

Abstract

CARTER, PHILLIP MARTIN. The Emergence of Hispanic English in the Raleigh Community: A Sociophonetic Analysis. (Under the direction of Erik Thomas, Associate Professor)

Though the recent influx of native Spanish speakers to the Southeastern United States has caused sociolinguists to pay closer attention to Hispanic English, most studies have focused their attention on the adaptation of segmental features, leaving rigorous examinations of suprasegmental features vastly underrepresented. Although some studies have commented on prosodic differences between Spanish, English, and dialects of English influenced by Spanish, most of these have relied on impressionistically based observations and have avoided systematic, quantifiably based examinations. Nevertheless, Ramus et al. (1999) were able to show quantifiable differences between Spanish and English, firmly classifying the former as more syllable-timed and the latter as more stress-timed.

The development of the Pairwise Variability Index (PVI) by Low and Grabe (1995) provides a method for examining the degree of stress-timing or syllable-timing in a given linguistic variety. Fought and Fought (2003) used PVI to show that bilingual Chicanos in California were more syllable-timed than the adjacent English-speaking community, though only for the first five syllables of an utterance.

This thesis study examines the Spanish and English of adolescent bilinguals in Raleigh, NC and applies the PVI method in order to a) report empirically quantifiable differences between the two systems b) determine the rhythmic nature of Hispanic English and c) explore possible influences of southern American English on the Spanish of immigrants to the Mid-Atlantic South. As expected, findings show a range of

rhythmic productions that is best represented on a continuum, where Spanish is located on one endpoint, the English of native monolinguals on the other, and the English of Hispanic immigrants somewhere in between. This analysis provides further insights on the bilateral affects of Spanish-English contact situations. The nature of prosody as a substrate feature in emerging varieties of Hispanic English in the Mid-Atlantic South is also considered in this description.

**The Emergence of Hispanic English in the Raleigh Community:
A Sociophonetic Analysis**

by

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Biography

PHILLIP CARTER was born on March 19, 1980 in Cary, North Carolina. He attended North Carolina State University and completed the Bachelor of Arts Degree in Spanish Language and Literature with minors in Business Administration, Linguistics, and Women's and Gender Studies. Carter graduated *summa cum laude* in December of 2001 and began his graduate study in Linguistics in the fall of 2002. With the completion of this thesis, Carter fulfills the requirements for a Master of Arts degree in English with a concentration in Linguistics.

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1. Introduction: Preliminary Theoretical Issues in the Study of Hispanic English

Varieties of English spoken by Hispanics in the United States have been the object of investigation by sociolinguists for several decades. Though the investigation of Hispanic English (HE) has often been overshadowed by examinations of other ethnic and rural dialects—particularly in the Southeast, where many Hispanic communities are incipient—sporadic progress has been made toward answering important questions about the origin and sociolinguistic description of Hispanic varieties of English (Santa Ana 1993). While some progress has been made, little is known yet about the formation of Hispanic English, given the lack of reliable linguistic data from the first Spanish-English contact situations in North America. Additionally, relatively little is known about how Hispanic English, might vary regionally, as the locus of attention among sociolinguists has been the longstanding Hispanic speech communities found in the West and Southwest. Notable exceptions include Fishman et al.'s (1974) study of bilingualism among New York Puerto Ricans, Wolfram's (1974) descriptive study of Puerto Ricans in New York, and Poplack's (1976) study of Puerto Ricans in Philadelphia. Progress toward the sociolinguistic description of Hispanic English may have been impeded by early claims that the English of both Hispanic immigrants and U.S. born Hispanics was little more than Spanish language interference (Sawyer 1959, 1964). Several recent studies, as well as a few early ones, argue for the conceptualization of Hispanic English as an autonomous ethnic dialect akin to other ethnic dialects such as African American English (AAE) (Bills 1977; Peñalosa 1980; Godinez 1984; Wald 1984; Mendoza-Denton 1999; Fought 1999, 2003).

Many studies have suggested that phonological variables are the most salient linguistic variables for study of Hispanic English, both in terms of dialect acquisition and accommodation as well as new dialect formation (Poplack 1978; Galindo 1988; Thomas 1993; Fought 2003; Wolfram, Carter, & Moriello forthcoming). Additionally, it has been noted that suprasegmental features may constitute a largely unexplored realm of linguistic meaning which may be indexed cross-dialectally (Tarone 1973; Penfield & Ornstein-Galicia 1985; Wolfram & Thomas 2002; Fought 2003; Fought & Fought 2003). As the overwhelming majority of the studies focusing on Hispanic English, both in the Southeast and elsewhere, have examined segmental features in phonology and/or morphosyntax rigorous analyses of suprasegmental features in English varieties spoken by Hispanics have been vastly underrepresented in the current literature. Accordingly, this thesis examines the rhythm and phonology of an emerging variety of Hispanic English spoken by bilinguals in Raleigh, North Carolina, in order to: 1) determine the degree of dialect accommodation to the adjacent English speaking community, 2) shed light on possible Spanish language substrate influence on Hispanic English, 3) determine the rhythmic nature of English spoken by L1 Spanish speakers, and 4) explore an emerging variety of Hispanic English in real time.

This chapter foregrounds three theoretical issues involved in the sociolinguistic description of Hispanic English before addressing the quantitative research presented in the main chapters. First, I explore the issue of ethnic and linguistic nomenclature and provide an empirical rationale for the use of *Hispanic* in this study. This discussion also includes brief etymologies of some of the most frequently used labels for Hispanic English (HE). Second, I outline the debate in variationist sociolinguistics over the

classification of Hispanic English and argue for its autonomous classification. Finally, I address some of the issues involved in sampling Hispanic communities and argue for the need to include non-native bilinguals in Hispanic English corpora.

1.1 Labeling the Variety

One of the issues facing linguists who work with varieties of English influenced by Spanish, either historically as a substrate or synchronically in contact situations and in interlanguage varieties, is the matter of nomenclature. A number of labels have been given to such varieties including Latino English, Hispanic English, Spanish-American English, and Vernacular Chicano English (Bills 1977), though the preferred label since the 1970s seems to be Chicano English (Metcalf 1972; Hernandez-Chavez; Cohen, & Beltramo 1975; Register 1977; Peñalosa 1980; Godinez & Maddieson 1985; Santa Ana 1993; Fought 2003; etc.). Hernandez-Chavez et al. (1975) and Peñalosa (1980) tie the use of Chicano to the civil rights movement of the same name during which equality and self-determination were central themes. In the 1990s, the preferred label seemed to shift towards Hispanic, both as an ethnic and linguistic label (Bernstein 1993; Thomas 1993; Moriello & Wolfram 2003)—possibly as a result of the hyper-sensitivity to political correctness associated with that decade.

Despite the preponderance of the *Chicano* label and the later use of *Hispanic*, a number of authors have eschewed the issue altogether by providing a more precise label based on national origin, such as “Mexican-American” English (Thompson 1975, Thomas 2000). This label is more difficult to engage, as many informants in a Hispanic

speech community in North Carolina may not actually be Mexican-American, but rather of Honduran, Guatemalan, or Salvadoran heritage, for example. Only a few studies have reported the preferences of the speakers themselves; among those, Sawyer (1971) writes that bilinguals in San Antonio, Texas, preferred Latin American (leading to her label, Latin), while Fought (2003:17) reports a general aversion to *Hispanic* in Los Angeles, commenting that one speaker even says that *Hispanic* is a 'white person's word.'

Several points can be made about the issue of nomenclature. First, the issue clearly mirrors the debate over the appropriate label for the variety of English spoken by African Americans (Schneider 1996:3). Peñalosa (1980:2) remarks on this similarity in an early study, noting that the vacillation in labeling for a Hispanic person is "analogous to the replacement of 'Negro' by 'Black.'"

A number of studies have cited the copious labels used for the variety of English spoken by African Americans since it was first formally described in the 1960s; Green (2003:6) offers perhaps the most complete list, which includes Negro Dialect, Nonstandard Negro English, Black dialect, Black street speech, Black English, Black Vernacular English, Afro American English, "Ebonics," African American Vernacular English (AAVE), African American English (AAE) among others. Green (2003:5) also notes that the use of a particular linguistic label "has often been related to the social climate," so that the name of the speech variety changed alongside the name of the ethnic group.

Indeed, this seems to be the case for the variety of English influenced by Spanish, although sensibilities to the terms seem to have developed at the regional level instead of the national one, as was the case for AAE. While speakers in the West and Southwest seem to prefer *Chicano*, as evidenced by the near epithet perception of Hispanic by the

speaker in L.A. (Fought 2003), speakers in the Mid-Atlantic states may prefer *Latino* or *Hispanic*. For example, in interviews that I conducted at an annual Hispanic festival in Raleigh (“La Fiesta del Pueblo”) for a North Carolina Language and Life (NCLLP) video project, none of the speakers reported a dominant preference for the *Chicano* label. In fact, most seemed to prefer *Hispanic*, second only to a label of national origin (Mexican, Salvadoran, etc.). Though this finding seems to complicate the issue further, it is actually quite instructive as it provides evidence for the hypothesis that there may be regional preferences for ethnic labels. Still other speakers interviewed for the documentary seemed to think they *should* have a preference, but couldn’t readily distinguish between *Latino* and *Hispanic*. For example, some speakers reported that *Hispanic* means “from Spain” while *Latino* reflects indigenous American and even African heritage. Others reported the opposite, that *Latino* is a derivation of “Latin” which was spoken in ancient Spain, while *Hispanic* reflects Latin American ancestry, irrespective of Spanish influence. In contrast, *Chicano* was clearly identified as a label for a child born in the U.S. to Mexican nationals.

Since the historical distinctions among the labels seem to have been blurred, a brief etymological analysis is instructive. The *Oxford English Dictionary* clearly distinguishes Chicano as “a person of Mexican birth or descent resident in the U.S. (particularly in those areas annexed in 1848).” The *OED* posits a second definition based on usage first reported in 1967: “of or pertaining to Mexican-Americans or to the varieties of English or Spanish spoken by them.” This second formal definition would seem to give merit to the label “Chicano English” for varieties spoken only by Mexican-Americans. A related term is *Tejano*, which the *OED* defines as, “a native or inhabitant

of Texas, especially one of Mexican stock; a Texan.” As for *Hispanic* and *Latino*, the definitions and etymologies suggest a semantic convergence. The *OED* provides the following definitions for *Hispanic*: “pertaining to Spain or its people, especially pertaining to ancient Spain” (first usage 1584) and “Spanish speaking, especially applied to someone of Latin-American descent living in the United States (first usage 1974). The *Latino* definition is “a Latin-American inhabitant of the United States” (first usage 1946). Clearly, portions of meaning overlap.

I would like to offer five observations that I hope will shed light on this issue for future studies and which will guide this study. First, as previously noted, the debate over the appropriate label reflects the socio-cultural sensibilities of the time period in which the label is used. In short, the issue of labeling is controversial because issues of race and ethnicity are sensitive and controversial. Second, preferences for particular labels seem to be based on regional sensibilities, as evidenced by the East Coast-West Coast dichotomy (*Chicano* vs. *Hispanic*). As this debate becomes less esoteric and more people become aware of the implications of label usage, additional regional terms will undoubtedly arise. Third, *Hispanic* and *Latino* seem to be converging semantically, at least in their formal definitions: both labels seem to indicate a Latin American living in the United States. In contrast, *Chicano* seems to be undergoing a semantic divergence in its respective usages in Spanish and English, where the Spanish *Chicano* still means something to the effect of ‘born in the U.S. to Mexican parents,’ while the English *Chicano* means something like ‘born in the U.S. to Mexican parents or having Mexican ancestry.’ The diverging English usage may be the result of the Chicano Rights Movement from the 1960s where *Chicano* became a symbol of liberation and self-

determination for Mexican-Americans. Finally, as suggested by speakers in the Raleigh sample, there may be a hierarchy of preference in labeling, in which a term of nationality (*Mexican/Mexican-American*, etc.) is most highly favored, followed by *Hispanic*, and *Chicano* and *Latino* show the least favorability. It should be noted that in the South, and possibly elsewhere, Mexican could be a highly derogatory, pejorative epithet. Accordingly, this analysis engages *Hispanic*, both as a label for the ethnic group and the variety of English spoken in the Raleigh community. Here again, hierarchies of preference are community specific and accordingly, community-specific parameters should be drawn.

1.2: Defining the Hispanic Speech Community

Another issue that must be considered is determining the parameters of “Hispanic English.” Is it a variety spoken only by native Spanish-English bilinguals in longstanding English-speaking communities? Is it a variety that has developed as a result of historical Spanish-English contact, irrespective of the fluency of the speakers in either language? Is it simply a “learner” variety spoken by Hispanic immigrants who have little previous exposure to English? Is it an emerging variety resulting from unique contact situations with several regional and ethnic varieties, and if so is it too soon to delineate ethnolinguistic boundaries? Or is it in some ways all of these?

A number of perspectives have been adopted in early variationist studies, with most studies advocating one side of a descriptive dichotomy: 1) Hispanic English is an interlanguage variety resulting from language transfer or 2) Hispanic English is a

legitimate ethnic dialect akin to other ethnic dialects such as AAE. Sawyer (1957) was the most outspoken on the side of interlanguage. In her (Sawyer 1970:78) study on Mexican-Americans in San Antonio, Texas she wrote, “Nothing that could be called a Mexican-American *dialect* [her emphasis] of English was found in San Antonio, Texas. The English spoken by the bilingual informants was simply an imperfect state in the mastery of English.” Responding to Sawyer, other authors (Bills 1977; Godinez 1984; Wald 1984) advocated a separate dialect interpretation of Hispanic varieties of English. Most convincing was Bills (1977), who deconstructs Sawyer’s interference theory, which considered Hispanic English to be, among other things, unstructured and transitional. In addition to showing the enduring nature of Hispanic English in the Southwest and thus disproving the claim of transitionality, Bills notes a number of studies which indicate that Hispanic English is variable but at the same time highly structured and systematic. His study also problematizes the notion that interference (“the influence of the native language on the second language”) and dialect (“a systematic and distinct variety of a language”) are “contrastive, mutually exclusive” categories and writes that “a distinction between dialect and interference may be impossible.”

