puerto Rico.

Noll, V. (2008) *O português brasileiro: formação e contrastes*. São Paulo: Globo. (Translation: Viaro, M. E.)

Otheguy, R., & Lapidus, N. (2003). An adaptive approach to noun gender in New York contact Spanish. *Amsterdam Studies in the Theory and History of Linguistic Science Series 4*, 209-232.

Otheguy, R., Zentella, A., & Livert, D. (2007). Language and Dialect Contact in Spanish in New York: Toward the Formation of a Speech Community. *Language*. 83(4), 770-802.

Otheguy R, Stern N. (2010) On so-called Spanglish. *International Journal of Bilingualism*. 5(1):85-100.

Penny, R. (2000). *Variation and Change in Spanish*. Cambridge: Cambridge University Press.

Penny, R. (2002). *A History of the Spanish Language (2nd ed.)*. Cambridge University Press, New York, NY

Phillips, B. (2006). *Word frequency and lexical diffusion*. New York: Palgrave

Pierrehumbert, J. (2001). Exemplar dynamics: Word frequency, lenition and contrast. In (eds.) J. Bybee and P. Hopper, *Frequency and the emergence of linguistic structure*, 137–157. Amsterdam: John Benjamins.

Poplack, S., Pousada, A., & Sankoff, D. (1982). Competing influences on gender assignment: Variable process, stable outcome. *Lingua,* 57(1), 1-28.

Poplack, S., Sankoff, D., & Miller, C. (1988). The Social Correlates and Linguistic Processes of Lexical Borrowing and Assimilation. *Linguistics*. 26: 47-104.

Poplack, S., Walker, J. A., & Malcolmson, R. (2006). An English "like no other"?: Language contact and change in Quebec. *Canadian Journal of Linguistics/Revue canadienne de Linguistique* 51(2):185–213.

Poplack, S., Robillard, S., Dion, N., & Paolillo, J.C. (2020). Revisiting phonetic integration in bilingual borrowing. *Language* 96 (1), 126-159.

Quesada Pacheco, M.A., & Martínez López, J.A. (2008). El Atlas Lingüístico Pluridimensional de América Central: Estado actual del proyecto. *Revista Internacional De Lingüística Iberoamericana,* 6(1(11)), 101-109.

Quesada Pacheco, M. A. (2013). Aspectos morfosintácticos del español hablado en Belice, in M. A. Quesada Pacheco (ed.), *El espanol hablado en America Central: nivel morfosintáctico*. Madrid: Iberoamericana, 23-64.

Quilis, A. (1990). Notas sobre el español de Belice. *Revista Voz y Letra I*, 139-147.

Quilis, A. (1993). *Tratado de fonología y fonética españolas*. Madrid: Gredos.

Ravindranath, M. (2009). *Language shift and the speech community: sociolinguistic change in a Garifuna community in Belize*. (PhD. Dissertation). University of Pennsylvania, Philadelphia, Pennsylvania

Raymond, W., & Brown, E. (2012). Are effects of word frequency effects of context of use? An analysis of initial fricative reduction in Spanish. In S. Gries & D. Divjak. (eds.), *Frequency effects in language. Vol. 2. Learning and processing*. Berlin: Mouton de Gruyter. 35–52.

Recasens, D. (2007). Phonetic Typology and Positional Allophones for Alveolar Rhotics in Catalan. *Phonetica.* 63, 1-28.

Regan, B. (2020). The split of a fricative merger due to dialect contact and societal changes: A sociophonetic study on Andalusian Spanish. *Language Variation and Change* 32, 159-190

Rennicke, I., (2011). The retroflex r of Brazilian Portuguese: theories of origin and a case study of language attitudes in Minas Gerais. *Revista de Estudos Linguísticos da Uiversidade do Porto.* 1(6), 149-170.

Risso, R.R. (2010). Subject pronoun placement as evidence of contact and leveling in Spanish in New York. *International Journal of the Sociology of Language* 203, 101-114.

Rodrigues, A. N. (1974) *O dialeto caipira na região de Piracicaba*. São Paulo: Ática.

