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1 Intonational Variation and Mexican American English

Intonation represents a frontier for sociolinguistics. For the most part, both quantitative and qualitative sociolinguists have focused on other aspects of speech, largely segmental variation, morphosyntactic variation, or discourse structures. The lack of a long-established transcription system and the arcane nature of much of the research conducted by phonologists who specialize in intonation have discouraged variationist research. The dearth of work is especially acute in North America. In Europe, conversely, research on dialectal variation in intonation has recently begun to flourish, with such scholars as Peter Auer, Esther Grabe, Carlos Gussenhoven, and Margret Seltung leading the way: see, e.g. Gilles and Peters (2004). In North America, studies of the communicative use of High Rising Terminals (McLemore 1991) and a few studies of ethnic variation, mainly on African American English (e.g. Tarone 1973, Loman 1975, Foreman 2000) constitute most of the existing sociolinguistic work on intonation. Clearly, North American sociolinguists could and should exploit intonation considerably more than they have.

One group of dialects for which intonation holds indexical value is Mexican American English (MAE). In the past, there have been relatively few descriptions of Mexican American English intonation and of what distinguishes it from intonational patterns associated with Anglo varieties (e.g. Castro-Gingrás 1972, Metcalf 1974, Penfield and Ornstein-Galicia 1985, Fought 2003). Moreover, there has been little or no quantitative analysis of MAE intonation. With regard to description, Penfield and Ornstein-Galicia (1985:19) provided the most thorough list of features of MAE intonation to date. They named four characteristics, as follows. 1) "Rising glides [appear] at any point in an intonational contour to highlight or emphasize specific words…Rising glides [are] maintained even at the end of a neutral, declarative sentence." 2) "Initial sentence contours [are] begun above the normal pitch of voice." 3) "Rise-fall glides occur in sentence-final contours." 4) "Declarative, neutral statements are terminated with a one-pitch contrast." The first characteristic, the incidence of rising glides, concerns us here, and

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we attempt to demonstrate how it can serve as a variable in a sociolinguistic study of MAE.

MAE is beset with its own controversies, which intonation could play a role in resolving. Probably the most important is whether MAE is a transitional variety, as per Sawyer (1959, 1964), or a permanently established variety, as numerous more recent authors have argued (Bills 1977, Wald 1984, Penfield and Ornstein-Galicia 1985, Santa Ana A. 1993, Fought 2003). Sawyer's view of MAE as merely interlanguage, which seems extreme by today's standards, is widely repudiated now, and it is clear that MAE has taken on a life of its own. However, other questions remain. Exactly what features characterize MAE? Which features of MAE are derived from a Mexican Spanish substratum, and which ones have developed subsequently within MAE? MAE certainly begins with a base of substratal features, but identifying those features can be difficult because substratal phonetic factors can be quite subtle, as noted by, e.g. Thomas (2000) for /ai/ glides in MAE and Purnell, Salmons, and Tepeli (2005) for final stops in German-influenced Wisconsin English. As the dialect develops, some such features may disappear and others may take on a life of their own, acquiring various social meanings. How much variation is there within MAE, and how much of that variation is a function of the degree of assimilation to local Anglo or African American varieties? How is such variation manifested socially? These questions are only beginning to be answered (see especially Fought 1999, 2003). A comparison of intonation with other variables may shed light on them.

2 Methods

MAE was examined in two disparate communities: Pearsall, a community in southern Texas with long-established Mexican American majority, and Raleigh, the capital city of North Carolina, whose Mexican-American population is small but growing quickly. Language shift characterizes the Pearsall community. Our sample of speakers from Pearsall spans four generations. The oldest living generation, which is also the oldest in our sample, is Spanish-dominant, while the youngest generation is decidedly English-dominant. Recent immigration from Mexico to Pearsall has been low compared with that in the Rio Grande valley or nearby San Antonio, and not surprisingly this situation has worked against maintenance of Spanish in spite of the fact that the community is approximately 80% Mexican American. In Raleigh, the immigrant generation is Spanish-dominant, and generations 1.5 and 2 are transitioning toward English. Hispanic groups make up a small minority of the population of Raleigh, which presumably will hasten a shift to English there.

Data from 30 speakers were used in the study. Twelve Mexican Americans from Texas and five from North Carolina are included. Twelve Anglo speakers—one old female, one old male, one young female, and one young male each from three localities in North Carolina (Warren, Hyde, and Robeson Counties)—are used for comparison, as well as one elderly male Anglo from Pearsall, Texas.