Though the question of interference vs. dialect still permeates current perspectives on Hispanic English, the dialect position seems to be generally accepted. A related, more recent debate, however, is ensuing over what type of speaker should be considered a speaker of a particular variety of Hispanic English. Fought (2003), following Santa Ana (1993) and others, considers “Chicano English” to be a vernacular variety spoken by native English speakers as they acquire English in the ethnogeographic regions where it is used. This perspective subsumes several speaker categories, including

native bilinguals, those who do not speak Spanish at all, and those for whom Spanish is a second or heritage language. It thus necessarily considers longstanding Hispanic communities where English has replaced Spanish as the mother tongue for the majority of the speakers.

There is a clear push to distinguish varieties that are spoken by native English speakers from those that are considered ‘interlanguage’ varieties spoken by native Spanish speakers. While the distinction is useful on some levels, it inaccurately classifies children who learn English at a young age as interlanguage speakers, thereby excluding them from analyses that consider their native bilingual cohorts. Though school age children may exhibit characteristic Spanish-English transfer and clear phonological and morphosyntactic interlanguage traits (pleonastic tense marking, consonant cluster reduction, bare root verb forms, etc.), their exclusion from analysis may be based on an oversimplified dichotomy (i.e., L1 English vs. L1 Spanish). For example, many regional and ethnic varieties of English are characterized by features associated with interlanguage and language transfer varieties. Like all other dialects, Hispanic English is not impermeable to the influences of contact with other linguistic varieties. Wolfram (1974) found that social interaction between Puerto Ricans and African Americans in New York was partially responsible for high frequencies of consonant cluster reduction among Puerto Ricans. If it is acceptable to assume that dialects can be influenced externally, that is, from surrounding regional and ethnic varieties, why then should we not equally value internal influence, or influence from an individual speaker’s repertoire of linguistic competence, especially when there is significant overlap between the feature subsets? It is often assumed that L2 English immigrants will undergo significant changes in

linguistic competence as they learn English. This assumption has been used as evidence for only considering native speakers of English in studies on Hispanic English, but, as Mufwene (2001:12) points out, idiolects are in flux until the time a speaker dies. Why, then, should we consider the fluid language of some speakers but not the in-flux language of others? Additionally, speakers of other ethnic varieties such as AAE may undergo significant dialect changes, perhaps with a trajectory towards more standard English as a result of external social factors including school and work. This trajectory toward more standard English may be the same for L2 Hispanic immigrants as they pass through school. Here again we should ask why we should base our assumptions about what is dialect and what isn't on sources of vernacularity.

Furthermore, these “interlanguage” features may eventually undergo a process of grammaticalization and phonologization and become canonical, core traits of an emergent Hispanic variety of English. Grammaticalization and phonologization may be underway or complete in communities in the West and Southwest. Spanish substrate influence has been noted as a possible source of the Hispanic varieties spoken by native English speakers in these areas as well as in urban varieties (Wolfram 1974; Peñalosa 1980; Wald 1984; Fought 2003). This finding would seem to provide further support for the inclusion of non-native speakers in what we consider a dialect of Hispanic English. We often lament the absence of reliable linguistic data from the early, emergent varieties of African American English, which at one point probably included significant numbers of native speakers of West African languages. We are equally faced with insufficient linguistic data from the earliest Spanish-English contact situations in North America. However, as a result of rapidly changing demographic situations in the Mid-Atlantic

South—i.e., the immigration of large numbers of Hispanics to locations where sizable populations were previously absent—we now have the opportunity to explore dialect formation in progress.

But this exploration can only truly occur if we consider non-native speakers of English in our corpora. Due to the highly incipient nature of the Raleigh community, non-native bilingual speakers must be considered, if not for the reasons listed above then for purely logistical ones. The neighborhood examined in this study (a full description is found later in chapter 2) does not include any Hispanic participants who are native English speakers—only those whose native language is Spanish. In addition, proficiencies in English vary from speaker to speaker, though, in general, children are more proficient than adults and speakers with greater length of residencies are more proficient than those with lower ones, though this is not always true.

2. The Sociohistorical Context

As Eble (2003: 347) notes, “Historians of language customarily recount development and change in a language in relation to historical events that affect its form or use.” Historical events, particularly those involving contact situations among previously separate groups, are commonly regarded as bearing an important influence on language change and the respective linguistic situation of a particular location. The colonization of the “Americas” by the British, Spanish, French, and Portuguese clearly resulted in some of the most dramatic linguistic changes in Western history (Mufwene 2001), but other, less cited events have also resulted in major linguistic developments (Eble 2003). An analysis of today’s changing linguistic environment with respect to Spanish-English contact is incomplete without noting some significant historical events that placed the two languages in contact for the first time in North America. As a bridge to a later description of the current Spanish-English contact situation and emergent variety of English under investigation, the ensuing discussion focuses on the development of Hispanic populations in the United States from a socio-historical perspective.

Though many areas in the United States are only now beginning to witness rapid Hispanic population growth, stable Hispanic communities have existed in longstanding communities in disparate geographical areas throughout the United States for centuries. In fact, Spanish speakers have inhabited parts of the West and Southwest since the 16th century when the first Spanish settlements were established (Hernandez-Chavez, Cohen, & Beltramo 1975; Peñalosa 1980; Wolfram, Carter, & Moriello, forthcoming). Many of the longstanding populations are located in what is now the Southwestern United States,

in vast areas that were once the property of Mexico, including portions of Arizona, California, Colorado, New Mexico, and Texas. The earliest explorations to the region by the Spanish date back to 1540 by Francisco Coronado, followed later by Juan de Oñate in 1598. Settlements were established throughout the Southwest and, according to Hernandez-Chavez et al. (1975), as many as 100,000 Spanish speakers were living in this region by the mid-nineteenth century.

Despite the growing Spanish-speaking population in the Southwest, Anglo English speakers were rapidly populating the region. In particular, American immigration to present-day Texas was especially robust (Sorrels 1996). Mexico received its independence from Spain in 1821 and within a year, the new nation was offering land to American settlers who were willing to raise cattle in the barren northern regions (Texas). By 1835, the American immigrants, who were joined by some Spanish-speakers, had decided to pursue independence and establish a Texan republic, thus beginning the Texas Revolution. One year later, Texas was established as a republic with plans of later becoming an American state. In 1845 Texas was admitted into the United States, a move which angered the Mexicans and led to the Mexican-American War in 1846, the outcome of which was the American annexation of vast territories to the north and west of Texas in 1848 (Sorrels 1996). This annexation, in conjunction with westward expansion, facilitated the spread of English across much of North America, as well as the demise of Spanish as the first language of most inhabitants. Despite the marginalization of Spanish, the language endured in many communities and has developed into unique regional varieties (Post 1933; Rael 1939; Ornstein 1951) that are still used as the first or second language of Hispanics throughout the Southwest.

2.1 The Changing Demography: Evidence From National, State, & Local Hispanic Communities

Despite the presence of these century-old populations, the existence of many Hispanic communities has been the result of much more recent immigration in the 20th century. U.S. Census 2000 figures show that Hispanics (12.5%) now make up the largest ethnic minority group in the country, narrowly surpassing African Americans (12.3%) for the first time in the nation's history. While the Hispanic population is on the rise throughout the country, the locus of Hispanics remains in the West and Southwest as a result of proximity to Mexico and the aforementioned sociohistorical factors (Spanish settlement, American annexation of Mexican territory, and immigration). At the same time, as a result of migration from Puerto Rico, Cuba, Mexico, and Central American countries such as Honduras, Guatemala, and El Salvador, a number of urban centers such as Chicago, Miami, and New York have also witnessed notable increases in their Hispanic populations.

Figures provided by the U.S. Census Bureau (2000) illustrate the current demographic changes at the national, regional, and local levels. Table 1 provides the total U.S. population, total Hispanic population, and the percentage of the Hispanic population for 1990 and 2000. The data show that the total national population increased by over 32 million between 1990 and 2000, while the national Hispanic population increased by 12.9 million in the same 10 year span. Hispanic population growth, then, accounts for 39% of the total U.S. population growth between 1990 and 2000.

Accordingly, the percentage of Hispanics also increased from 8.9% in 1990 to 12.5% in 2000.

Table 2 presents the 1990 and 2000 Census data for North Carolina which reveal an even faster Hispanic growth rate than at the national level. In fact, North Carolina's Hispanic population grew at a rate of 397% between 1990 and 2000, making it the fastest growing Hispanic population in the United States in this ten year period. Though much of the recent growth is concentrated in rural areas where people have come to find work in North Carolina's vast agricultural industries, urban areas have likewise seen increases in their Hispanic populations. Census data from 1990 show that in the capital city of Raleigh, Hispanics comprised just 1.2% of the population or 2,500 out of a total population of over 200,000. Census data from 2000 show a much different demographic profile of Raleigh, as the Hispanic population has grown to nearly 20,000 and comprises 6.9% of the total population of over 275,000.

The proliferation of Spanish language media and Hispanic businesses provides further evidence for the rapid growth of the Hispanic population in North Carolina. In 1990, North Carolina had no Spanish language weekly periodical, no Spanish language radio station, and no local affiliation with any Spanish language television network. Today, North Carolina has three major Spanish language weekly periodicals (*La Conexión*, *La Voz de Carolina*, and *Qué Pasa*) three Spanish language radio stations, and one local affiliate for a national Spanish language television network. Additionally, a full-time Mexican Consulate opened in Raleigh in 2001 to serve the state's growing Mexican population.

Table 1. 1990 and 2000 national Census data

Year	Total U.S. Population	Total Hispanic Population	% Hispanic
1990	248,709,873	22,354,059	8.9 %
2000	281,421,906	35,305,818	12.5 %

Table 2. 1990 and 2000 North Carolina Census Data

Year	Total NC Population	Total Hispanic Population	% Hispanic
1990	6,628,637	76,726	1.2 %
2000	8,049,313	378,963	4.7 %

Table 3. 1990 and 2000 Raleigh, NC Census Data

Year	Total Raleigh Population	Total Hispanic Population	% Hispanic
1990	207,951	2,454	1.2 %
2000	276,093	19,308	6.9 %

2.2 Delimiting the Raleigh Hispanic Speech Community

The Hispanic community under examination is located in southwest Raleigh, NC, whose location, relative to other North Carolina cities, is found in figure 1. Residents live in a number of tightly clustered buildings that collectively house around 400 residents, the vast majority of whom are native Spanish speaking immigrants from Mexico, El Salvador, Guatemala, and Honduras, though all participants in this study are originally from Mexico. Figure 2 shows the location of the Raleigh Hispanic community.

Figure 1. Location of Raleigh, North Carolina

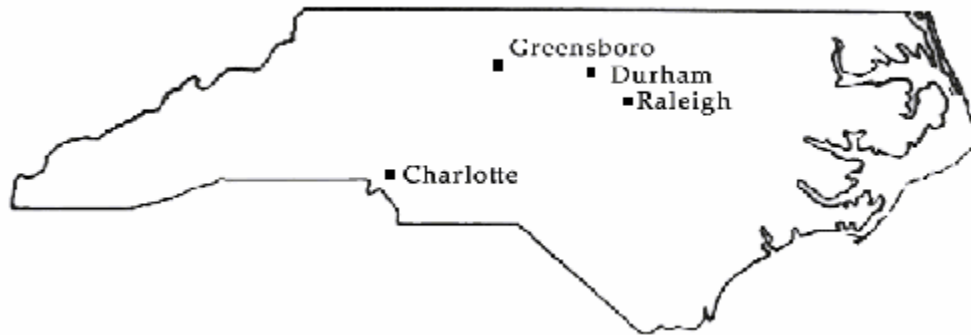
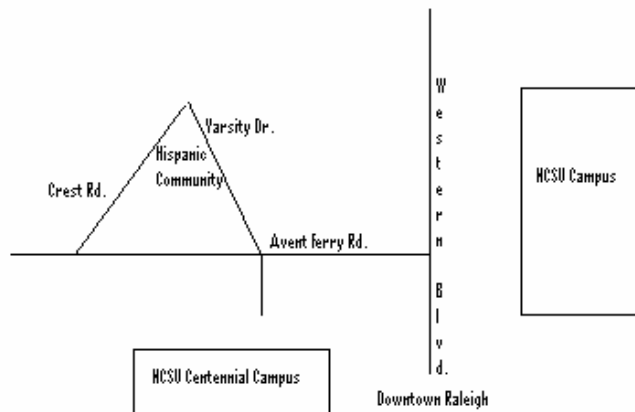


Figure 2. Location of Raleigh Hispanic community



Located near North Carolina's largest public university, NC State, the neighborhood primarily housed a student population until the mid 1990s, when the construction of newer student housing attracted students away from the community. As students moved elsewhere, rental rates fell and the community gradually became predominately Hispanic. Despite being located in a metropolitan area, the community is relatively insular in that the speakers live in the same neighborhood and interact socially and recreationally largely with other Hispanics. In work and in institutional affiliations such as school English is typically used, though Spanish is used for the most part within the community. It should be noted that the elementary-aged children attend school in the Raleigh suburb of Cary, which is overwhelmingly European American, while the high-

school aged adolescents attend school at a more racially diverse school in Raleigh. (A more complete demographic outline is presented in the following chapter.) The incipient nature of this Raleigh Hispanic community, coupled with its relative insularity and robust population, provide ideal conditions for sociolinguistic inquiry.

Chapter 3: Fieldwork Methodology and the Community Participants

3.1: Field Methods

Over the past year, I have conducted sociolinguistic interviews with Raleigh community members in both English and Spanish under the aegis of the North Carolina Language and Life Project (NCLLP). Initial contact with some community members was made two years prior to beginning the sociolinguistic fieldwork, and correspondingly, I had already established a presence in the community with some core families. Though my involvement with the community fell short of that reported in some ethnographic studies, most notably by Eckert (1989), it facilitated my aim of the type of participant observation characteristic of other NCLLP studies (Wolfram & Schilling-Estes 1996; Wolfram, Hazen, & Schilling-Estes 1999, Hazen 2000) as well as the sociolinguistic interview process in general. In fact, the eleven year old female speaker I first interviewed acted as a community liaison and often accompanied me to other interviews, especially to those involving her peers. Her parents were also instrumental in locating subjects and, from time to time, coordinating interviews with family and community members. Subsequent interviews were obtained through these contacts, who in turn provided me access to new speakers, and so on. In this regard, speakers were found using the snowball sampling technique used in many sociolinguistic studies on ethnic speech communities (Wolfram, Hazen, & Schilling-Estes 1999, etc.) where members of the speech community provide access to their personal contacts, who in turn provide access to their contacts, and so on.