Roettger, T. B., Winter, B., & Baayen, H. (2019). Emergent data analysis in phonetic sciences: Towards pluralism and reproducibility. *Journal of Phonetics*, *73*, 1-7.

Russell Webb, E. (2004). Explanatory adequacy in phonology: a deductive approach to /R/. *Linguistica Atlantica*, 25: 77–94.

Russell Webb, E. (2009). Minimalism and French /R/: Phonological representations in phonetically based phonology. *French Language Studies*, 19, 87-115.

Sánchez Corrales, V. (1986). Escisión fonológica de /ɪ/ en el español de Costa Rica. *Revista de Filología y Lingüística.* 12 (2): 129- 133.

Sandøy, H. (1998). The diffusion of a new morphology in Norwegian dialects. *Folia Linguistica* 32: 83–100.

Sankoff, G., Blandeau, H., & Charity, A. (2001). Individual roles in a real time change: Montreal (r → R) 1947–1995. In Van de Velde & van Hout, *R-atics: Sociolinguistic, Phonetic and Phonological Characteristics Of R.* 141-158.

Sankoff, G. (2005). Cross-sectional and longitudinal studies in sociolinguistics. In P. Trudgill (ed.) *Sociolinguistics: an international handbook of the science of language and society*, 1003–13. Berlin: Mouton de Gruyter.

Sankoff, G., & Blondeau, H. (2007) Language change across the lifespan: /r/ in Montreal French. *Language* 83(3). 560-588

Sankoff, G. & Blondeau, H. (2008). Instability of the [r] ~ [R] alternation in Montreal French: The conditioning of a sound change in progress. In Hans Van de Velde and Roeland van Hout (eds.) *Etudes & Travaux, 'r-atics 2.*

Saussure, F. de (1916). *Course in General Linguistics,* (A. Sechehaye, W. Baskin, trans.). C. Ballyand (ed.), New York and Toronto: McGraw-Hill.

Schiller, N. (1999). The phonetic variation of German /r/. In *Variation und Stabilität in der Wortstruktur: Untersuchungen zu Entwicklung, Erwerb und Varietäten des Deutschen und anderer Sprachen*, Butt; Nanna Fuhrhop (Eds.). 261-287.

Schützler, O. (2010). Variable Scottish English consonants: The cases of /ʍ/ and non-prevocalic /r/. *Research in Language* 8, 5-21.

Sessarego, Sandro. 2011. "Phonetic analysis of /sr/ clusters in Cochabambino Spanish." In (ed.) Luis A. Ortiz-López, *Selected Proceedings of the 13th Hispanic Linguistics Symposium,* 251–263. Somerville, MA: Cascadilla Proceedings Project.

Shopen, T. & Wald, B. (1982). The Use of (ing) in Australian English. MS. Shrank, H.L. & Gilmore, L.D. (1973). Correlates of fashion opinion leadership: implications for fashion process theory. *The Sociological Quarterly* 14, 534-43.

Siegel, J. (1985) Koines and koineization. *Language in Society* 14: 357–378.

Siegel, J. (1987) *Language Contact in a Plantation Environment*. Cambridge: Cambridge University Press.

Taylor, D. (1975). *Declinatio: A Study of the Linguistic Theory of Marcus Terentius Varro.* Amsterdam: John Benjamins.

Timberlake, A. (1978). Uniform and alternating environments in phonological change. *Folia Slavica* 2 312–328.

Torp, A. (2001). Retroflex consonants and dorsal /r/: mutually excluding innovations? On the diffusion of dorsal /r/ in Scandinavian. *Etudes & Travaux*, 4, 75-90.

Torres Cacoullos, R. & Travis, C. (2018). *Bilingualism in the community*. Cambridge University Press.

Torres Cacoullos, R. & Ferreira, F. (2000). Lexical frequency and voiced labiodental-bilabial variation in New Mexican Spanish. *Southwest Journal of Linguistics* 19(2), 1-17.

Tousignant, C. (1987) Les variantes du /R/ montrealais: Contextes phonologiques favorisant leur apparition. *Revue quebecoise de linguistique theorique et appliquee* 6.73–113.

