

THE INDIVIDUAL AS THE LOCUS OF VARIATION AND CHANGE IN A CONTACT SITUATION IN PANAMA

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1. Introduction

The present paper is concerned with language contact and change in the bilingual West Indian speech community in the Republic of Panama where Spanish and an English-lexifier Creole are spoken. I focus on the production of the voiceless dental plosive in terms of an acoustic property known as voice onset time (VOT). VOT is defined in acoustic phonetics as the time interval between the occlusion of a consonant stop and the onset of vocal cord vibration (Lisker & Abramson, 1964:387). In Spanish, VOT is considered to be *short lag* because vocal cord vibration, or voicing, occurs shortly after the release of the stop. During this time interval very little aspiration can be heard. However, in English, VOT is categorized as *long lag* because voicing occurs well after the release of the stop and there is a great deal of aspiration. Therefore, this acoustic property provides what is known as a conflict site, which is an area where the two languages do not line up (Poplack & Meechan, 1998:132). The conflict site allows us to analyze potential effects of contact between Spanish and Creole English, which is one of the goals of the present study. The second goal of the analysis is to focus on the individual as the locus of variation and change in the context of linguistic contact and to combine quantitative results with qualitative data to explain contact-induced change occurring in this speech community. In this light, the analysis contributes not only to the extensive work carried out in situations of language contact and change, but also to the growing literature on variationists sociolinguistics, especially in terms of methodology.

2. Spanish and Creole English in Panama

Besides being the national language of Panama, Spanish has been the official language of this country since the early 1940s with the promulgation of the Constitution of 1941 (see Constitution of 1941, Title 1, Article 10).¹ However, Creole English has been the second most widely spoken language in Panama due to migration from the English-speaking Caribbean during three important projects: the construction of the Panama Railroad and the first and second phases of the construction of the Panama Canal. The construction of the Panama Railroad began during the California Gold Rush in the mid-1800s. Many were searching for the quickest route from the east coast of the United States to the west, and as an isthmus, Panama was considered the ideal location for this journey. In 1838 slavery had been abolished in the British West Indies, and many freedmen who were unable to find jobs in their homeland decided to seek work abroad, particularly in Panama. This initiated the first wave of migration of about 5,000 workers from Jamaica to the Isthmus to labor on the railroad (Connif, 1985:17).

A second wave of migration of West Indians was triggered in the late-1800s when the French began the first phase of the construction of the Panama Canal. The majority of the workers migrated from the French-speaking islands of Martinique and Guadeloupe (Diez Castillo, 1981; de Banville, 2005). About 50,000 workers went to Panama, some of whom returned to their islands after the construction of the canal failed; however, many decided to stay and raise families while they waited for another project which might offer employment (Connif, 1985:18). The second phase of the construction of the Panama Canal was initiated by the United States after Panama won its independence from Colombia on November 3, 1903, thus initiating the third wave of migration mainly from English-speaking islands. It is estimated that 150,000 laborers and their families arrived in Panama between 1904 and 1914. Many remained after the canal was completed because of the numerous opportunities available there. According to Connif

¹ A copy of Constitution 1941 can be found at Biblioteca Digital Panameña:
<http://www.binal.ac.pa/buscar/clconst.htm>

(1985:4), the West Indians, or *antillanos*, became the largest group of immigrants in a country that had a total population of 400,000 people.

The presence of West Indians in Panama gave rise to extreme racism as Panamanians of mestizo origin felt they had to compete with West Indian immigrants for highly sought after Canal jobs (Connif, 1985:4). Bad race relations were also noticeable in the Canal Zone where the Americans implemented Jim Crow segregation under the guise of a gold-silver payroll system (Connif, 1985:4-5). The racism that West Indians had to endure in Panama caused this group to unite despite their differences due to island of origin. They began to establish their own schools, churches and businesses, which brought about the emergence of a new West Indian subculture which incorporated traditions borrowed from England, the Caribbean, North America, and Panama (Connif, 1985:12). Their establishments were normally run in English, which helped to maintain the language in later generations, especially in the cases where their children had limited access to education in Spanish (Connif, 1985:6). These establishments were located in areas where the majority of West Indians had settled, such as El Chorrillo, San Miguel, Calidonia, and El Marañón, also known as Guachapalí (Thomas-Brereton, 1992:49). Although race relations have improved tremendously, many West Indians continue to live in these areas and speak both Spanish and English daily.²

It is also important to note that what West Indians refer to as “English” in Panama has been labeled as “Creole English” by creolists. This term is used to describe this variety for two reasons: 1) it is a variety that has evolved from the language spoken by the immigrants who had come from islands such as Jamaica, Barbados, Saint Vincent, etc., and 2) the variety maintains many characteristics of the English-based creoles spoken in those islands. The term “English” has been used in the present paper up to this point because the concept of “creole” in Panama is not as clear as it may be in Jamaica. However, in order to keep with the tradition of creolistics, the term “Creole English” will be used henceforth to refer to the variety spoken in Panama.