This “friend of a friend” method works well in insular immigrant communities such as this one because one speaker can explain what is happening to another speaker in culturally salient ways, thus mitigating the possible perception of the interviewer as being an intrusive outsider. This is especially important in Hispanic communities where many residents have not obtained legal residency and are fearful of possible visits by *la migra* (Immigration and Naturalization Service [INS]) and subsequent deportation. Although such scenarios are essentially unheard of in North Carolina, deportation stories are an enduring part of the cultural mythos in many immigrant Hispanic communities.

Many participants were initially suspicious of my aims, but they were told the interviews would aid my study of Mexican-American culture and language. Moreover, they were assured that I was unaffiliated with any governmental or legal entity and that the interviews were unrelated to immigration, the legal status of community members, or the employment of community members. Nevertheless, these topics usually did surface, particularly after establishing trust and familiarity with some of the adult community members. Discourse topics varied from speaker to speaker and to some extent, depended on the age of the speaker and the language used during the interview. Topics involving activities taking place in North Carolina, in school for instance, were more easily discussed in English than in Spanish, while topics related to activities taking place in Mexico (childhood games, vacations, etc.) were more easily discussed in Spanish. Fieldwork involving adults frequently focused on the hardships and socio-economic status of Mexican Americans while conversations with community children and adolescents focused on school and friendship groups. Personal narratives were elicited from both adults and adolescents about border-crossing experiences.

During the first six months of fieldwork, I usually told participants that I preferred the interviews to be in English but that we could speak in Spanish as necessary. As current research on bilingualism shows, total deactivation of one language is rarely possible, especially for those speakers in the process of acquiring the L2, (Grosjean 1989, 1997) and accordingly, the earlier interviews include frequent code-switching to Spanish at the lexical, phrasal, and sometimes discourse levels. Later, as my research aims became more specific, ad hoc interviews were scheduled in which I specified from the outset which language I hoped to engage, though code-switching remained prevalent. As the interviews were elicited primarily for their phonological content, the duration of the interviews ranged from 45 to 90 minutes, rather than the longer interviews typically required for morphosyntactic or stylistic analyses. While the target interview duration was 60 minutes, interviews with younger children tended to fall short of this mark. In all, the Raleigh corpus includes nearly twenty interviews with over fifteen speakers. Analog and digital copies of the recordings are housed in the Linguistics Lab at NC State University.

3.2: The Community Participants

As previously noted, all participants in this study live in the same relatively insular urban community and, with the exception of two speakers, no speaker has lived in any location in the US outside of North Carolina. Two brothers who lived in an adjacent predominately African-American neighborhood approximately one quarter mile away from the community in this study were born in Mexico but grew up in Salinas, CA. Given that this is a recent immigrant Hispanic community rather than a longstanding one,

the majority of bilinguals (L1 Spanish, L2 English) are children and adolescents, while Spanish monolinguals are more likely to be adults. Most of the children and adolescents who I describe as bilingual, with the exception of the two brothers mentioned above and one ten year old boy who came to N.C. at age two, are somewhere in the process of acquiring English. Likewise, few of the speakers (with the same exceptions) could be described as balanced, or equal bilinguals. Competence in reading, writing, speaking, and listening varies from speaker to speaker, though in general the younger children excel in all areas as compared to the older community cohorts. Spanish is used for most speakers at home, while English is used extensively at school and/or work. Table 4 sets forth a demographic profile of the Raleigh sample, indicating sex, age, length of residency, languages spoken, and which language is dominant. It should be noted that table 4 is intended to give an overview of the demography found in the Raleigh community and that not all participants are included in the analyses found in later chapters due to a lack of data or poor field recording quality.

Grosjean (1997) proposes an eight-part heuristic for the description of the bilingualism of individual speakers used in a linguistic analysis, and though the focus of this study is not on bilingualism per se, it is nevertheless important to provide an adequate description of the type of bilingualism evident in the sample. The type(s) of bilingualism found in the Raleigh community undoubtedly carry implications for the type of linguistic phenomena examined in this study. For example, stable or completely balanced bilinguals would not provide the same insights to new dialect formation that more incipient English learners could provide. Likewise, simultaneous bilinguals could not provide the necessary insights to provide a fruitful analysis of the substrate influence

of Spanish on Hispanic varieties of English since both languages were acquired at the same time. Conversely, consecutive bilinguals who are in the process of acquiring the L2 may not represent the ultimate variety of English that will emerge in a new English-speaking community.

Table 4. Demographic Profile of the Raleigh Sample

Speaker	Sex	Age	Length of Residency (LOR)	Languages	Dominant Language
AG	F	11	2.5 years	Span & Eng	Spanish
VM	M	36	4.5 years	Span & Eng	Spanish
MB	F	8	3 years	Span & Eng	Spanish
MMB	F	7	3 years	Span & Eng	Spanish
MHB	M	11	7 years	Span & Eng	English
LBB	F	15	7 years	Span & Eng	English (Balanced?)
JJT	M	9	4 years	Span & Eng	Spanish
MJT	M	15	4 years	Span & Eng	Spanish
CMA	F	31	4 years	Spanish	*
JA	M	14	2 years in NC; 9 years in CA	Span & Eng	Balanced ?
JD	M	16	2 years in NC; 9 years in CA	Span & Eng	English
CBB	M	18	7 years	Span & Eng	Spanish
JBV	M	28	6 years	Spanish	*
BFBG	F	18	2 months	Spanish	*
FEBG	F	18	2 months	Spanish	*

Table 5, compiled using impressionistic observations, addresses a number of the methodological issues raised in Grosjean (1997) about the complexity of bilingual subjects and indicates the amount of code-switching observed, language stability, language functions, and my subjective assessment of English proficiency based on a four-tier scale (excellent, good, fair, poor). Though the labels used in table 5 are largely subjective and based on impressionistic judgments, table 5 provides an instructive typology of the type of bilingualism endemic to the Raleigh community. The second column presents the frequency of code-switching observed for individual speakers and considers the role of both English and Spanish as the “matrix” (base) and “embedded” (guest) language, though data is not available for every permutation for each speaker (Myers-Scotton 1993). The frequency of code-switching is not intended to imply anything about the specific *type* of code-switching found in the sample, but rather to provide insight into what language-contact phenomena are present. Column three of table 5 provides a label for the “stability” of the languages used by the bilinguals; that is, to borrow Grosjean’s words, is one language being acquired or has stability been achieved? Here again, my assessment is largely impressionistic and is partially informed by the educational status of the speaker as well as their perceived proficiency in both languages.

A very rough estimate of the language functions is provided in column four of table five and is limited primarily to describing the differences in language use evident between work/school and home use. As I was not a participant observer in extra-community institutional affiliations, data about language use in school and work is based on information provided directly from the speakers. The information found in this

column are by no means exhaustive and should not be considered the only functions of the languages used in the community.

Table 5. Bilingualism Status

Speaker	Amt. Code Switching	Lang. Stability	Lang. Function	English Proficiency
AG	S > E: Frequent E > S: Frequent	Acq. English	S- home E- school	Excellent
VM	S > E: Rare E > S: Frequent	Acq. English	S- home/work E- work	Poor
MB	S > E: no data E > S: frequent	Acq. English	S- home E-school	Good
MMB	S > E: no data E > S: frequent	Acq. English	S-home E-school	Good
MHB	S > E: Very Frequent E > S: Sometimes	Stable in both	S- home E- home/school	Excellent
LBB	S > E: Very Frequent E > S: Sometimes	Acq. English	S-home E-home/school	Good
JJT	S > E: no data E > S: rare	Acq. English	S-home E-school	Fair
MJT	S > E: no data E > S: sometimes	Acq. English	S-home E-school	Fair
CMA	S > E: borrowings (rare)	Monolingual Spanish	S- home/work	N/A
JA	S > E: no data E > S: rare	Stable in both	S- home E- home/school	Excellent
JD	S > E: no data E > S: rare	Stable in both	S- home E-home/school	Good
CBB	S > E: no data E > S: Sometimes	Acq. English	S- home/work E-home (rare)	Good
JBV	S > E: borrowings	Monolingual Spanish	S- home/work	N/A
BFBG	None	Monolingual Spanish	S-home/work	N/A
FEBG	None	Monolingual Spanish	S-home/work	N/A

The type of ethnographic detail presented in this chapter is necessary for sociolinguistic analyses of immigrant Hispanic communities due to the types of variation found in place of origin, length of residency, and bilingual competency in addition to the standard variables of variationist sociolinguistics such as age, sex, socio-economic status, and ethnicity. Perhaps less can be taken for granted in incipient communities such as the Hispanic community in Raleigh where sociolinguistic norms are just now beginning to take shape.

Chapter 4: Toward a Quantitative Approach to Speech Rhythm

Comprehensive investigations of suprasegmental features are far less frequent than studies of their segmental counterparts. Correspondingly, examinations of speech rhythm have been relatively rare in both phonetics and sociolinguistics and at times based on impressionistic rather than objective data. The first studies on rhythm, from as early as the 1940s (Pike 1945), formed the basis for what was accepted about rhythm for nearly four decades. Methodologically, these early studies largely considered impressionistic data in cross-linguistic analyses. Theoretically, they were concerned with the categorization of linguistic systems into one of three immutable rhythmic categories (syllable-timed, stress-timed, and mora-timed). Though this early thinking still permeates current studies of speech rhythm, particularly theoretically, several attempts have been made to quantify rhythm in order to reveal more accurate differences among language varieties.

With more progress made toward a cogent methodology underway, rhythm has become a more accessible variable to linguists in a variety of subfields, including phonetics, language acquisition and bilingualism, and sociolinguistics. And as sociolinguists in particular have increasingly turned their attention to instrumental phonetics, considerations of suprasegmental features, including rhythm, have become more robust. Studies of rhythm have been extended to consider not only rhythmic differences among different languages but also the type of dialectal variation, both regional and ethnic, within particular linguistic systems. This study, operating within the

variationist framework, considers rhythm from the English and Spanish data collected from the Raleigh community.

4.1: Past Studies on Speech Rhythm

Early studies on rhythm, particularly Pike (1945) and Abercrombie (1967), stressed a strict dichotomy between languages that were considered stress-timed which included Germanic, Arabic, and Slavic languages, and those considered syllable-timed, which included most Romance languages. Syllable timed languages were reported to have syllables of nearly equal duration that occurred at regular intervals, while stress-timed languages exhibited a wider range of syllable durations, with the syllable recurring at irregular intervals. A third category based on mora (Japanese and Tamil) is sometimes discussed in the literature.

It was this stress-syllable dichotomy that led to the classification of English as syllable timed and Spanish as stress timed. Conventional thinking on rhythmic timing prevailed until the 1980s when more rigorous analyses by Miller (1984) and Dasher (1987) problematized the dichotomy, leading to a proposal of a continuum model of rhythm that situated stress-timed languages at one pole and syllable-timed languages at another, allowing for the infinite gradation of rhythm across linguistic systems. This model seemed effective in accounting for “intermediate languages” (Ramus, Nespor, Mehler 1999) such as Catalan and Polish, which may exhibit syllable structures characteristic of either stress- or syllable- timed languages but also display segmental phenomena such as vowel reduction typically associated with one rhythmic variety or the other.

Further evidence for a continuum model instead of a dichotomy model comes from earlier work by Borzone de Manrique and Signorini (1983), who found unequal syllable duration in Spanish despite having more syllable-timed characteristics. The most innovative contribution comes from Dasher and Bolinger (1983) who propose that a language's timing is more dependent on its segmental phonological features such as consonant-vowel distribution, lexical stress, and the presence or absence of syllable reduction, than on the syllable structure itself. Despite the upheaval in conventional thinking, recent perceptual studies such as Nazzi, Bertoncini, and Mehler (1998) point to perceived differences between previously classified syllable-timed, stress-timed, and mora-timed languages, but no perceptual discrimination between languages of the same rhythmic variety. Findings from studies from the 1980s on demonstrate that earlier thinking was based on a spurious dichotomy and that, rather than taxonomizing linguistic varieties into one side of a binary or another, we should instead consider varieties as "more or less" syllable timed or "more or less" stress timed.

One of the primary reasons for the debate among phoneticians (and phonologists) over the appropriate rhythmic model and resulting rhythmic taxonomy of languages has had to do with a lack of a standard, accepted methodology for quantifying differences. An appropriate methodology, particularly one involving a mathematical equation, has been elusive since it would have to consider a number of factors that influence rhythmic production, namely syllable duration and interval differences.

Despite these challenges, Low & Grabe (1995) introduced the Pairwise Variability Index (PVI) that compares pairs of syllables while controlling for speaking rate. Using this method, they demonstrated that Singapore English was substantially

more syllable timed than standard British English, as was expected based on prior impressionistic accounts. It should be noted that these results were based on read speech. The PVI method was soon adopted by several phoneticians and sociolinguists eager to illuminate differences in rhythm among different languages and dialects. Gut et al. (2001) used PVI method coupled with their own 'rhythm ratio' (RR) to examine rhythmic differences between three West African tone languages. Among those using PVI to explore cross-dialectal differences were Low, Grabe, & Nolan (2000) who returned with more results from Singapore English; Deterding (2001) who used conversational speech to compare British and Singapore English; Spencelayh (2001) who compared four dialects of English in the UK; and Fought & Fought (2003) who compared Chicano English with the English of the adjacent Anglo California community. Thomas and Carter (2003 a, b) examined rhythmic differences among African American and European American varieties of English in the South using conversational data and a slightly modified methodology.

Fought & Fought's (2003) findings are especially relevant to this study and merit further elaboration. From the outset, they posit that one factor contributing to differences between Chicano English and Anglo English is the unique sociohistoric relationship with Spanish, which may have resulted in a legitimate Chicano dialect of American English. Their application of PVI revealed more syllable timing for the Chicanos than for the Anglos, though syllable timing was concentrated in the first five syllables of an utterance. Likewise, they found a similar localization of syllable timing in Mexican Spanish, signaling a possible link between the two varieties.