Travis, C. & Torres Cacoullos, R. (2015). Beyond questionnaires: Community-based measures of bilingualism. *Southwest Journal of Linguistics* 34.1-2: 105-127.

Trudgill, P. (1972). Sex, Covert Prestige and Linguistic Change in the Urban British English of Norwich. *Language in Society*. 1(2), 179-195.

Trudgill, P. (1974). *The social differentiation of English in Norwich*. Cambridge, UK: Cambridge University Press.

Trudgill, P. (2004). *New-Dialect Formation: The Inevitability of Colonial Englishes*. Edinburgh: Edinburgh University Press.

Tuten, D. N., (2003). *Koineization in Medieval Spanish.* New York: Mouton de Gruyter.

Ugueto, M.M. (2016). La variación de /r/ en posición final de palabra en el habla de Caracas: un studio sociofonético. *Lingüística y Literatura*. 70, 15-46.

Van de Velde, H., & van Hout, R. (1999). The pronunciation of (r) in Standard Dutch. In R. van Bezooijen & R. Kager (eds.) *Linguistics in the Netherlands* 1999. John Benjamins Publishing Company, 177-188

van Oostendorp, M. (2001). The phonology of postvocalic /r/ in Brabant Dutch and Limburg Dutch.

Vásquez Carranza, L. M. (2006). On the phonetic realization and distribution of Costa Rican Rhotics. *Filología y Lingüística* 32(2), 291-309.

Verstraeten, B., & Van de Velde, H. (2001). Socio-geographical variation of /r/ in standard Dutch. *Etudes & Travaux*, 4, 45-62.

Vigil, D. (2008). *The Traditional Spanish of Taos, New Mexico: Acoustic, Phonetic, and Phonological Analysis*. Ph.D. Dissertation. Purdue University, West Lafayette, Indiana.

Wagner, S. (2012). Age Grading in Sociolinguistic Theory. *Language and Linguistics Compass*, 6, 371-382.

Wagner, S., & Sankoff, G. (2011). Age grading in the Montréal French inflected future. *Language Variation and Change*, 23(3), 275-313. doi:10.1017/S0954394511000111

Walker, D. C. (2001). *French Sound Structure*. Calgary: University of Calgary Press.

Weinreich, U., Labov, W., & Herzog, M. (1968) Empirical foundations for a theory of language change. In W. P. Lehmann & Y. Malkiel (eds.), *Directions for Historical Linguistics* (p. 95–188). Austin: University of Texas Press.

Widdison, K.A. (1998). Phonetic Motivation for Variation in Spanish Trills. *Orbis: Bulletin international de documentation linguistique*. 40(1), 51-61.

Wiese, R. (2001). The unity and variation of (German) /r/. *Etudes & Travaux*, 4, 11-26.

Willis, E. (2007). An acoustic study of the "pre-aspirated trill" in narrative Cibaeño Dominican Spanish. *Journal of the International Phonetic Association* 37, 33-49.

Willis, E. and Bradley, T. G. (2008): Contrast maintenance of taps and trills in Dominican Spanish: data and analysis, In L. Colantoni and J. Steele (eds.): *Selected Proceedings of the 3rd Conference on Laboratory Approaches to Spanish Phonology*, Somerville, MA, Cascadilla Proceedings Project, 87-100.

Wilson Vergara, D. (2013). "One Construction, Two Source Languages: Hacer with an English Infinitive in Bilingual Discourse." In Ana M. Carvalho, and Sara Beaudrie (eds.), *Selected Proceedings of the 6th Workshop on Spanish Sociolinguistics*, 123-134. Somerville, MA: Cascadilla Proceedings Project.

Wolfram, W., & Fasold, R.W. (1974). *The study of social dialects in American English*. Englewood Cliffs, NJ: Prentice-Hall.

Woods, H. (1979). A socio-dialectology survey of the English spoken in Ottawa: a study of sociological and stylistic variation in Canadian English. (Ph.D. Dissertation) University of British Columbia.

Young, C. (1973). *Belize Creole: a study of the creolized English spoken in the city of Belize in its cultural and social setting*. York: University of York dissertation.

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