Orthographic transcriptions of interviews of these speakers were already available from an earlier project. We annotated these transcriptions by marking any tones that appeared to be prominent—i.e. constituting a change in the absolute direction of F_0 (i.e. a change from falling F_0 to rising or vice versa) or other change in trajectory of F_0 (e.g. an interruption in the rate of fall in F_0). Prominences were determined by a combination of inspection of narrowband spectrograms with pitch tracks superimposed and impressionistic listening. In nearly all cases, these prominences were associated with stressed syllables, though not all stressed syllables showed pitch prominences. Tones that could be considered boundary tones, that is, before a pause, before a reset in F_0, or in noticeably prolonged syllables, were not considered to be pitch prominences. This method permitted rapid transcription of large numbers of prominences, which would have been impossible with a more conventional intonational transcription system.

Pitch prominences were classified as one of two types. The first type is not associated with any ethnic group. It consists of pitch prominences that either have no upward slope at their onset or have one that is so short as to be impressionistically inaudible and could represent merely transition from a preceding consonant. The second type is associated with MAE. It consists of pitch prominences with a noticeable and impressionistically audible upward slope in F_0 at their onset. This classification represented an attempt to objectify the "rising glides" described by Penfield and Ornstein-Galicia (1985).

The analysis was limited to conversational speech. Analysis focused strictly on declarative sentences. Questions (both yes/no and wh-) were excluded, as were imperatives and any Spanish utterances. Phonological patterns were used to classify any ambiguous phrases as representing English or Spanish. Five minutes of speech were annotated for each speaker. With five minutes of speech, large numbers of data were generated. Having so many data meant that random variations within an individual's speech that might appear in a smaller sample of speech were largely averaged out. Once the annotation of an interview was completed, the proportion of rising pitch prominences out of the total number of pitch prominences was calculated for that speaker.

3 Results

Typical Mexican American F_0 patterns show relatively smooth contours, without much discontinuity. An example can be seen in Figure 1, which shows a pitch track superimposed on a narrowband spectrogram of a sentence uttered by a Mexican American from Raleigh. His F_0 track shows a roller-coaster-like pattern. This pattern appears to reflect those found in Mexican Spanish, as described by Willis (2003), but not in other varieties of Spanish. In contrast, Figure 2 shows a typical Anglo utterance by a speaker from Hyde County; it is characterized by a jagged, saw-blade-like F_0 pattern, with considerable discontinuity, especially before pitch accents. That is, an intonational phrase shows declination throughout and is followed by an abrupt pitch reset at the beginning of the next intonational phrase.

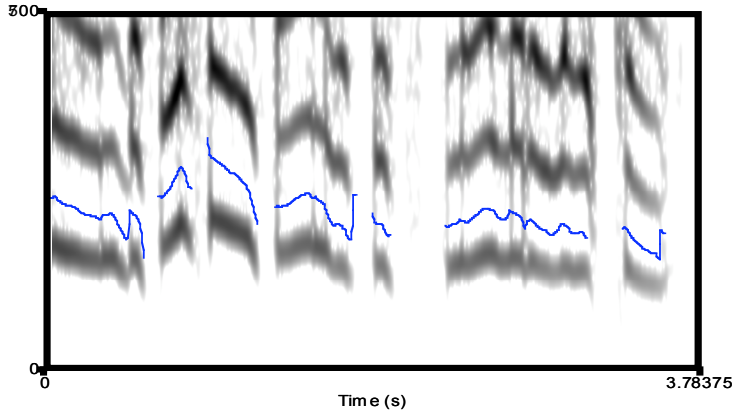

Figure 1: Pitch track and narrowband spectrogram of a Mexican American saying “And the first one we found was this small, little, white crab.” The y-axis shows frequency from 0 to 500 Hz for the pitch track and from 0 to 700 Hz for the spectrogram.

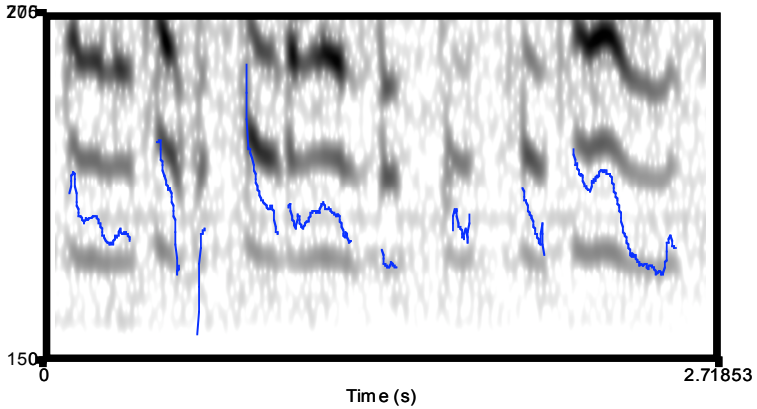

Figure 2: Pitch track and narrowband spectrogram of an Anglo saying "And when they take the schools out o' the—these two towns…" The y-axis shows frequency from 150 to 275 Hz for the pitch track and from 0 to 700 Hz for the spectrogram.