West Indian speech, particularly in Spanish, is not often commented upon in Panama; however, on the rare occasion that a person points out any differences, they highlight phonetic characteristics. Some refer to their speech as being slow paced, using the phrase “hablar con el tiempo”. Another trait that is highlighted when one imitates a West Indian is the aspiration of consonants. It seems that this aspiration is a salient characteristic of West Indian speech, and thus, could reveal some type of sociolinguistic meaning when analyzing effects of contact in this particular speech community. Thus, the linguistic variable chosen for this analysis is VOT duration of the voiceless dental plosive because this acoustic cue is correlated with consonant aspiration. VOT is further discussed in Section 3.

3. Voice onset time (VOT)

According to Lisker & Abramson (1964:387), VOT is the time interval between the release of a consonant stop and the onset of glottal vibration. The voiceless dental plosive in Spanish exhibits a VOT value of no more than 25 msec. In English, the voiceless alveolar plosive features a VOT value of no less than 30 msec. (Lisker & Abramson, 1964). According to these measurements, Spanish stops are considered *short lag* because voicing occurs shortly after the release burst. English stops, however, are *long lag* because voicing occurs well after the release. Although these are well-established values in the literature for monolingual speakers of Spanish and English, researchers have found that bilinguals can show different patterns in their production of stops when compared to their monolingual counterparts in both languages.

In his *Speech Learning Model*, Flege (1995a) affirms that age of acquisition of the second language has a significant effect on VOT duration in bilingual speech. He claims that as age of acquisition increases, the ability to discern phonetic differences between two languages becomes less likely, and thus, brings about a merger in the language. Flege’s (1987) merger hypothesis is based on evidence of

² There is also an enclave of West Indians in the city of Colón, which can be considered the Panamanian mecca for West Indians. Also, West Indians can be found in the province of Bocas del Toro. These have a slightly different history from those living in the metropolitan areas of Panama, but they also speak a variety of Creole English.

compromise VOT values found in the speech of late bilinguals. ‘Compromise’ refers to the fact that the mean VOT values for both languages fall between the prototypical ranges produced by monolinguals. This process is known as cross-language assimilation and occurs because bilinguals make an equivalence classification of similar sounds from their two languages (Flege, 1987; Flege, 1995b:101). Flege (1995b:101) also finds evidence of what is known as cross-language dissimilation, which is more common in early bilinguals. In this process, bilinguals separate their two languages by producing extra-long VOT values in one language to compensate for long VOTs in the other. That is, the speaker produces English stops with extra-long VOT values because he now produces Spanish stops with longer VOT values. This behavior is common in early bilinguals because since the first language (L1) is not completely developed at a young age, the second language (L2) is established independently of the L1 (Flege, 1987).

Therefore, it can be concluded based on the literature concerned with VOT duration in both monolingual and bilingual speech, that this acoustic property is ideal for examining effects of contact between Spanish and Creole English such as convergence and divergence. With these ideas in mind, in Section 4, I discuss certain social factors that have been considered in the language variation and change literature in order to explain contact-induced changes in bilingual speech communities.

4. Language contact, variation, and change

In the framework of language variation and change (LVC), the evolution of language has been attributed to the geography or the social setting in which language change occurs. Such external factors, along with internal ones, have been considered to be the “ecologies” that bear on language evolution (Mufwene, 2001). There can be many explanations for why certain forms die out, and why others enter or become more frequent in a language. Many researchers concerned with LVC take into account social factors, such as intensity of contact (e.g. Thomason, 2001), language attitudes (e.g. Appel & Muysken, 2005; Hill & Hill, 1980), language loyalty and maintenance (e.g. Fishman, 1964; Grosjean, 1982) and identity (e.g. Eckert, 2000; 2008; Hall-Lew, 2009) to explain variation, change, and language shift in contact situations.