4.2: Rhythm Methodology

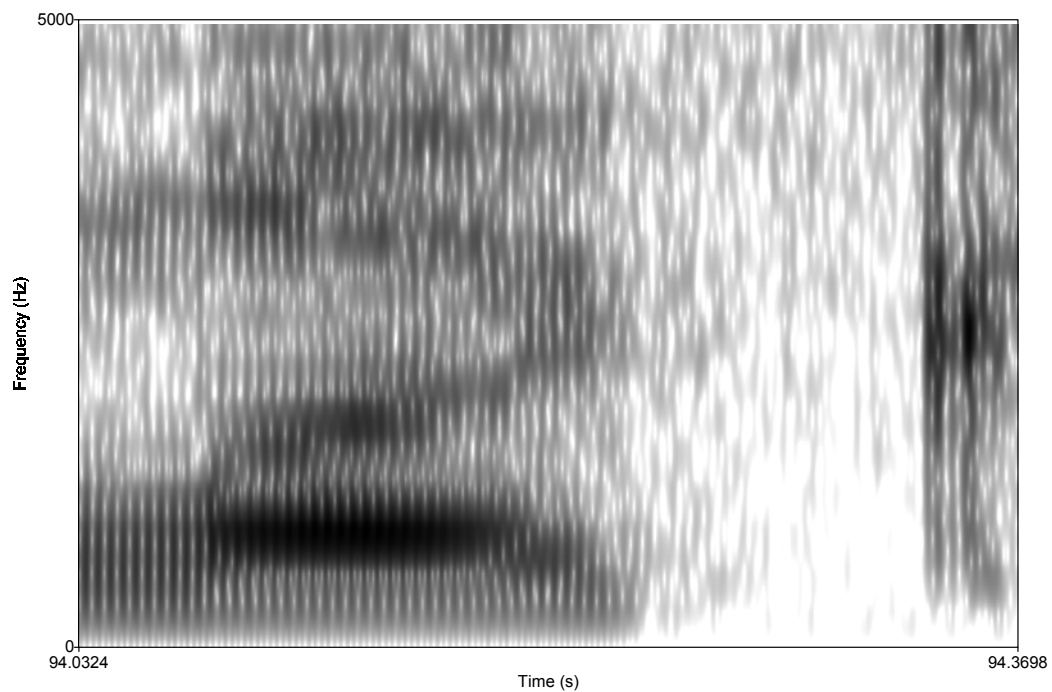
This section outlines the PVI method developed by Low and Grabe and used by Fought and Fought (2003) and Thomas and Carter (2003 a, b) in their respective sociolinguist studies. A number of important departures were made from Low and Grabe's initial PVI application. These were first used in Thomas and Carter's (2003 a, b) study of ethnic variation in the South and once again in this study. I also discuss the adaptation of the methods to Spanish language data.

Perhaps the most important departure from Low and Grabe is the use of field recordings for this study. While conversational speech is more desirable than read speech, data collected in the field are often imperfect as a result of background noise, equipment failures, and static. As a result, the decision was made to examine syllable nuclei instead of an entire syllabic segment. Rigorous consonantal analyses of field recordings proved to be unreliable and frequently inaccurate.

Spectrograms of conversational speech from field recordings were analyzed using PRAAT computer software. As previously mentioned, measurements were taken from the endpoints of the vocalic segment. This involved a process of consonantal excision from one or both sides of the syllabic segment on the spectrograms. Auditory and spectrographic (visual) cues were used in this process. Figure 3 shows a spectrogram of the word *like* as produced by LB, a fifteen year old Hispanic female. F1 and F2 nearly converge and are relatively low for the production of /l/. Both formants raise for the /ai/ production and F1 and F2 diverge for the glide. The measurement began at the onset of /a/ at the time 94.075. The endpoint for the measurement of the diphthong was at the

offset, which corresponds to a time of 94.228. Accordingly, the duration for the vocalic segment used for the PVI measurement was 153ms. Following the diphthong is the completely devoiced production of /k/. Interestingly, this production of *like* includes a large voiced stop release which is common among speakers in this community, though somewhat uncharacteristic of native speakers of English.

Figure 3. Spectrographic representation of *like* by LB, fifteen year old female



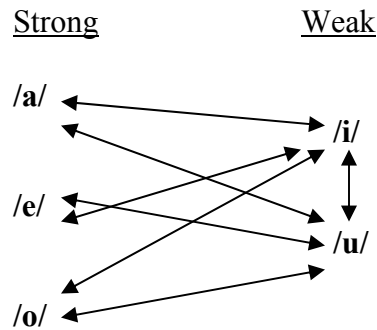
It was noted that pre-pausal lengthening seemed to extend beyond the ultimate syllable of an utterance if the syllable is unstressed. Accordingly, the decision was made to exclude the pre-pausal foot from utterances without stress on the final syllable. Otherwise, only the utterance-final syllable was omitted. For example, both syllables of *happened* would be omitted from analysis because the ultimate syllable is unstressed.

Pre-pausal unstressed syllable deletion was also used for the Spanish data. Exclusion of two or more syllables before a pause was more frequent for the Spanish sample since the penultimate syllable ordinarily carries the stress by in Spanish. (The exceptions are words ending in consonants other than /n/ or /s/ and words with orthographic accents on the ultimate syllable.) Thus, the final two syllables were omitted from words such as *mochila* (backpack), but not from words such as *felicidad* (happiness) or *lección* (lesson).

Diphthongs were considered to be one measurement in both languages, except when an orthographic accent on a glide (/i/ or /u/) splits the diphthong in Spanish, in which case two measurements were taken. Therefore, /ay/ as in *bike*, /oi/ as in *boy*, and /aw/ as in *house*, were all considered as one measurement for the English data. Spanish is a much more diphthongal language than English, at least in terms of numbers of canonical diphthongs and, accordingly, the situation is a bit more complex and should be outlined in some detail.

Each of the so-called “strong vowels” (/a/, /e/, /o/) can diphthongize with one of the so-called “weak vowels” (/i/, /u/). Likewise, a “weak vowel” can diphthongize with another weak vowel, yielding 14 diphthongal permutations. Two strong vowels form a hiatus and do not diphthongize, resulting in two distinct measurements in this study. The following schema presented in figure 4 shows the possibilities for diphthongization in Spanish. Both strong and weak vowels can occupy the nucleus and glide positions of the diphthong, such that /eu/, as in *europa* and /ue/, as in *fue*, are both diphthongal. The bipolar arrows on the lines depict this aspect of Spanish diphthongs.

Figure 4. Spanish Diphthongization



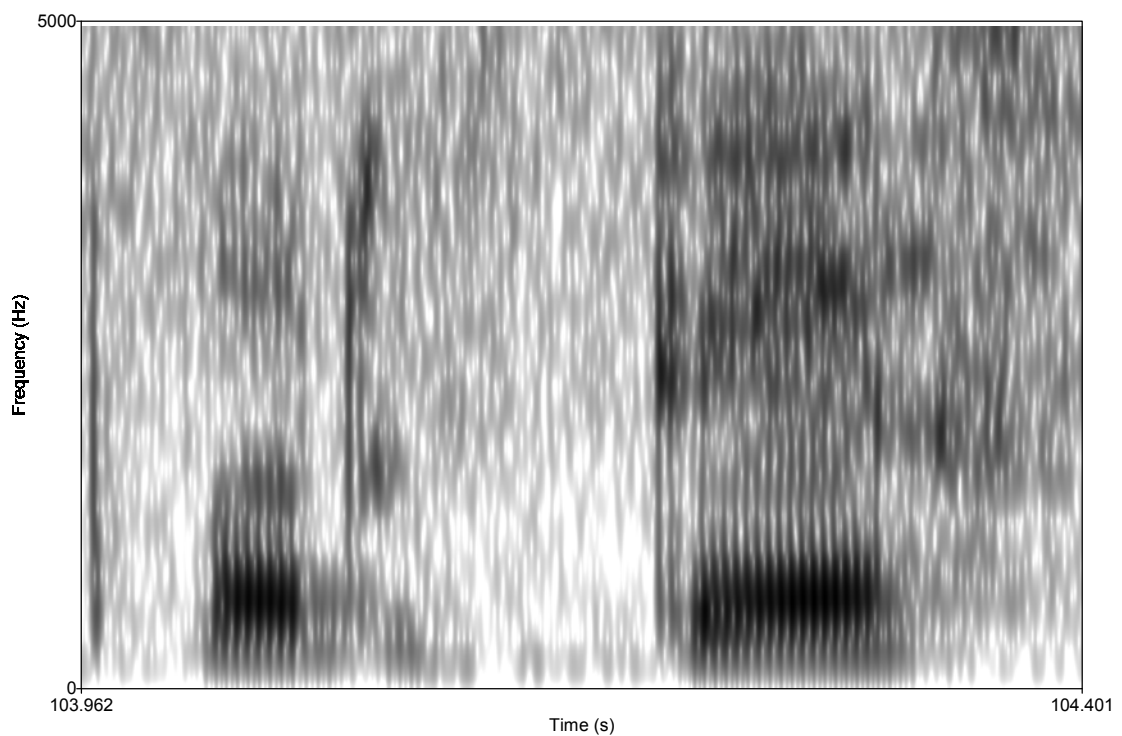
Diphthongs are frequently broken in Spanish and are represented in orthography with an acute accent, as in *miércoles*, *carpentería*, and *televisión*. These diphthong breaks were treated as two separate segments and correspondingly, two measurements were taken.

The Spanish *sinalefa* (natural combination of vowels across word boundaries) was considered on a case by case basis. Where clear diphthongization occurred across word boundaries, one measurement was taken, but when spectral cues indicated separate monophthongs, two measurements were taken.

Finally, following /r/ and /l/ were subsumed with the nucleus for the English data, but were considered separate for the Spanish data. (These, of course, are actually separate phonemes in the two languages.) The reason for the discrepancy with regard to /r/ is that the alveolar Spanish /r/ was relatively easy to extract while the English retroflex /r/ was more problematic. Figure 4 shows the spectrographic production of *porque*, by LB, a fifteen year old Hispanic female. The first section of voiced energy is the production of /o/. Following /o/ is an example of the alveolar Spanish /r/ that resembles a voiced stop. The narrow band of energy associated with the /r/ production is relatively

easy to excise from the vocalic segment in *por*. Spectrographically, the English approximate /r/ more closely resembles a vowel, leading to the decision to include it as one measurement with the vocalic nucleus.

Figure 5. Spectrographic representation of *porque* by LB, fifteen year old Hispanic female



This analysis yielded between 200 and 250 syllabic comparisons for each monolingual speaker and 400-500 syllabic comparisons for each bilingual speaker (approximately 200 comparisons per language). Not surprisingly, statistical analysis at the 100 comparative token level revealed higher variation among speakers and at times more variance within the production of a single speaker than at the 200 level. Much of

the variance seemed to be mitigated at the 200 level, though it remains to be seen how the statistical outcomes could be affected with the consideration of even more comparative tokens.

For each syllable, a mathematical comparison was made with each adjacent syllable. The following example in figure 6 illustrates the comparative methodology used for the PVI analysis. The data come from CB, an eighteen year-old bilingual Mexican-American male. The numbers reported beneath the syllables indicate the duration of vocalic segment in milliseconds (ms). Durations reported in parenthesis were omitted from comparison in accordance with the stipulations previously mentioned. A “P” in parenthesis (P) indicates that no measurement was taken due to pre-pausal position.

Figure 6. Vocalic Nucleus Duration Measurements for a Short Sample of Speech

All my friends from school. [pause] They're all my age. [pause] They, they all go
 100 83 95 63 (148) 102 112 97 (176) 212 90 195 107

to school. [pause] Some of them dropped out because they have to work too
 60 (166) 139 60 75 86 141 63 66 64 119 66 85 (P)

[pause] Most of them go to school. [pause] They still, I mean they still goin'.
 88 69 74 80 59 (P) 96 125 72 96 80 94 (P) (P)

In this sample, *all* (100 ms) was compared with *my* (83 ms) which was then compared with *friends* (95 ms). The comparison technique used in this study can be represented in

the following schema where letters represent syllable nuclei and # represents utterance coda:

A-B B-C C-D D-E #

Finally, each set of comparisons was analyzed using the formula set forth by Low and Grabe. The absolute value of syllables A and B are divided by the average of syllables A and B. Averaging the syllables provides a control for speaking rate. Figure 7 provides a mathematical representation of the PVI equation:

Figure 7. PVI Equation

$$PVI = \frac{\frac{\text{abs } A - B}{(A + B)}}{2}$$

The following representative excerpt from CB (eighteen year-old Mexican American male) found in figure 8 provides the syllable durations reported earlier as well as the corresponding PVI scores given in the third tier. The chart that follows in table 6 provides an idea of the kind of variation evident in a sample based on index ranges. These data are not intended to be conclusive in any way, but are included to illustrate generally the way PVI works in this study.

Figure 8. Example of Comparative Methodology

All my friends from school. [pause] They're all my age. [pause] They, they all go
 100 83 95 63 (148) 102 112 97 (176) 212 90 195 107
 \ /\ /\ /
 \\ \/ \
 .1857 .1348 .4050 .0935 .1435 .8079 .7368 .5827

to school. [pause] Some of them dropped out because they have to work too

60 (166)	139	60	75	86	141	63	66	64	119	66	85	(P)
/	\	/\	/\	/\	/\	^	/\	/\	/\	/\	/\	
/	\	/\	\	/\	/\	\	\	\	\	\	\	
.5628	.7939	.2222	.1366	.4845	.7647	.0465	.0307	.6010	.5729	.2516		

[pause]	Most of them go to school.						[pause]	They still, I mean they still goin'.						
88	69	74	80	59	(P)		96	125	72	96	80	94	(P)	(P)
\	/\	/\	/\	/			\	/\	/\	/\	/\	/		
\	/	\	/	\			\	/	\	/	\	/	\	/
.2420	.0699	.0779	.3021				.2624	.5380	.2857	.1818	.1609			

Table Six. PVI ranges from a representative Hispanic English sample

Index Range	Number in Sample N=28
< .2099	11
.2100-4.099	7
4.100-6.099	6
6.100-8.099	4
> 8.100	0

Table six illustrates the inverse relationship between PVI range and the quantity of PVI scores found within that range for a given sample of Hispanic English. That is, as the index range increases, the number of scores within that particular range decreases. Here again, this trend is not conclusive but is useful in illustrating the clustering of scores on the lower end of the PVI scale. This pattern provides the basis for the final mean PVI scores reported in the following chapter. It should be noted that PVI scores for other linguistic varieties would pattern differently from what is illustrated in table 6 for this representative sample of HE.

Descriptive statistics (mean, median, standard deviation, and variance) were calculated for each sample (200 + comparisons). In all, more than 2,400 comparisons were made for this study. This includes 800 comparisons for the monolingual Spanish speakers (~ 200 each for four speakers) and 1,600 for the Spanish-English bilinguals (~ 200 for each speaker in each language). Results were reported along with various sociolinguistic variables including age, length of residency in Raleigh, and length of residency in place of origin. Graphs were made using Origin graphic software.