Quantitative analysis revealed that there was, indeed, a difference in the incidence of rising pitch prominences. Figure 3 plots the results for all speakers analyzed. Although there is some overlap, it can be seen that Mexican Americans tend to show higher proportions of rising pitch accents than Anglos. A 2-tailed t-test comparison of scores for Texas Mexican Americans and North Carolina Anglos yielded a significance level of $p < 0.005$ (df=21, t=3.48064).

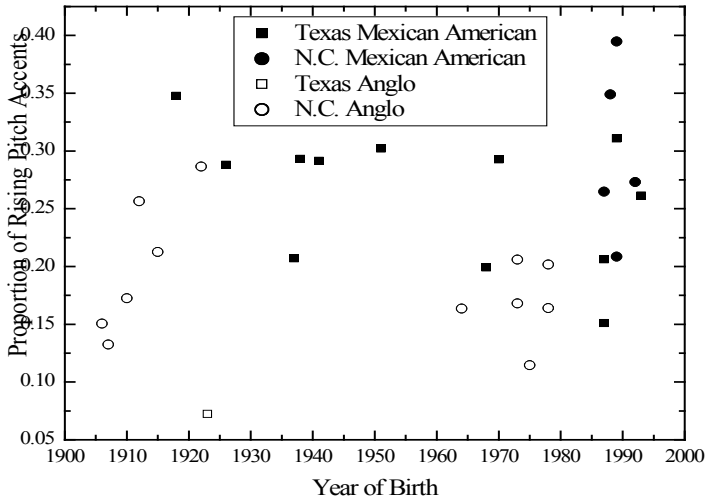

Figure 3: Proportions of rising pitch prominences for all speakers analyzed.

The overlap between Mexican Americans and Anglos visible in figure 3 deserves some comment. Younger Mexican Americans show a wide range of values, with some appearing well within the range of most Anglos. Such speakers genuinely do seem to be accommodating to Anglo norms. Network-level analyses of such speakers might well prove informative, and, concomitantly, intonation could turn out to be a key variable indexing speakers' network associations and identities. Some of the older Anglos show relatively high proportions of rising prominences. In general, though, their rising tones differed from those found in MAE. These Anglos showed tautosyllabic rise-fall patterns associated with the "Southern drawl." An example is shown in Figure 4. Rising prominences in MAE, in contrast, were less likely to show a similar fall in F_0 within the same syllable or foot, as seen in Figure 5.

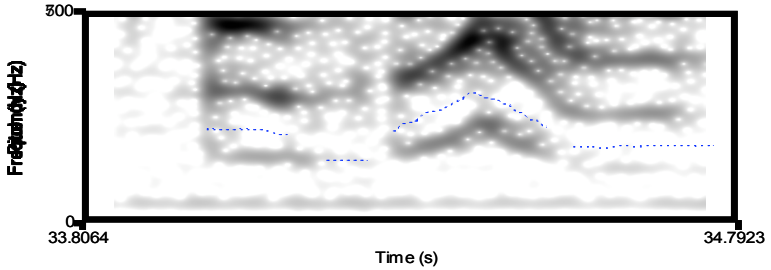

Figure 4: Pitch track and narrowband spectrogram of the phrase "they said I" uttered by an Anglo female, with a rise and fall on *said*. The y-axis shows frequency from 0 to 500 Hz for the pitch track and from 0 to 700 Hz for the spectrogram.

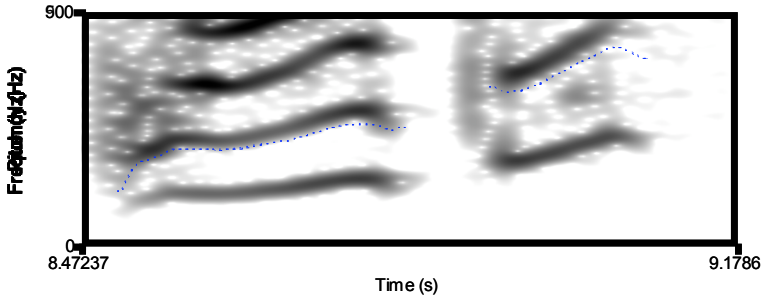

Figure 5: Pitch track and narrowband spectrogram of the word *walking* uttered by a Mexican American male, showing the continued rise in F_0 without a following fall. The y-axis shows frequency from 0 to 500 Hz for the pitch track and from 0 to 600 Hz for the spectrogram.