One of the most widely discussed social factors is intensity of contact, which Thomason (2001) quantifies using three criteria: duration of the contact period, relative sizes of the populations, and socioeconomic dominance. If two groups of speakers have been in the same region for a long period of time, this could lead to more opportunities for language change due to contact (Thomason, 2001:66). Second, the group of speakers with the smallest population more than likely will adopt features from the other group’s language, especially if the larger group’s culture is the dominant one. Third, if this dominant group is also socioeconomically more successful than the smaller one, it is even more likely that the smaller group will adopt features from the larger one (Thomason, 2001:66). When considering these conditions, other factors, such as language attitudes, loyalty and maintenance, and identity could work together to bring about change in a speech community. These factors can also be at work when observing the behavior of the individual because change is not only noticeable in the general speech community, but also at an individual level. Therefore, it becomes necessary to examine contact-induced change in individual speakers, since such analysis could yield an additional explanation of the emergence of new varieties in contact situations due to language change.

4.1 The individual as the locus of change

Literature concerned with language contact, as previously mentioned, normally focuses on the speech community as a whole when analyzing the effects of contact. In recent years, many researchers (e.g. Blondeau & Nagy, 2008; Meyerhoff, 2009; Poplack & Levey, 2010; Torres Cacoullous & Aaron, 2003) have taken on the task of determining the source of change in a contact situation using the comparative variationist method established by Poplack and her colleagues. This method helps to determine whether change occurring in a bilingual speech community is internally motivated or if it is contact-induced by performing a series of comparisons of statistical results between monolingual and bilingual varieties. The comparative variationist method has been considered one of the most adequate

ways of examining possible contact-induced change. However, in spite of this, one finds it necessary to hone in on the individual to have a better understanding of the particular contact situation since speakers tend to vary their language according to style (see Eckert, 2008; Podesva, 2007; Zhang 2005). If bilinguals have the ability to access different speech styles, this means that they could produce different forms, either from their native or second language, in a single context according to certain social factors. One method of determining the effect of social factors on individual speech style is incorporating mixed effects into regression models (Baayen, Davidson, & Bates, 2008; Drager & Hay, 2012; Johnson, 2009).

Mixed-effects modeling refers to the inclusion of two types of factors. There are factors that are considered fixed effects, which can be verb type, syllable stress, phonetic environment, or gender. These have a small number of levels and can be replicated in further studies. There are also factors that are random effects, that is, they are drawn from a larger population such as lexical items or individual speaker, and cannot be replicated in further studies (Johnson, 2009:364-365). Including speakers as a random effect in a regression model allows for individuals to vary significantly from the norm without underestimating or overestimating the significance of factors treated as fixed effects (Drager & Hay, 2012; Johnson, 2009). Most importantly for this study, the results of speaker as a random effect represents stylistic variation, which can complement the interpretation of the fixed effects results when drawing from qualitative data found in sociolinguistic interviews (see Methodology for further discussion). This type of interpretation can be used to explain why certain linguistic changes may be taking place in a bilingual speech community. The goal of the present study is to use this representation of speaker style to understand why change is occurring in the speech of Spanish-Creole English bilinguals living in Panama. In Section 5, I discuss the methodology used to achieve this goal.

5. Methodology

5.1 Speech community and data collection

This study originates from a larger analysis of language change in Panama in which samples of natural, spontaneous speech were extracted from sociolinguistic interviews conducted with 5 monolingual speakers of Spanish, 5 monolingual speakers of Creole English and 5 Spanish-Creole English bilinguals. In this paper, I focus on the production of Spanish and Creole English by the 5 bilingual speakers. These individuals are of West Indian origin and have lived in Panama all their lives. They also claim to be early bilinguals; that is, they learned Creole English in the home from birth and Spanish in their community at least by the age of five. They use both languages daily, as they are integrated into the general Panamanian population and also belong to a social network of Creole English speaking West Indians.

The speakers were recorded using a Sony Digital Voice Recorder ICD-SX750 and a Shure Microphone SM10A. This equipment was selected given the need for high-quality audio files to perform acoustic measurements of voice onset time of the voiceless dental plosive.

5.2 Analysis

The dependent variable, as previously mentioned, is the voiceless dental /t/ occurring in three phonetic environments: absolute word-initial, prevocalic (#_V); post-consonantal, prevocalic (C_V); and intervocalic (V_V). In an attempt to follow the principle of accountability (Labov, 1972:72), all words containing a voiceless dental were extracted from 10-minute segments beginning after the 10th minute of each interview. The total number of tokens obtained for the larger analysis was 2,128. 1,040 of these tokens were produced by the bilinguals, with 528 being extracted from Spanish and 512, from Creole English. VOT duration was measured in milliseconds using *Praat* (Boersma & Weenink, 2012), a free software program for analyzing speech sounds. The point of release of the /t/ was detected on the spectrograms as a short periodic pulse. The measurement was taken from this point up to the onset of voicing, which is indicated by regularly spaced vertical striations. The following figures are examples of spectrograms of voiceless dentals in Spanish and Creole English.