Chapter 5: Rhythm Results

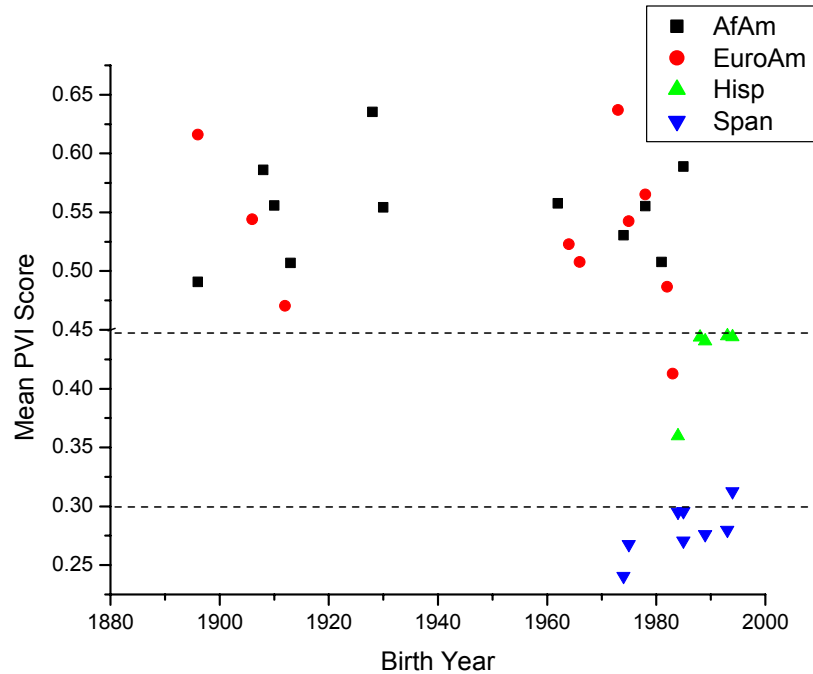
The results of the study, as represented graphically in this chapter, address the aims given at the outset of this thesis and provide some preliminary answers to the following questions about language contact and language acquisition: Is the native-like, English rhythm attainable to immigrant Spanish speakers beyond early childhood, or are the rhythmic differences between L1 and L2 too vast to overcome? If it is attainable, how rapidly do Spanish-speaking immigrants acquire the unmarked, native-like rhythm of the contiguous English speaking community? The data herein also provide some insight into the nature of new dialect formation in the Raleigh community as well as to the possible origins of Hispanic English, both in general and within this community. In this regard, preliminary answers are provided to the following questions: To what extent does the rhythm of Spanish provide substrate influence on the emerging dialects of English spoken by Hispanics? How might the rhythm of Southern English be affecting the prosodic patterns of Spanish for speakers in immigrant communities? Could the marked rhythm of Raleigh bilinguals become a permanent dialect feature for Hispanics in this region? Finally, these data have cross-linguistic concern by providing some rather conclusive answers to the question, what are the empirically measurable differences between Spanish, English, and the linguistic varieties resulting from the contact of the two?

African American and European American North Carolinians from Thomas & Carter (2003 a, b) will provide a baseline for comparison with Spanish and Hispanic English data. A table with relevant statistical information, including individual and group mean and median PVI scores, total number of comparisons, and standard deviations, is provided following each figure, where applicable.

5.1: Overview of Rhythm Results

Figure 9 provides a scatterplot of the mean PVI results by birth year for each individual from the respective groups considered, including the Spanish monolingual, the Spanish bilingual, and English bilingual, as well as the benchmark African American and European American North Carolinians. In the graph, each plot represents one individual and the points corresponding to the label “Spanish” represent the Spanish of the monolingual and bilingual speakers.

Figure 9. Mean PVI results for individual speakers, including benchmark North Carolinians (Thomas & Carter, 2003a, b)



As is clear from the scatter plot, the mean PVI scores for the Hispanic English speakers and Spanish speakers fall well below those for the native English-speaking North Carolinians, indicating some difference in rhythmic production for among these varieties. An approximate dividing line could be drawn at the .45 mark on *y*-axis, separating, for the most part, the native English speakers with the L2 English speakers from the Raleigh community. An additional approximate dividing line could be drawn at the .35 mark on the *y*-axis, nearly separating all the productions from the two languages. Figure 10 presents a bar graph of the mean PVI group scores for each of the groups: Hispanic English and Spanish, and the English of the benchmark groups: African

American English and European American English. The raw scores are provided for the Hispanic English and the Spanish of both monolinguals and bilinguals combined in table 7.

Table 7. Statistical data for all groups

	N	Mean PVI	Median PVI	Std. Deviation
Af Am (Eng)	N/A	.5515	.4774	N/A
Euro Am (Eng)	N/A	.5304	.4801	N/A
Hispanic (Eng)	891	.4264	.3700	.3151
All Spanish	1,675	.2798	.2151	.2415

Figure 10. Mean PVI group scores including benchmark varieties

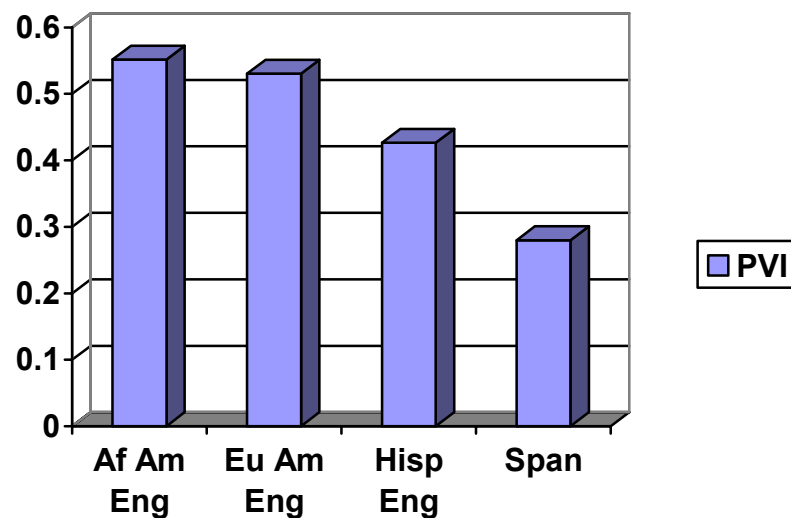


Figure 10 provides a concise look at the differences among means for the Spanish, Hispanic English, and two control groups. Once again, there is evidence of different

rhythmic output among the groups. As Thomas & Carter (2003) noted, no significant differences are readily discernable between Southern African American (mean PVI= .5515) and European Americans (mean PVI= .5304), but the English of the Hispanic group is notably lower (mean PVI= .4264). The score for the combined Spanish group (mean PVI= .2798) falls well below the mean PVI scores for any English group, indicating that, indeed, Spanish is more syllable-timed than English, and conversely, English is more stress-timed than Spanish. This assertion is confirmed by both the individual speakers presented earlier and by the group scores presented in figure 10.

Figure 11 presents the median PVI scores by year of birth for each of the groups, including the benchmark North Carolinians. While the trends are the same, the spreads for each group are different, as the PVI scores dropped for most individuals from the mean to the median. The median figures give a more accurate representation of the data without the skewing associated with the mean scores, which may be inflated as a result of upward and downward pulling from statistical outliers. In order to give an idea of the type of variation that occurs across groups without the skewing of the mean scores, average median scores for each group are presented in figure 12. Once again, refer to Table 7 for the relevant statistical information.

Figure 11. Median PVI scores for individuals by year of birth

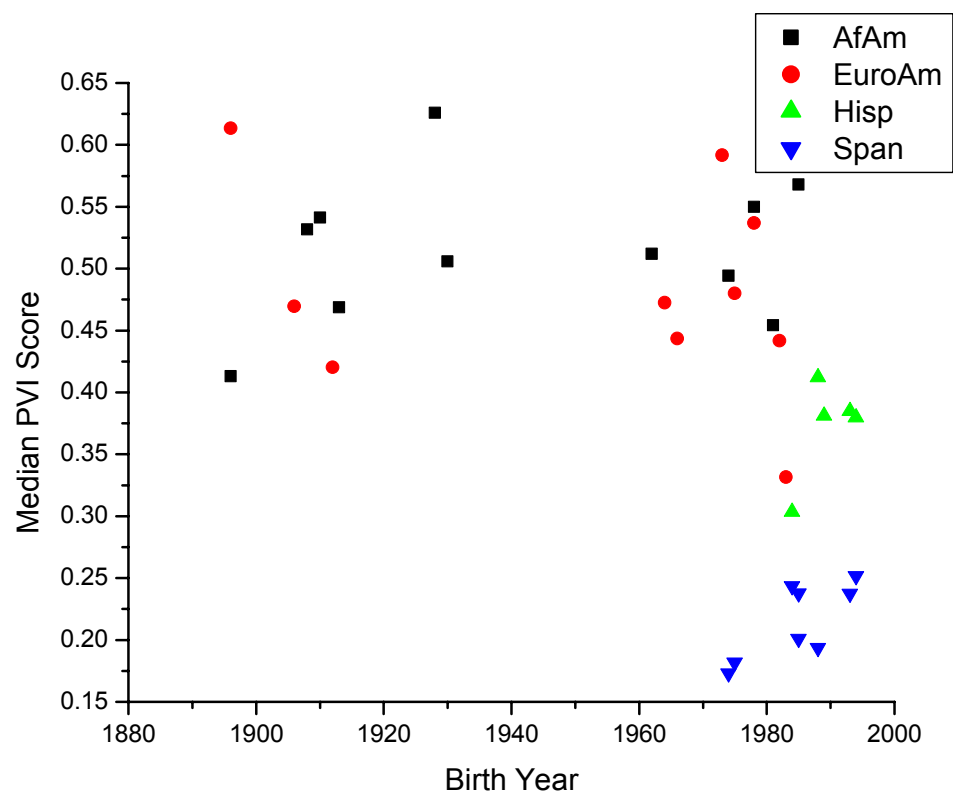
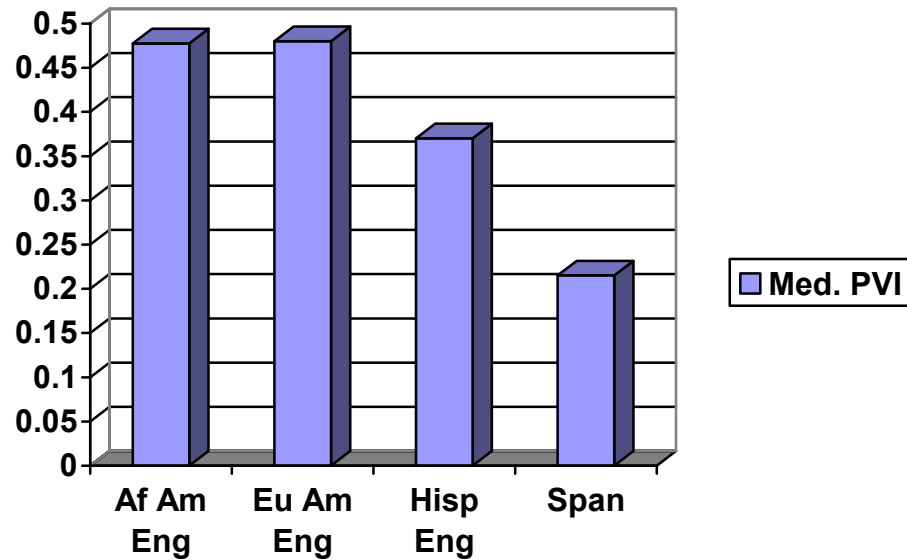


Figure 12. PVI group median



5.2 The Bilinguals

Figure 13 offers a closer look at the individual Spanish and English productions of the four Raleigh bilinguals. This figure is necessary to illuminate differences at the individual level that may be camouflaged by the group means. The corresponding statistical information is provided in table 8. Though the sample size is relatively small, some instructive points about rhythm production are emerging.

Figure 13. Mean PVI scores for individual bilinguals (Spanish, English)

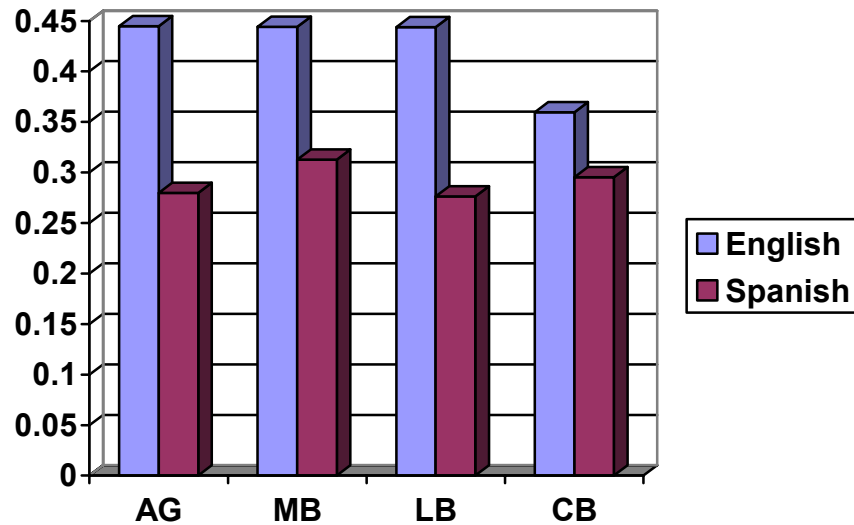


Table 8. Statistical information for individual bilinguals (Spanish, English)

Speaker	N= (Eng)	PVI (Eng)	Std.Dev. (Eng)	N= (Span)	PVI (Span)	Std. Dev. (Span)
AG	213	.4447	.3262	201	.2797	.2348
MB	236	.4440	.3415	205	.3127	.2601
LB	226	.4438	.3163	206	.2762	.2477
CB	216	.3596	.2533	238	.2953	.2422

First, it is evident that each of the speakers exhibit different rhythmic productions for each of his/her two languages, though to somewhat varying degrees. Second, there is much more uniformity across the English set than across the Spanish one. AG, MB, and LB have nearly identical PVI scores in English, but exhibit more variation in their Spanish productions. This may be the result of an orientation toward a perceived English norm or “target” acquired in school or the ESL classroom, though this explanation is unlikely given the very different educational experiences of the three. It is also possible that young immigrant speakers don’t learn stylistic variation at the prosodic level because

acquiring the formal structures of the L₂ is already challenging enough. The uniformity in mean scores may also be the result of some intra-community English norm, and may indicate the emergence of a new Hispanic English dialect for the Raleigh area. This possibility also seems to be evidenced by MB, an eleven-year old male who has lived in the community for 8 years. Of all the speakers, it seems he would have the most opportunity to acquire, or accommodate, English prosody because of his relatively long length of residency and early age of arrival. While we might expect a PVI score in line with or slightly below the African American (mean PVI= .5515) or European American (mean PVI= .5304) North Carolinians, his PVI score (.4440) is instead more in line with LB (.4438), his older sister who received more schooling in Mexico, and with AG (.4447), who moved to the community just three years ago. One possibility is that MB is accommodating his ethnic community cohorts, but a more plausible explanation is that he is participating in an accepted community norm for English rhythm production.