4 Comparison with Other Variables

In order for intonation to prove useful as a variable in quantitative sociolinguistic studies, it has to be comparable with other variables. To show how it can be examined in conjunction with other variables, we compared it with analyses of two other phonetic variables for the same speakers. These variables are the degree of fronting of the nucleus of /o/, as in *coat*, and prosodic rhythm, the relative degree of syllable-timing or stress-timing. For /o/, three young Anglos from the San Antonio metropolitan area, several Anglos from Raleigh, and African Americans from North Carolina have been added for

comparison. Striking ethnic differentiation occurs for both variables. Anglos show more fronted /o/ realizations than Mexican Americans. Moreover, Anglos generally show a greater degree of syllable-timing and Mexican Americans a greater degree of stress-timing. Figures 6 and 7 show the results for each speaker for these two variables.

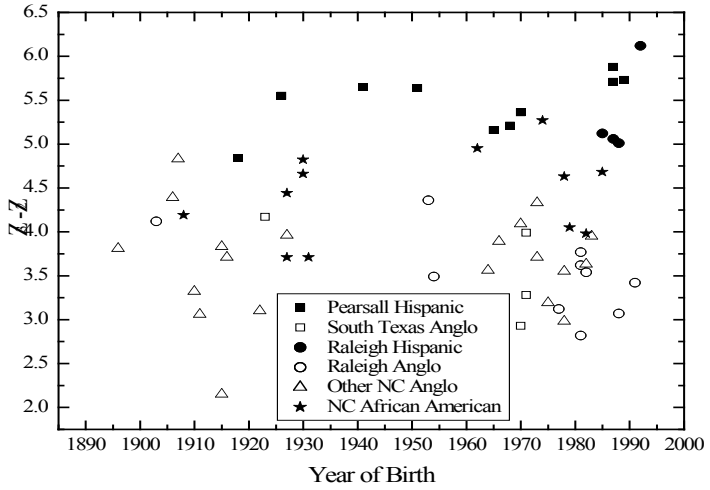

Figure 6: Normalized values of mean values of the nucleus of /o/, as in *coat*. Higher values indicate more backed quality, lower values more fronted quality.

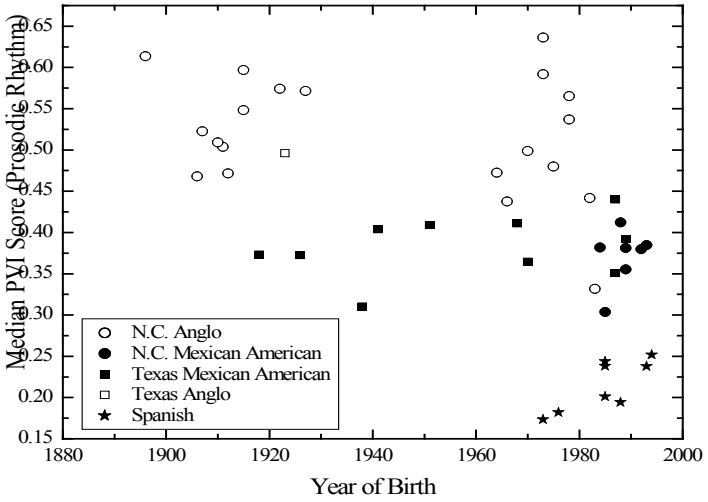

Figure 7: Prosodic rhythm, as measured by PVI (pairwise variability index) scores (see Low, Grabe, and Nolan 2000). Higher values indicate more stress-timed patterns, lower values more syllable-timed patterns.

In order to demonstrate how intonation can be analyzed together with the other variables, we performed a principal components analysis of rising pitch prominences, /o/ fronting, and prosodic rhythm on the speakers for whom data were available for all three variables. Figure 8 plots the first two principal components, and Figure 9 plots the first and third principal components. It can be seen in Figures 8 and 9 that, while North Carolinians and Texans are not differentiated from each other by the principal components analysis, there is a clear differentiation between Mexican Americans and Anglos. Thus intonational variables can be quantified in a way that makes them compatible with other variables in a statistical analysis.