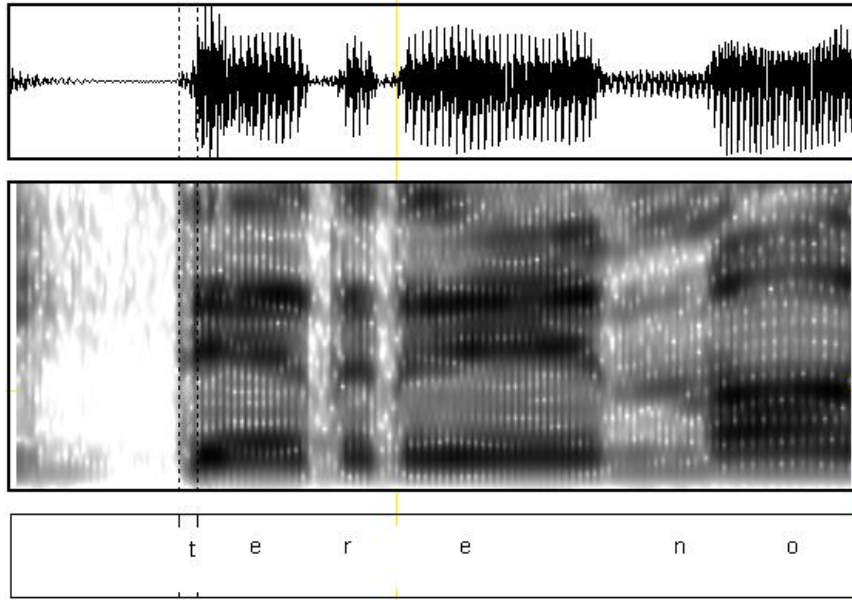


Figure 1. Spectrogram and waveform of /t/ in 'terreno' in Spanish

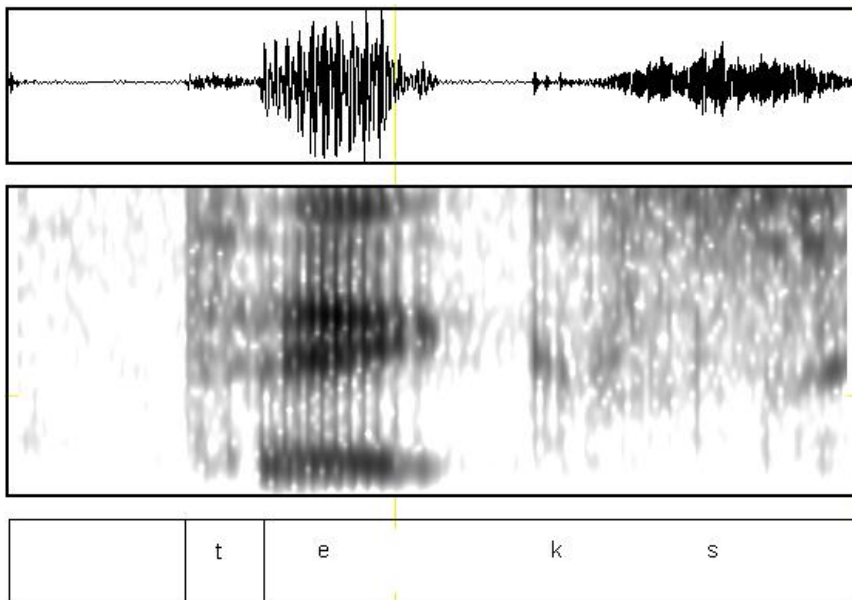


Figure 2. Spectrogram and waveform of /t/ in 'text' in Creole English

In order to pinpoint variation and potential change in bilingual speech, linear regression models with mixed effects were included using *Rbrul* (Johnson, 2009). This package, which is loaded in the free statistical environment *R*, provides the statistical significance level for factor groups. It also estimates the effect of factors on mean values and presents the results in coefficients that can be positive or negative. In the case of VOT duration, positive coefficients indicate that a longer VOT is favored with a certain factor and negative coefficients indicate that a shorter VOT is favored. In the LVC framework, the order of effect of the conditioning factors, also known as the constraint hierarchy, is considered the underlying system of the language and offers a detailed view of each factor being tested (Poplack & Tagliamonte, 2001).