Despite similarities in the English means for the Raleigh bilinguals, only MB exhibits a PVI score above the .3 level for the Spanish production, while the other three speakers have productions between .27 and .29. Though these differences are not statistically significant, this may signal some possible influence by the English pattern onto the Spanish one. This explanation, though preliminary, seems viable, as MB, more than any other speaker, has spent the overwhelming majority of his life in the Raleigh community. This finding is instructive for linguists interested in the ways in which the children of Spanish speaking immigrants acquire Spanish prosody in an English speaking context.

CB, the older brother of MB and LB, deserves further attention. CB's Spanish production is in line with the other bilinguals, but his English production is much lower. Of all the bilinguals, CB received the greatest of his compulsory education in Mexico and because of intra- and inter-ethnic conflict at his North Carolina high school, dropped out at the age of 16. In the past two years, he has worked alongside other Hispanics in construction, and though his peer group is exclusively Hispanic and who are characterized by frequent code switching to English, the dominant language is Spanish. It is impossible to say at this point if the more marked pattern is the result of not mastering the English pattern even at the level of his community cohorts, or if the marked pattern is an assertion of his Hispanic identity.

5.3: The Spanish Monolinguals

Although it is already clear from the preceding analysis that different patterns of rhythm are associated with English and Spanish, a closer investigation of the Spanish data is nevertheless needed in order to illuminate differences among individual Spanish speakers, principally the monolinguals from the bilinguals, as well as to call attention to possible explanations to the cross-linguistic differences. Figure 14 shows the mean PVI data for the Spanish monolinguals and for easy comparison, reintroduces the results from the Spanish-English bilinguals. An asterisk denotes the bilingual speakers. Table 9 provides the relevant statistical information including the mean PVI scores for each group, monolingual Spanish and bilingual Spanish.

Though no clear pattern is easily discernable, some trends can be noted. First, there is a nominal difference between the means for the two groups, as the bilingual

speakers have a mean above .29 while the monolinguals have a lower score at above .26. This difference may signal some influence from the English pattern onto Spanish prosody. Thomason and Kaufman (1998) entertain this possibility in their theory of language shift. They write: “Shifting speakers maintain their original language’s prosodic patterns if they haven’t learned those of the TL [target language]. But immigrants who have succeeded in learning the prosodic patterns of a language their group is shifting to may use those patterns so often in speaking the target language, and their own so seldom (or with a feeling that low prestige adheres to the native language), that they replace the native patterns with the ones borrowed from the target language.” Accommodation at this level is unlikely since there is no evidence of language shift or low prestige per se, but many of the young bilinguals do show a heightened orientation toward American values and, indeed, toward English language use. This is especially true for the young female bilinguals, AG and LB, who have both provided metalinguistic commentary on their preference for English use. In fact, AG has claimed that she has forgotten “a lot” of her Spanish, despite living in the Raleigh community for just three years. Additionally, AG’s parents report that she vehemently refuses to provide English-Spanish translations in English-only contexts.

Still, another possible explanation for the higher PVI mean score for the bilingual group is that the Spanish they acquired is prosodically different from the Spanish they would have acquired had they remained in Mexico. Further analysis is needed to determine what, if any, the English language context plays on the Spanish in immigrant Hispanic communities.

Figure 14. Mean PVI scores for the Spanish set, monolingual and bilingual

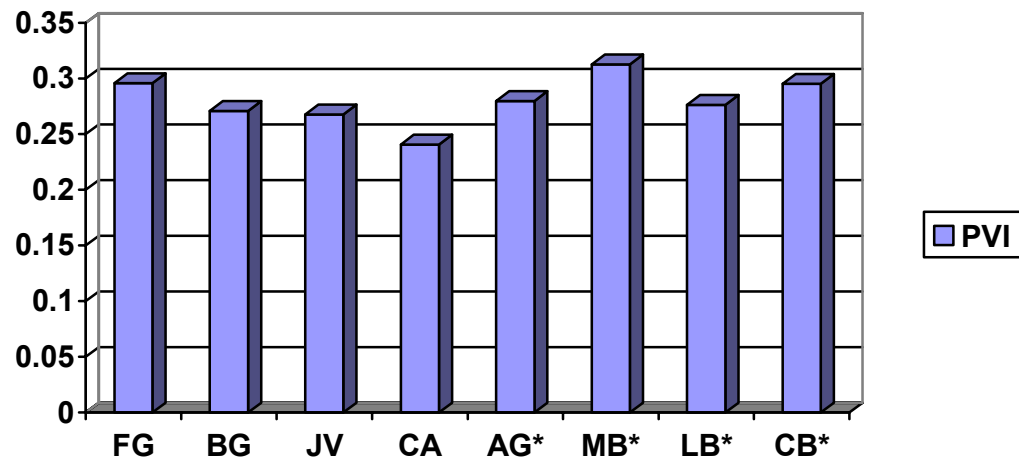


Table 9. Statistical Information for Monolingual Speakers

Speaker	N=	Mean PVI	Std. Deviation
FG	206	.2957	.2386
BG	202	.2708	.2409
JV	217	.2678	.2335
CA	200	.2406	.2297

	Mono. Span. Group Mean	Biling. Span. Group Mean
PVI Score	.2687	.2909

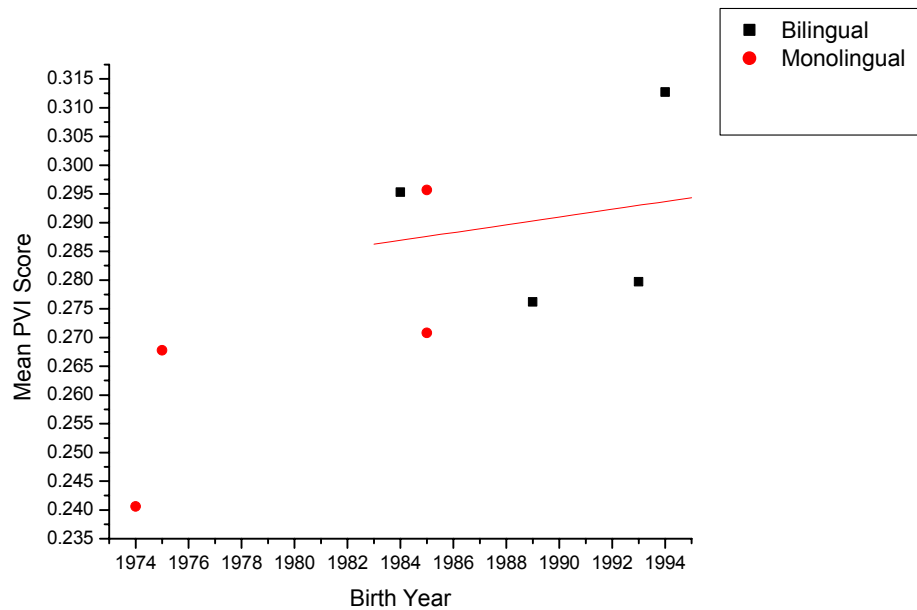
An additional aim of this examination was to explore the differences between the Spanish of immigrant bilinguals and the Spanish of the monolinguals. How might prosody be affected by second language acquisition, and indeed, second language immersion? Could the stress-timed nature of English affect the rhythm of Spanish? A close analysis of the field interviews illuminates one overt difference between the

Spanish of the bilinguals and that of the monolinguals: the use of English. The “Spanish” of the young bilinguals is noticeably marked with English borrowings and inter- and intra-sentential code-switching to English. Though these data were not analyzed for rhythm, the habitual infusion of English into Spanish may have some overarching prosodic affect. Figure 15 shows the mean PVI plotted against birth year for the eight Spanish speakers examined in the Raleigh community. Though there were no “clustering” patterns, the figure does illuminate some instructive points about rhythm and bilingualism in the Raleigh community. First, the monolinguals tend to be older than the bilinguals. As expected, proficiency in English is tied to childhood and adolescence, at least for the first generation of speakers currently living in this community. A related finding is that the points for the bilingual speakers tend to be slightly higher on the y-axis than the points for the monolinguals. Two of the bilinguals are above the line of best linear fit, while only one monolingual falls above the line. Of those below the line of linear fit, the two bilinguals come closer to approaching the line than the two monolinguals.

Oddly, the two monolingual speakers located at the birth year 1985 are twin sisters who show some contrast in their rhythm production. At the time of the interviews, the sisters had been living in the United States for just over three months. In that time, FG, represented with the higher PVI score, had been working nearly the entire time at a local fast food restaurant. Her sister, BG, represented with the lower PVI score, had no job and remained at home with her mother during the day. Neither sister spoke any English (FG used Spanish at her place of employment), but one sister was surrounded by it ten hours a day or more. Though the difference in their mean PVI scores is statistically

insignificant, the contrast calls to question the role of language context on prosodic output. The difference is also noted in the median scores; FG = .2380; BF = .2011, signaling that the difference is not a function of mean skewing. Additional ethnographic investigation is needed to determine what other contextual differences may contribute to this differential rhythmic output.

Figure 15. Bilingual and Monolingual Spanish speakers, by birth year



5.4: PVI and Sociolinguistic Variables

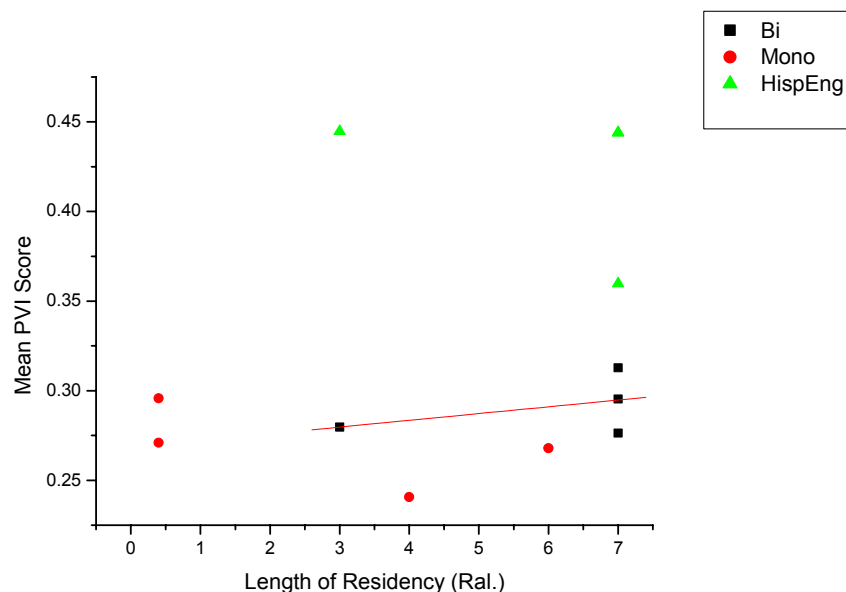
Though the sample size is admittedly much too small to make any statistically significant correlations between PVI and demographic variables, the preliminary graphic

comparisons provide a starting point for some projections, or at the very least, some hypotheses about how rhythm could be affected by external factors.

5.4.1 PVI and Length of Residency (LOR)

The graph in figure 16 plots PVI against length of residency for three categories: Hispanic English, bilingual Spanish, and monolingual Spanish. Here again, the bilinguals are reflected in both English and bilingual Spanish categories. Though all four Hispanic English speakers were plotted, only three “Hispanic English” points appear in this figure because two PVI scores are nearly identical.

Figure 16. PVI and Length of Residency for the Raleigh Community



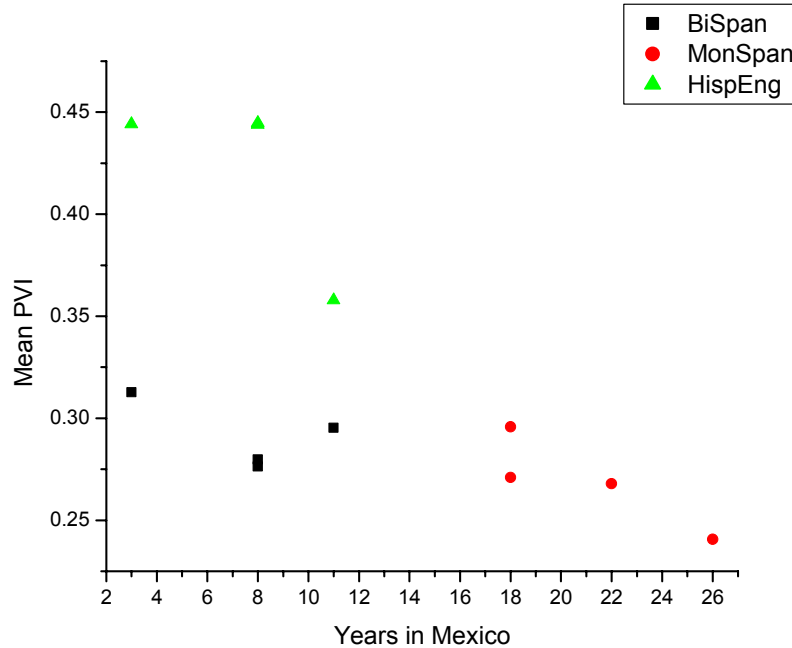
Though it is not yet apparent, a positive correlation might be expected between PVI and length of residency in North Carolina. As the LOR increases, contact with more syllable-timed varieties of English might induce a rise in PVI scoring (more syllable timing).

Though less likely, a similar pattern might be expected for the Spanish, as Spanish is possibly influenced by the ubiquitous second language.