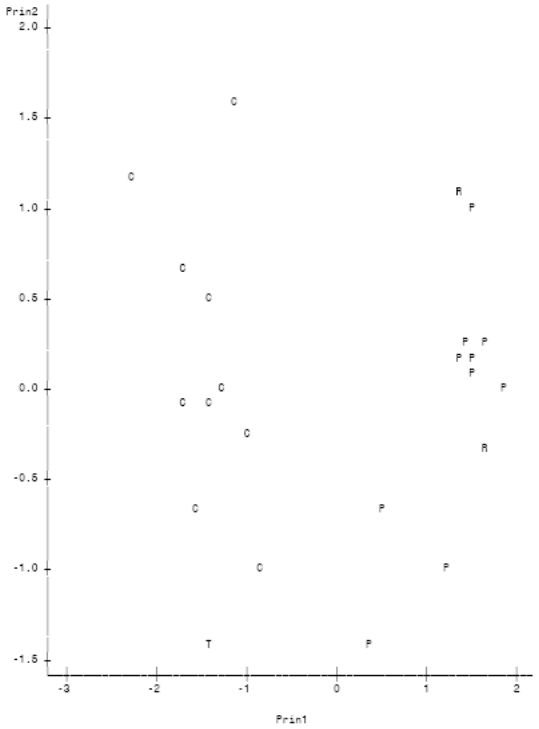

Figure 8: Analysis for Rising Pitch Accents, /o/ Nucleus, and PVI: Principle Components 1 and 2 (C=NC Anglo, T=Texas Anglo, R=NC Mex. Am., P=Texas Mex. Am.).

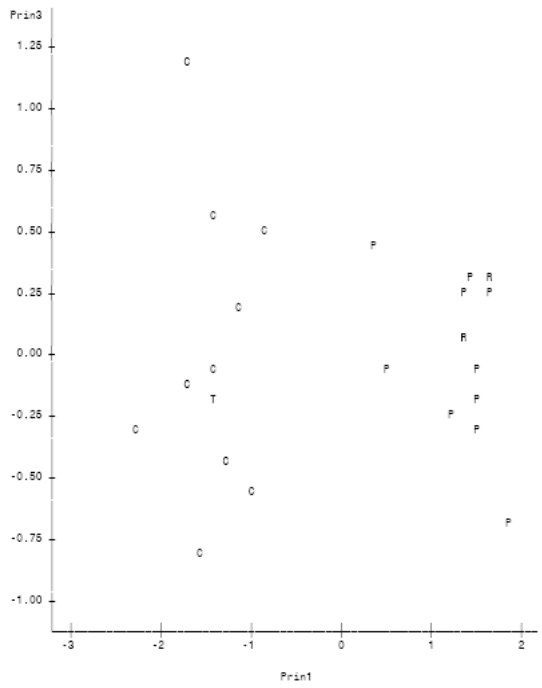

Figure 9: Analysis for Rising Pitch Accents, /o/ nucleus, and PVI: Principle Components 1 and 3 (C=NC Anglo, T=Texas Anglo, R=NC Mex. Am., P=Texas Mex. Am.).

5 Conclusions

As we have attempted to demonstrate, intonation certainly can be used as a quantifiable sociolinguistic variable. For many sociolinguists, often the main obstacle is simply knowing what to look for. However, researchers also have to decide the extent to which they will rely on impressionistic transcription and how much they will rely on phonetic measures. Commonly used transcription systems may not always serve the researcher's needs adequately, especially if large amounts of data are needed.

With regard to the developing southern Texas MAE dialect, intonation appears to be showing a more complex pattern than the vowel variables or rhythm in the developing southern Texas MAE dialect. The emerging split between speakers with greater and lesser proportions of rising tones suggests that intonation is potentially a group identity marker within the Mexican American community. A similar range of values appears among the North Carolina Mexican Americans. At this point, it is difficult to say whether the diversity shown in Raleigh MAE is a sign of differing identities among individuals or a sign that the whole community is undergoing assimilation to Anglo speech.

The proportion of rising pitch prominences is only one intonational variable that could be explored. As noted above, Penfield and Ornstein-Galicia (1985) noted others for MAE. Ericson (2007) examined another variable, the types of boundary tones, for the speakers used here and found that Mexican Americans consistently used higher proportions of level and rising final tones than Anglos did. Still other intonational variables must be relevant in other communities and for other ethnic groups. It should be clear, then, that intonation offers considerable potential for sociolinguistics.

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