Therefore, certain linguistic factors were included in the linear regressions based on previous literature concerned with VOT duration. These factors were preceding segment, following vowel height,

position of /t/ in the word, syllable stress, rate of speech, word class, word frequency and lexical item.³ All of these factors, except lexical item, were considered fixed effects. Also, since I am concerned with how speaker style plays a role in language change in this contact situation, individual speaker was included in the linear regression as a random effect. Each speaker is assigned a coefficient in the regression model, which allows us to observe how they vary from the other (Baayen, Davidson & Bates, 2008; Drager & Hay, 2012; Johnson, 2009). Therefore, in terms of VOT duration, I am able to determine the likelihood that a speaker will produce a longer VOT as opposed to a shorter one. These quantitative results are then explained by exploring the qualitative data drawn from the sociolinguistic interviews to elucidate the linguistic behavior of the speakers. In Section 6, I present and discuss the results of the analysis, focusing mainly on the bilingual speaker results; however, I mention the findings from the monolingual data where they are relevant.

6. Results

6.1 Mean VOT values

Table 1. Comparison of mean VOT in msec. across varieties

	Spanish	Creole English
Monolingual	15.25	28.43
Bilingual	21.15	34.20

$p < 0.05$

Table 1 presents a comparison of mean VOT values obtained from the monolingual and bilingual speech samples. It is observed that monolingual speakers of Spanish have a shorter mean VOT (15.25 msec.) than monolingual Creole English speakers (28.43 msec.). These findings are in line with previous literature concerning VOT (e.g. Lisker & Abramson, 1964) that describe Spanish stops as short lag and English stops as long lag. The results also show that bilingual speakers have shorter VOTs in Spanish (21.15 msec.) and longer VOTs in Creole English (34.20 msec.), which also indicates that bilinguals follow the short lag-long lag pattern.

However, interestingly, we see that bilingual Spanish stops exhibit a mean VOT duration that falls between monolingual Spanish and monolingual Creole English. Also, their Creole English stops are longer than those of their monolingual counterparts. According to these measurements, these early bilinguals seem to show evidence of cross-language dissimilation or divergence between Spanish and Creole English. These findings are in line with Flege's (1995a) Speech Learning Model, in which he explains that early bilinguals tend to maintain a separation between their two languages. At an early age, the L1 is not fully developed; therefore, bilinguals are able to acquire the L2 independently of the L1. Thus, they establish a different mean VOT duration for each language.

In spite of these patterns, the data show that there is much variability in the speech of both monolingual and bilingual speakers. Figure 3 presents the VOT durations of the four language modes along with the ranges. If we compare the bilinguals to their monolingual counterparts, we notice that bilinguals are more variable than the monolinguals in both languages. Bilingual Spanish VOT ranges from 2 to 87 and monolingual Spanish ranges from 0 to 52. Bilingual Creole English ranges from 0 to 168 and monolingual Creole English ranges from 0 to 82. When comparing bilingual Spanish to bilingual Creole English, we see big differences. Bilinguals vary a lot more in Creole English than in Spanish.

³ The results of the linguistic factors are not reported in this paper, as the focus here is individual stylistic variation.