5.4.2 PVI and Time in Mexico

The final figure plots PVI against years lived in Mexico. With this graph, a negative correlation between PVI and years lived might be expected for both the English and the Spanish. As with the previous figure, this graph shows no clear correlation between PVI and the external variable. Of course, years lived in Mexico and length of residency are both complicated by what is known about language fossilization and second language acquisition, particularly the difficulties associated with acquiring native-like proficiency after the critical periods. An analysis that includes length of residency (NC) and length of residency (Mexico) should also account for age upon departure.

Figure 17. PVI and years in Mexico



5.5: Discussion

This analysis has shown that rhythm, determined using instrumental means of analysis, can be adequately measured by combining a cogent, systematic methodology with a method for quantification that is capable of normalizing speech rate. Additionally, this study shows that there are some clear differences between the rhythm of Spanish and the rhythm of English, once again confirming previous expectations as well as the findings of Ramus et al. (1999). It is evident that the Spanish is indeed more syllable-timed than English and English is more stress-timed than Spanish, but we should be cautious about assigning one label or the other to either language. The data from each language are only significant when considered in relation to each other. At this point

there is no exogenous norm for comparison using this application of the PVI methodology.

Next, this study does provide some evidential support for Dasher and Bolinger's 1983 claim that the segmental structure of languages may influence rhythm output. In Thomas and Carter (2003a, b), we found that syllable reduction played an important role in the stress timing of English. The more syllables are reduced, the more differences in duration among syllables increase, leading to higher PVI scores and, correspondingly, more stress timing. Syllable reduction was much less common in the English of the native Spanish speakers, and even less common in the Spanish data. Further investigation is needed to determine how interactions with other segmental and suprasegmental features, particularly intonation, affects rhythm production.

The findings from this study also support Borzone de Manrique and Signorini's (1983) finding that Spanish is characterized by differences in syllable duration. If Spanish were ideally syllable timed, we would have seen PVI scores of zero instead of scores in the .2 range.

Though this study confirms Fought and Fought's (2003) finding that California Chicano English is more syllable timed than other varieties, the data from the Raleigh community show no evidence of clustering at any fixed location within the utterance, either for the English or the Spanish. However, it does seem plausible that conversational topic and style could influence timing. This observation was made predominately for the Spanish data, but could easily be true for the English speakers as well. Further research at both ends of the linguistic spectrum (phonetics and discourse analysis) will be needed to shed light on this area.

This study also provides some important insights for sociolinguists and dialectologists interested in new dialect formation and the origins of Hispanic English. The data provide signs of Spanish substrate influence on the English of the Hispanic group, as evidenced by the intermediate rhythm production by the bilinguals. Additionally, the uniformity of English rhythm production may signal the emergence of new varieties of English spoken by Hispanics. Longitudinal studies will be needed to determine the impact of these incipient communities on future generations of Hispanics, especially on those born in the US.

Additionally, analyses of rhythm must consider the role of other prosodic features, especially intonation (as Fought & Fought 2003 suggested) as well as the role of segmental features such as lexical stress and syllable reduction, which this analysis did not formally consider. Finally, it is evident that with technological advancements in acoustic phonetics, laboratory examinations of non-segmental features are more feasible than ever before. Further research using these tools is critical to a comprehensive understanding of not only rhythm, but also to a host of suprasegmental features that previously eluded the quantitative analysis of phoneticians.

Chapter 6: Acoustic Analysis of /ai/

A secondary undertaking of this thesis is to employ instrumental phonetic methodologies to examine the extent of dialect accommodation evident in the Raleigh Hispanic community. Numerous studies have indicated that accommodation to regional, supra-regional, or national language norms is a possibility for speakers of minority dialects (Anderson 1997, 1999, 2002; Mallinson and Wolfram 2002; Moriello and Wolfram 2003). The notion of dialect accommodation is particularly important for immigrant communities that may lack a definitive model for the creation of their own intra-community norms. Some studies have suggested that national norms exert more influence on Hispanic English than regional norms (Peñalosa 1980:28) while others have indicated the opposite—that regional norms bear substantial influence on Hispanic English (Fought 2003; Fought 1999). This raises a number of important questions for this study. What is the trajectory of Hispanic English in the Raleigh community? Are the Raleigh Hispanics accommodating a supra-regional Southern English or are they more inclined to accommodate a more dialectally diffuse, less regionally marked national variety of English? Or is there any accommodation taking place at all?

While it has been assumed that features of morphosyntax are more salient than phonological ones for ethnolinguistic identity, phonological variables have been shown to be more illuminating in studies of Hispanic English (Fought 2003). Given that these are L2 English speakers, certain morphosyntactic features that could be used to determine ethnolinguistic or regional alignment in the Raleigh Hispanic community could be camouflaged by Spanish language influence. Though this same argument could certainly

be made for phonology, phonological variables seem somewhat more stable than morphosyntactic variables, especially for the younger speakers who are undergoing formal English language instruction that undoubtedly focuses more on the formal rules of English grammar than on subtle phonological or phonetic detail. Although there are a number of diagnostic features of Southern English, which is the regional norm for the Raleigh area, few features have the symbolic saliency of the Southern /ai/. Additionally, the highly studied nature of /ai/ makes it an ideal benchmark for studying dialect accommodation in the Raleigh Hispanic community. The diphthong is comprised of the low, back nucleus, /a/, a stable transition, and a glide that approaches the high front vowel [i] in “standard” English. Generally, /ai/ glides are only phonetically realized as [I] or [E] in American English. A number of studies (McDavid 1958, Kurath and McDavid 1961, Thomas 2001) have noted that glide-weakening or monophthongization is the norm for many Southern whites. This weakening has been found to occur in two phonetic contexts. In the first context, /ai/ is glide reduced or monophthongized in all environments (before voiced and voiceless consonants). In the most extreme cases, *tide* and *tight* would be realized as [t^had] and [t^hat], respectively. This is the predominate pattern for the Southern Appalachian region. In the second context, /ai/ is weakened or monophthongal only in pre-voiced and word final environments. Thomas notes that this patterning is found in “parts of the South in which the plantation culture once flourished” (Thomas 2001:37). This is the pattern for the Piedmont region of North Carolina, which includes the Raleigh area. In this context, /ai/ is weakened in *tide*, though not in *tight*, though depending on the speaker, full monophthongization is unlikely even in the pre-

voiced environment. Accordingly, analyses of the Hispanic /ai/ illuminates accommodation, or lack of accommodation to the regional Southern norm.

Earlier work from Thomas (2000) shows that Mexican Americans from Laredo, Texas, do not differentiate /ai/ glide trajectories based on the voicing condition of the following consonant. Whereas European Americans, even in diphthongal dialects, produce higher glides in pre-voiceless environments than in voiced ones, Mexican Americans seem to shoot for the same target in both pre-voiced and pre-voiceless environments. Wolfram and Moriello (2003) and Moriello (2003) examined /ai/ production in the Hispanic community in Siler City, North Carolina, where Hispanics now account for over 50 percent of the overall population. Although their studies showed no accommodation to Southern /ai/ on a wholesale basis, some individual Siler City speakers did exhibit accommodation with respect to the Southern norm. Their findings, which substantially aided this study, confirmed that dialect accommodation is complicated and compounded by socio-psychological issues such as identity, sociolinguistic factors such as age, sex, and group membership, and socio-pragmatic considerations such as length of residency.

6.1 Acoustic Methodology

As with the rhythm analysis, digitized speech samples were analyzed using PRAAT phonetics software. Six to ten pre-voiced tokens of /ai/ were extracted from conversational speech for each of the speakers examined. Temporal measurements for

F1, F2, and F3 were taken 30 milliseconds from the onset of the nucleus and 30 milliseconds from the offset of the glide. Though F3 measurements were taken, only the first two formants were considered in this analysis. Duration measurements were also taken for the nucleus length, glide length, and overall length of the diphthong.

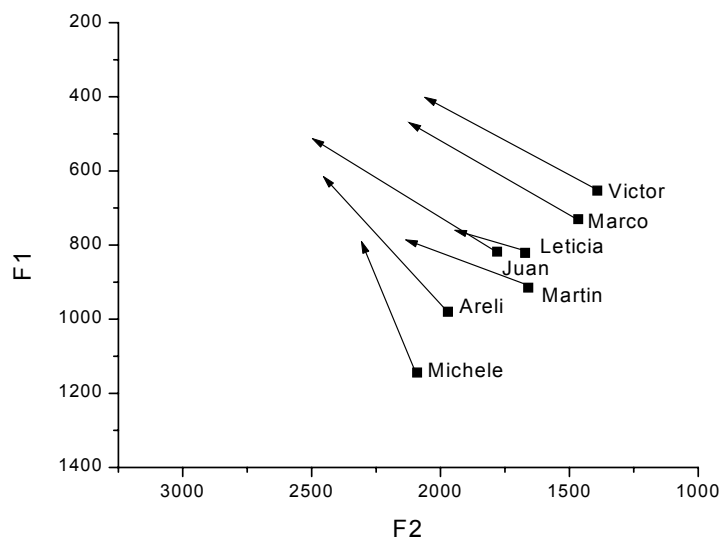
Tokens found in pre-nasal, pre-/r/, and pre-/l/ environments were excluded from analysis. Nasality has been shown to create false formants while pre-/l/ and pre-/r/ have been shown to show strong coarticulatory effects. In fact, Thomas (2001) notes that /r/ in particular can create the appearance of glide-weakening for /ai/ even in glide-full dialects by significantly lowering the second formant. In order to reduce skewing due to phonetic context, no more than two tokens of a single lexical item were considered and the lexical items *I*, *my*, and *by* were not considered due to the possible affects of lexicalization. In the graphs that follow, the points represent the mean values for individual speakers, except when points are labeled as individual lexical items. The points represent the mean value for the nucleus and the arrows indicate the glide trajectory.

6.2 Acoustic Results

Figure 18 shows the /ai/ productions on an unnormalized vowel space for the seven speakers considered from the Raleigh sample. It should be noted that the vowel plot in figure 18 includes /ai/ values reported for both men and women of different ages, including some adults and some children. Due to physiological differences between men and women and adults and children, particularly with respect to the length of the vocal tract, we can expect differences in formant values, and correspondingly, differences in

the vowel space. Though this is a less than ideal way to report formant values for a community cross-section, the plot in 18 can be informative if considered cautiously.

Figure 18. /ai/ production for the Raleigh sample



First, it is apparent that there is no substantial glide weakening and obviously no monophthongization for the Raleigh community in pre-voiced environments. Though the nucleus position appears to be variable, the F1 and F2 values for /a/ are well within the ranges found by Thomas (2001) for the Texas Hispanics he examined. For instance, Victor has a nucleus around 1500 Hz for F2 and 650 Hz for F1. Thomas finds young males born in the 1970s like Victor in the F2 range of 1200-1700 Hz and F1 in the range

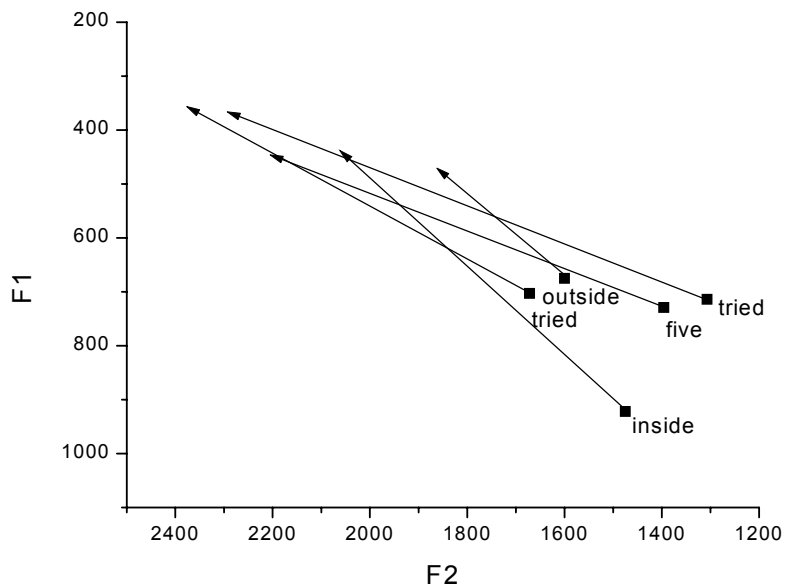
of 600-900 Hz for their respective nuclei. For Victor, the glide extends forward to about 2100 Hz (F2) and up to about 400 Hz (F1). This probably reaches the periphery of his vowel space, though it is impossible to say without a more complete examination that includes some anchor vowels. Thomas (2001) shows glide trajectories for men in this age group around 300-450 Hz (F1) and about 1800-2200 Hz. Values for the other speakers fall more or less within the expected ranges but, admittedly, this is highly dependent on the individual vowel spaces of each speaker.

Though monophthongization does not appear to be a part of the phonetic production of any of the Raleigh speakers, the two speakers with the longest lengths of residency do exhibit the shortest glide trajectories. Leticia shows gliding forward to 1800 Hz (F2) and upward to 800 Hz (F1). Young Mexican American women from Texas show slightly higher glides, with F1 values around 650 Hz or higher. Here again, this is highly variable and dependent on the unique physiology of the individual speakers. Martin, Leticia's younger brother, also shows slight glide weakening when compared to some of the community cohorts. The mean F2 value for the /ai/ nucleus is about 1600 Hz and the mean F1 is about 900 Hz. These values seem acceptable for an 11 year old male. The mean values for the glide, however, may indicate some slight reduction. Martin shows gliding forward to about 2100 Hz (F2) and up to about 800 Hz (F1). The most comparable speaker from Thomas (2001) is a 14 year old Mexican American male from San Antonio, Texas, who shows a mean F1 value for the glide at nearly 500 Hz. While we cannot speculate on the physiological development of either of the speakers, in general we could expect lower F1 values for the older speaker (14 year old Texan) than for the Raleigh speaker (11 year old) given the longer vocal tract for the former,

assuming the productions for the two speakers were equal. This is further evidence that Martin may be exhibiting some degree of glide weakening with respect to his pre-voiced /ai/ production.

Figure 19 provides a closer look at the individual productions for one of the less proficient English speakers in the Raleigh community. Unlike Martin and Leticia, Marco has lived in North Carolina for only four years and didn't arrive in North Carolina until after age 11.