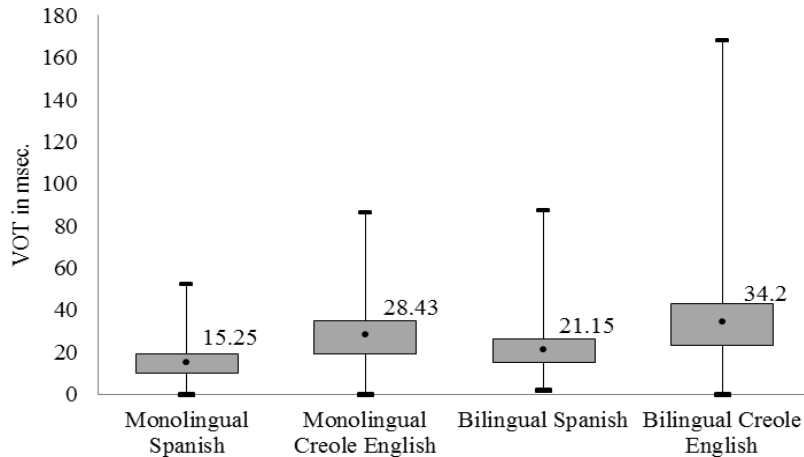


Figure 3. Variability among monolinguals and bilinguals

These numbers show us that there is a possibility that each individual is behaving in their own peculiar way and exhibiting stylistic variation in their languages. The variants that they produce could originate from the L1 or the L2, that is, from Creole English or from Spanish. They could also feature VOT values that represent convergence or divergence between the L1 and the L2. In order to investigate further the root of the variability discovered by examining mean VOT values, I focus on the individual speaker coefficients provided by the linear regression model. Recall that individual speaker was included in the analysis as a random effect, that is, it shows how the participants vary from each other in terms of their production of the variant, in this case, VOT duration of the voiceless dental plosive. It shows who is more likely to produce a short VOT or a long VOT. As will be seen below, this is done for each language, therefore, highlighting not only differences across speakers in terms of stylistic variation but also between languages. Once the patterns of stylistic variation are revealed quantitatively, the behavior of the speaker can then be corroborated with qualitative data drawn from the sociolinguistic interviews and other information gathered from the participants. In Section 6.2, I discuss the results for the individual bilingual speakers.

6.2 Stylistic variation in a contact situation

Table 2 presents the results of individual speaker (bilinguals) as a random effect in each language. We are able to see the different types of stylistic behavior in these bilinguals, which I explain as convergence moving towards Creole English (Section 6.2.1), convergence moving towards Spanish (Section 6.2.2), and divergence (Section 6.2.3). Each behavior type is explained quantitatively and qualitatively in their corresponding section. The factors from the sociolinguistic interviews that were used to explain the bilinguals' production were language attitudes, language loyalty and maintenance, and cultural identity.

Table 2. Individual speaker as random effect in linear regression model

Spanish			Creole English		
Speaker (random)	coef	tokens	Speaker (random)	coef	tokens
Samuel	6.938	108	Alicia	3.641	124
Alicia	-0.615	104	Samuel	2.993	115
Alberto	-0.917	100	Alberto	2.588	101
Rogelio	-1.154	110	Rogelio	-1.194	102
Dora	-4.251	106	Dora	-8.028	71

$p < 0.05$

6.2.1 Convergence moving towards Creole English

Positive coefficients correspond to longer VOT durations and negative coefficients, to shorter VOT durations. Thus, we notice that Samuel is more likely to produce voiceless dental plosives with longer VOT durations in Spanish (6.938) and in Creole English (3.641). This can be interpreted to mean that he shows convergence in his phonetic systems, and the languages are moving towards Creole English because he favors longer VOTs. These results seem accurate when looking at the qualitative data. First of all, Samuel has a very positive attitude towards what we referred to in the interviews as “English”, but he is not so positive when it comes to Spanish:

Interviewer: How important is Spanish to you?

Samuel: More or less important. Just to um... just to do the basic, like to go to the- to do you g- um, if you have fi deal with the government or something. But, um, it not that important to me. It- it's important but I could do without it. (laughs)

Interviewer: ...and how important is English to you?

Samuel: Very important.

(Samuel, Creole English, 6/5/2010)

His attitudes towards these languages can also be gleaned from how he evaluates his own language skills:

Interviewer: How well do you speak Spanish?

Samuel: Not so well. Well, not perfectly, but very well.

Interviewer: So, very well or not so well?

Samuel: Very well.

Interviewer: And how well do you speak English?

Samuel: Very good. Read- speak, write, very well. Perfectly.

(Samuel, Creole English, 6/5/2010)

We see here that Samuel is very confident of his English and explains that he is good in all aspects of using the language; however, he seems non-committal when describing his Spanish. Samuel also shows preference for English in his language use, and explains that when he was growing up, he only spoke English with his parents. He also states that he instilled the importance of English in his own children:

Interviewer: and who do you normally speak Spanish to? friends?

Samuel: um, neighbors or... um, people that round here. Yea, the young children, not my children, I speak English to them. I even- even to my dogs and my (laugh) parrot I speak English to them (laugh).

Interviewer: and so when you were growing up with you parents, you spoke... usually spoke...?

Samuel: English, they speak to me in English.

Interviewer: um, do you ever speak English to neighbors?

Samuel: um, yes, I have one that come from Denver. I have next neighbor that she grow with me on the zone. I speak English with her. Yea, all the time. And another one that live across the road, the other street, live- yea, I speak English with them. ... and that one of the things I instill in my kids. I told them bluntly, in this house everybody speak English. That language, Spanish, you will learn it outside or with you neighbors. And so said, they live today to realize what I was trying to tell them. Now it's a hassle for people to learn English in Panama, when they didn't want. So they- they- they is ahead of the game.

(Samuel, Creole English, 6/5/2010)

Therefore, Samuel's statements seem to be in line with what the quantitative data show for his use of Spanish and Creole English.

6.2.2 Convergence moving towards Spanish

If we look at Dora's and Rogelio's coefficients, we notice that they are more likely to produce shorter VOT durations in both Spanish (-4.251, -1.154) and Creole English (-8.028, -1.194). They seem to also be exhibiting a convergence in their phonetic systems; however, contrary to Samuel, they are moving towards Spanish because they favor shorter VOTs. Their statements about language and culture also seem to corroborate these results. For example, Dora, although she has very positive attitudes towards Spanish and English, seems to lean more towards Spanish, which is seen in her reasons for giving each language importance:

Interviewer: How important is Spanish to you?

Dora: How?

Interviewer: How important is Spanish to you?

Dora: It is- it is very important. It is very important because I live in a Latin country. Although they say- they claim now that the English is the number one language because of the call centers I guess, you know? But I think that en- Spanish is very important.

Interviewer: And how well do you think that you speak Spanish?

Dora: I think I speak pretty good Spanish. Better than English...

Interviewer: so perfectly or very well?

Dora: I say very well, yea.

Interviewer: and how important is English to you?

Dora: I would say it is very important too, because um... sometimes on the street or in different area you can meet a person that is looking for an address or they want to

know how to get certain place, and they don't speak Spanish. And sometimes because they see you black they will come to you...

(Dora, Creole English, 5/13/2010)

Also, when asked about her linguistic skills in the language, she is more confident with Spanish than with English:

Interviewer: How well do you speak English?

Dora: umm... I would say not that well.

Interviewer: So not so well?

Dora: Not so well.

(Dora, Creole English, 5/13/2010)

However, contrary to the fact that she seems to prefer Spanish a little more than English, she uses English a lot in her family:

Interviewer: do you get a lot of chance to speak English?

Dora: Yea. yes. Yes, I do.

Interviewer: Who do speak English with?

Dora: My cousin. em, my sister, my son, eh... my nieces and nephew that live in the states. my husband, my- mother in law, because she don't speak much Spanish, yea. and my father in law also, you know. He didn't speak much Spanish either. so, we speak more- we got to speak more English with him, and my brother-in-law also. He speaks Spanish, but usually we speak more English. Okay. ...but I used to speak a lot English with my mother and my father. XXX although they speak- they used to- they speak Spanish too, but you know, when they got- when they got sick and then I would have to go with them I spend time with them, you know I would speak more English. Definitely, the Spanish was out, and I strictly speak- speak English with them.

(Dora, Creole English, 5/13/2010)

Dora also identifies herself as West Indian, which seems to be very important when it comes to maintaining Creole English in one's life and using it as an identity marker:

Interviewer: How do you identify yourself as far as culture and race? especially now with the census going on?

Dora: well, my husband say that I'm a- I'm a Latina. I'm a Spanish.

Interviewer: (laugh)

Dora: I- me- I don't fe- I don't consider myself a Spanish, is just that I grew up among a lot of Spanish people. But deep down, my roots is from the West Indies, you

know. So I consider myself black or from the West Indies, or whatever afroantillano, afroantillano descendiente, whatever they want to say, but I consider myself- what- I'm a Panamanian, you know, a natural Panamanian.

(Dora, Creole English, 5/13/2010)

We notice at the end of her statement that she still continues to hold on to being a Panamanian, which is something that was not seen as much in previous generations.

Interestingly, Rogelio is married to Dora, which could explain why they have the same tendencies. However, according to his qualitative data, he associates himself much more with West Indian culture and with people of West Indian descent. This also appears to corroborate the random effect results, since he shows longer VOT durations than Dora:

Interviewer: and so how do you usually identify yourself?

Rogelio: (laugh) I don't need to identify myself. I- I- project exactly what I am. I am... what-should-I-say ah... black descendent from the West Indians. Alright, I- project- and ... most the people I know, people I relate with, I have the same, you-know, same the descendants, so. Okay I... Interviewer: So a lot of your friends are also...? Rogelio: Yes, yes, definitely definitely definitely.

(Rogelio, Creole English, 5/24/2010)

Rogelio: Bueno, en Colón, eh... éramos bastante, cómo-se-dice, cómo la mayoría de la gente era de habla inglesa, la mayoría de la música que yo escuchaba, RIGHT? eh... era en inglés. Había estaciones de radio, y todo lo que era SOUL y lo demás, eso- eso estaba de moda en ese tiempo, okay, para nosotros, okay. Algunos que otros, eh... cómo-diría-yo, música en español, alguna salsa, tal vez, en esos tiempos El Gran Combo, ya después la cosa fue evolucionando, y habiendo (inc) lo que es... música en español, no? pero primo- primordialmente, primera época era- era cuestiones en inglés.