Figure 19. /ai/ production for Marco

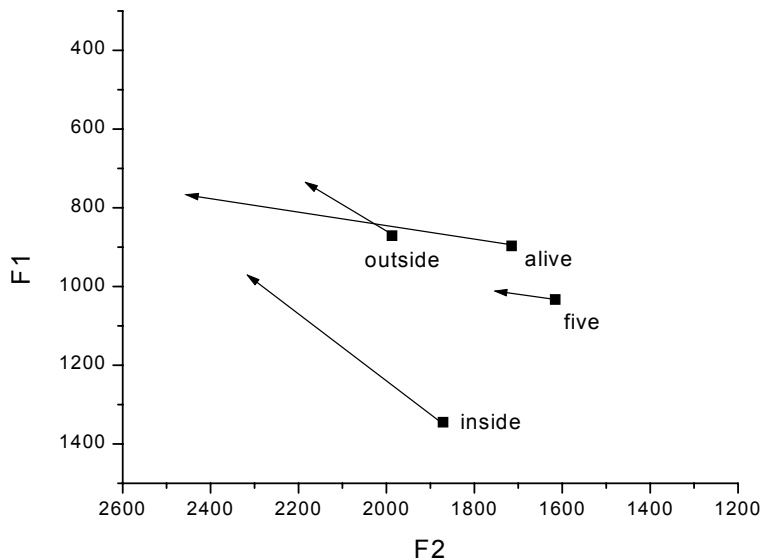


The vowel plot in 19 shows that Marco exhibits robust gliding for four of the five extracted pre-voiced tokens. For the token *tried*, Marco exhibits gliding of about 1,000 hz. Assuming that /a/ is not fronted and that /i/ represents a point close to the periphery,

this glide occupies about 5/6 of the total F2 distance of about 1,200 Hz. While the other tokens do not exhibit this extreme gliding, others do show trajectories leading to the high front position.

Figure 20 shows the individual pre-voiced /ai/ production for Martin, the eleven year old Hispanic male discussed earlier. Martin's family moved to the community when he was about three years old, and of all the speakers, he has lived in the Raleigh community for the greatest portion of his life. As a result, Martin is one of the most proficient English speakers in the entire community.

Figure 20. /ai/ production for Martin



The tokens provided in figure 20 show a slightly different pattern than the tokens shown in figure 19. Here, two of the tokens show longer trajectories and two show shorter ones. All four terminate at 700 Hz or lower for F1, though without a definitive high front anchor point, it is difficult to say if the glides are undershooting the high front /ai/ target. The tokens *alive* and *inside* show the robust gliding associated with diphthongal varieties of English, including the Mexican American English from South Texas discussed in Thomas (2001) and Thomas (2000). For Martin, only the token *five* (duration = 266ms) exhibits type of glide-reduction endemic to the Piedmont region of North Carolina. We should consider this apparent glide reduction cautiously, however, as the phonetic effects of [v] may inhibit the F2 movement on the glide.

Figure 21 shows the production of individual lexical items for Victor, a 34 year old Mexican American who has lived in the Raleigh community for about 4 years. The vowel plot presented here provides tokens in both languages: English and Spanish. The tokens presented with an asterisk (*) represent the Spanish production.

Figure 21. /ai/ production for Victor

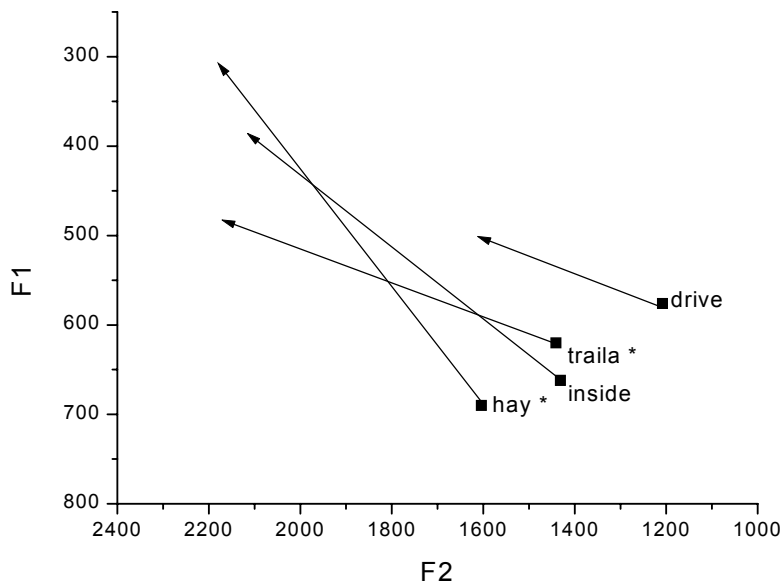


Figure 21 shows some inconsistency in the production of both the English and Spanish pre-voiced /ai/. Despite the very few number of tokens, it is clear that the English word *drive* has the shortest trajectory and the lowest endpoint while the Spanish word *hay* (3rd person singular auxiliary ‘to have’) has the longest trajectory and the highest endpoint. Of course, phonetic environment plays a crucial role in this, as the /ai/ in *hay* occurs in an open-syllable while the /ai/ in *drive* occurs before a voiced labiodental fricative. While an open syllable or a word boundary may condition or facilitate a more robust glide, labial consonants are known to lower formant values for the preceding vowel. Victor’s productions show that although there is an empirical difference between the English and the Spanish glides, there is no consistent difference between the two.

6.3 Discussion

Although the analysis of /ai/ in this thesis considers relatively few tokens for seven speakers, some illuminating points about dialect accommodation are evident. First it appears as though the Raleigh speakers are confronted with multiple models of different models of English diphthong production. Some of the tokens herein are glide weakened in apparent accommodation of the Southern norm, while others are fully glided. In essence, some speakers may be accommodating the Southern norm while simultaneously resisting it in the production of other lexical items. As with the preceding analysis of rhythm, sociolinguistic factors such as age and length of residency play an important part in the phonetic outcomes of /ai/ in the Raleigh community. The most recent English learners showed longer and higher glides than the speakers with the longest lengths of residency who showed the most glide reduction. Once again, longitudinal studies are needed in order to determine if future generations of Hispanics living in the Raleigh community will show increased alignment with the contiguous English-speaking community.

Equally important is the fact that the Raleigh sample evidences a substantial amount of intra- and inter- speaker variation with respect to /ai/ production. Length of residency, age, proficiency in English and a host of other sociolinguistic factors undoubtedly play a role in this variation, though we should not assume that these factors alone are sufficient in accounting for the type of variation found in the Raleigh community. Individual speaker identity, either at the conscious or subconscious level, seems to play an important role in the appropriation of Southern features. There is also no evidence of speaker perceptions of the South or of Southern linguistic features. The

amount of perceived dialectal prestige may also contribute to individual speaker's accommodation, or lack of accommodation, to the regional norm.

Finally, some differences are evident between the Raleigh Hispanic community and the Siler City Hispanic community studied by Wolfram and Moriello (2003). The Siler City community did not show a wholesale accommodation to the Southern norm, but there was substantially more accommodation at the individual level than in the Raleigh community. A number of factors including urban/rural differences, population ecology and demography may contribute to the different patterns found in these two communities. It should also be noted that the Raleigh area has witnessed a population boom in the past 15 years, not only in its Hispanic community, but also in all segments of the population. Much of the growth is due to immigration from the North, particularly from the Northeastern and New England states. This substantial growth may have contributed to the weakening of more Southern features for the Raleigh area, especially in the suburban areas where many of the young children in this study attend school. As the Raleigh Hispanic community continues to grow and age, more work will be needed to determine the direction of the emerging dialect.

Chapter 7: Conclusions

What can we conclude about the emergence of Hispanic English in the Raleigh community from this study? First, it is undeniable that a new variety of English is taking shape for Raleigh Hispanics. This variety is not limited to native speakers of English—in fact, it is being driven by L₂ English speakers with differing levels of proficiency. Sociophonetic analysis of the longest-standing members of the community provides the most support for the claim of new dialect formation. Though the unique prosodic and phonological features of some of the longstanding community members are more diffuse than those of the newer community members, these longstanding members nevertheless exhibit the kind of variation that evidences new dialect formation at both the segmental and suprasegmental levels.

The Raleigh community examined in this thesis is somewhat different than the California community examined by Fought (2003), though there are a number of similarities. Impressionistically, there is no evidence that the Raleigh community exhibits the highly reduced vocalic system that some studies (Peñalosa 1980; Fought 2003) have claimed to be endemic to incipient immigrant Hispanic communities and, indeed, to individual immigrants who have recently arrived. In other words, the system for the Raleigh community is not reduced to a system with no tense/lax distinction, even for more recent immigrants. The more complex system, which includes the lax vowels and open /o/, actually corresponds to Fought's (2003) findings, though the communities in question are quite different in terms of their sociohistoric and linguistic development.

The extent to which some of the younger children have acquired non-Spanish like phonology, despite having English as their L₂, is somewhat surprising given relatively short lengths of residency for some speakers. In fact, I have noticed what seems to be a bit of hypercorrection with respect to these vowels, particularly with the use of /I/ or /E/ where /i/ would be used in non-Hispanic varieties, as in “*he bet him*” for “*he beat him*”. Perhaps some community members have recognized the saliency of /i/ in Hispanic varieties and have noticed its use in dialect stereotyping and caricatures of Mexican American English speakers and, accordingly, have adjusted their own production.

Fought’s (2003) study of Hispanic English in California also indicated stratification based on gang membership and relative degrees of gang affiliation. Stratification at this level, either social or linguistic, is not evident at the Raleigh community at this incipient stage in its development. The community is only segmented by English proficiency and this segmentation typically is age-graded, as younger speakers exhibit higher levels of English proficiency than their older community counterparts. Nonetheless, the Raleigh community is overwhelmingly united through the common use of Spanish.

Though it is impossible to predict the course of dialect development and accommodation for the Raleigh Hispanic community at this stage of investigation, there is some evidence that both regional and national norms are integral in its emergence, supporting both Penfield (1980) and Fought (2003; 1999). The acoustic analysis of /ai/ revealed some minimal accommodation to the Southern norm, but only for the most longstanding members of the community. On the other hand, there was little evidence of lexical or morphosyntactic alignment to Southern English based on impressionistic

observation. A possible explanation is that the Raleigh Hispanics are confronted with multiple, and even conflicting models of English. They may, on the one hand, come into contact with Southern English models at work and at school, while simultaneously coming into contact with national models via the mass media and members of the large, non-Southern community in the Raleigh area. Still, evidence of accommodation to local norms, as evidenced by /u/ fronting in California (Fought 1999) and /ai/ ungliding in Siler City and Raleigh, is highly variable and dependent in part on individual identity and group membership. Further investigation of the Raleigh community at all levels of the linguistic spectrum is needed in order to determine more precisely the degree and direction of accommodation taking place with Hispanic English.

The findings in this thesis also support the claim that Spanish exerts substantial substrate influence on the emerging varieties of English spoken by Hispanics, and moreover, provides evidence that Spanish substrate influence may be responsible for the dialects of “Chicano English” spoken by native English speakers in the Southwest. The most conclusive evidence comes from the analysis of rhythm, which indicated a variety of English spoken by Hispanics that fell between the Spanish and native English productions. Clearly, the Spanish exerted some prosodic influence on the English of the bilinguals, resulting in the intermediate English rhythm production.

As Fought (2003) and others have noted, prosodic features are some of the most distinctive and enduring aspects of Hispanic English, even for those speakers who speak English as a first language and Spanish as a heritage language. Data from this thesis support this claim and, additionally, show the development of this dialect feature in action. A comparison of the Raleigh rhythm data with the rhythm data of less incipient

Hispanic communities, such as those in the West and Southwest, could be instructive in helping to predict the course of Hispanic English in the Raleigh community as well as illuminating the continued impact of non-Hispanic English on Hispanic varieties.

Finally, the analysis of rhythm in this thesis indicates undeniable differences in cross-linguistic and cross-dialectal rhythm production supporting earlier impressionistic accounts by Pike (1946) and Abercrombie (1965; 1967) as well as more recent empirical accounts by Ramus et al. (1999) and Fought & Fought (2003). The instrumentation of Low & Grabe's (1995) Pairwise Variability Index (PVI) illuminated rhythmic differences among Spanish, English, and the variety of English found in the Raleigh community resulting from the contact of the two.

Spanish was clearly more syllable-timed than English and, conversely, English was irrefutably more stress-timed than Spanish. Nevertheless, the absence of data from other varieties makes further cross-linguistic comparison impossible and the use of any particular rhythm label essentially infelicitous. The data from this thesis also indicate a slight difference in Spanish production by the monolingual Spanish speakers and the English-Spanish bilinguals. This emerging difference may be due to direct English influence onto the Spanish pattern, or it may be the result of a modified variety of Spanish acquired in North Carolina. Once again, future accounts of rhythm, particularly those contrasting the productions of young bilinguals with their older monolingual counterparts, must take into account the role of individual identity.

It was confirmed that interval dispersion and syllable duration played important roles in the type of rhythm pattern found in these linguistic varieties. It was also observed that lexical stress played a prominent role in syllable duration, which in turn

affects speech rhythm. Likewise, it was determined that syllable reduction was an important component in the stress timing of English and that a variable lack of syllable reduction may have contributed to the more Spanish-like production of rhythm by the Raleigh Hispanics.

The findings in this thesis support the need to consider rhythm production as highly gradient and existing along a continuum of productions, rather than as part of static, immutable categories. This conceptualization provides further support for work from the 1980s by Dasher & Bolinger (1982) and Dauer (1983) that make similar proposals. Evidence for this claim comes from the intermediate variety of Hispanic English. Further analyses of other world Englishes would undoubtedly uncover other intra-language variation. Additionally, there is substantial variation within the varieties examined here. Though the scatterplots indicate clustering by group, there is some spread within the clusters. One native European-American English speaker from North Carolina included in Thomas & Carter (2003a, b) actually fell within the Hispanic English cluster and, likewise, some of the Spanish productions nearly approach the Hispanic English productions.

The implications of these findings are numerous and diverse. The Raleigh Hispanic community can contribute to our knowledge about second language acquisition as well as first language acquisition in an immigrant community. This community also provides the opportunity to witness the dialect formation resulting from Spanish-English contact in progress. This is important as linguists continue to consider the role of dialect accommodation and attempt to determine which models are used in the processes of accommodation and acquisition. Finally, this thesis provides important insights into the

cross-linguistic and cross-dialectal production of rhythm. Additional investigations of other varieties of English as well as other languages, using the instrumental methodologies used in this thesis will deepen our understanding of prosody in general, and more specifically, the ways in which dialects vary at the prosodic level.

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