(Rogelio, Spanish, 5/24/2010)

6.2.3 Divergence

Turning to Alicia and Alberto, we notice that they are more likely to produce longer VOTs when speaking Creole English (-0.615, -0.917) and shorter VOTs when speaking Spanish (3.641, 2.588). They seem to be keeping both languages separate while still continuing to show bilingual norms; that is, they have compromise VOTs in Spanish and extra-long VOTs in Creole English (see Appendix). These results are interesting because these two speakers happen to work in call centers in Panama City where they use English all day long; however, they are also members of churches where only Spanish is used. It seems that because of this, these speakers are skilled at distinguishing Spanish from English in their daily usage; they have a domain where each one is used. They also consider English to be very important, which could be why they having generally longer VOTs than monolingual speakers:

Interviewer: how important is Spanish to you? Do you think it's very important or just important or...

Alicia: well right now the important language right now is English. It's bilingual but the basic right now is English. Spanish, it's good to speak it because umm translation

from English to Spanish is not the same and from Spanish to English is probably difficult. But the Spanish is necessary because the- right now XXX is Spanish.
Interviewer: do would you say very important or just important.

Alicia: it's just important, not very important.

Interviewer: How important is English to you?

Alicia: Very important.

(Alicia, Creole English, 5/23/2010)

Interviewer: and what about when you speak Spanish? Do people think you have an accent?

Alberto: well, sometimes. Good question. On the job sometimes... on the job, people say: this gringo. Because they hear with my Spanish like it's a little broken. So I do my best, I mean I don't think I'm bad at Spanish. But certain words I may say them wrong, not because I didn't learn them before but you know, it's like, it's like, um, how should I say? It's like at the moment I'm going to respond and I have to like make a pause to be able to say it right. So I may make a mistake and they may laugh at me and say: ah you a gringo. Because when I'm on the phone and I'm speaking with U.S., I need to have a good English because if they monitoring me, they going to question my English, right. I need to have good English, ya.

(Alberto, Creole English, 5/30/2010)

Another factor worth mentioning is religion. One of the various differences found between West Indians and Mestizos in Panama is the affiliation with the Catholic Church. Mestizos normally associate with Catholicism, although recently, many are beginning to attend protestant churches. West Indians, however, have deep roots in Protestantism, which was inherited from their Caribbean descendants. All but one of the bilingual speakers in this analysis attends a protestant church. Dora is the only Catholic in the group and also shows more of a preference for Spanish than the rest of speakers, which is reflected in her production of voiceless dentals.

7. Conclusions

It has been demonstrated in previous literature, particularly by Drager & Hay (2012), that random effect coefficients provide an additional tool for sociolinguists to analyze language variation and change. Individual speaker can be included in a regression model as a random effect. The results provided by this type of statistical analysis reveals how speakers diverge from each other in terms of a particular linguistic variable. This variation is explained by drawing upon the qualitative data of the speakers. The present study adopts this approach in order to analyze change in a language contact situation in Panama among bilingual speakers of Spanish and Creole English. This particular method is considered necessary because of the evidence of stylistic variation revealed in the mean VOT values and ranges. The analysis shows that certain social factors play an important role among these particular speakers, and possibly in this speech community as a whole. The linguistic behavior of the bilinguals appears to be conditioned by their attitudes towards Spanish and Creole English, language loyalty and maintenance, and their identity as West Indians living in Panama. This type of analysis is important for literature concerned with language contact because it highlights the significant role of the individual and aids in explaining contact-induced change in the speech community.

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Appendix

Mean VOT of Individual Bilingual Speakers

Group	Mean VOT (/t/) in msec.	Standard deviation	Range
Bilingual Spanish	21.15	8.95	2-87
PART 1	19.29	7.84	2-46
PART 2	20.49	8.10	4-47
PART 4	28.23	8.92	8-87
PART 7	16.38	7.16	6-63
PART 9	20.62	7.54	10-51
Bilingual Creole English	34.20	18.33	0-168
PART 1	34.18	18.84	3-113
PART 2	34.28	16.50	0-123
PART 4	40.63	15.13	17-113
PART 7	24.82	24.16	3-168
PART 9	33.58	15.86	10-108

$p < 0.05$