Phonotactic Variations in English Spoken by Cape Verdean Americans in The Ratty

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Introduction

It is commonly known that variations to 'standard' English pronunciation exist around the United States through innumerable dimensions, including race, ethnicity, gender, age and socioeconomic status (Wolfram 2015). In particular, ethnicity and immigration status have been shown to have substantial impact on the phonotactic features of English spoken by individual Americans. For example, Craig (2003) investigated English words pronounced by African American children and discovered that there are certain phonotactic patterns common among most children. Similarly, Newlin-Łukowicz (2015) observed phonotactic patterns characteristic of the English spoken by first-generation Polish American immigrants in New York and demonstrated how these patterns were derived from the phonotactic characteristics of the Polish language.

The state of Rhode Island is home to more than 20,000 Cape Verdean Americans (American Community Survey). Throughout the early and late 20th century, people from these Atlantic islands emigrated to New England for economic opportunities. While there are large variations in age, citizenship status, and the amount of time living in the United States, many Cape Verdean Americans utilize both American English and Kriolu (sometimes referred to as Kabuverdianu), the vernacular language of the Cape Verde Islands. However, unlike other ethnic communities in the United States, little is understood about the phonotactic aspects and patterns of English spoken by Cape Verdean Americans.

This research investigates the patterns in phonotactic variations that exist between Standard American English, SAE, and vernacular English spoken by Cape Verdean Americans working at Brown University Dining Services in Providence, Rhode Island. Through an

English-word sampling of six Cape Verdean American workers, phonotactic patterns among the participants were identified and analyzed.

We hypothesize that the differences that exist between the phonotactic features of the sample and those of SAE can be reasoned and derived from the phonotactic rules that exist in Cape Verdean Kriolu (Baptista 2003; Jürgen 2013). Precisely, we predict that the participants' pronunciations of English words will be shaped by the phonotactic rules of the Kriolu language, most notably for English words that utilize phonemes not found in the Kriolu sound inventory.

Method

(I) Participants

The participants are six Cape Verdean Americans who work at the Sharpe Refectory ("The Ratty") for Brown University Dining Services. They all speak Cape Verdean Kriolu and English, although their ability to communicate in these languages varies. Prior to data collection, participants answered a brief questionnaire to facilitate a better understanding of the features of their pronunciations.

The participants' amount of time spent living in the United States ranged from 19 to 33 years and averaged to approximately 30 years. Participants were asked this, as, hypothetically, the more time an individual spends being exposed to a new language, the more likely they are to develop an affinity for the language (Duursma 2007). Another way we evaluated the subject's familiarity and/or exposure to SAE is by grouping participants into two categories: those who underwent an ESL program and those who did not-- of which the latter is predominantly comprised of individuals who immigrated as adults.

It is also important to note that while all of the participants identify as Cape Verdean, they vary in the islands from which they grew up. The participants' homes ranged from the islands of Sao Nicolau in the northern Barlavento Islands to Santiago and Brava in the southern Sotavento Islands. Kriolu has substantial variation among the islands, especially between the Northern and Southern isles (Baptista 2003). The dialect of Kriolu an individual speaks may have affected the realization of English words.

Additionally, participants spoke languages besides English and Kriolu. As the official language of Cape Verde is Portugese, a majority of participants are fluent in Portugese. Additionally, half of the participants are conversationally fluent in a Spanish. Two participants noted having lived in other countries such as the Netherlands and France, respectively speaking Dutch and Kriolu. For those participants, phonotactic features of non-Kriolu languages may also modify English pronunciation.

	Vicky	**Jossara**	**Jessica**	**Valdy**	**Octavio**	**Benvida**
Gender	F	F	F	F	M	F
Age	56	30	35	52	47	45
Place of Birth	Brava	Praia	Praia	Sao Nicolau	Sao Nicolau	Brava
Years in U.S.	20	23	19	30	33	20
Languages	English, Kriolu, Portuguese, Spanish	English, Kriolu, Portuguese	English, Kriolu, French	English, Kriolu, Portuguese, Spanish	English, Kriolu, Portuguese, Spanish	English, Kriolu, Dutch
ESL	No	Yes (highschool)	Yes (highschool)	No	Yes (highschool)	No

Figure 1: Table of Characteristics of Research Participants

(II) Data Collection and Analysis

Following the model previously done in Craig (2003), this research used a word list of 50 words commonly used in the English language. In a quiet room, participants were shown the prepared word list and asked to pronounce each word as they would say it in everyday life. If a participant did not comprehend the word, they were able to see an image representing the word. If the participant still did not know what the word was, they skipped the word. Skipped words were omitted from the collected data. The voices of the participants were digitally recorded using an iPhone X and the app VoiceRecorder Pro.

We ensured that all of the words chosen for the sample are either words frequently used in daily adult life (such as *apple*, *kids*, and *Thursday*), proper nouns frequently used by the participants (such as *Thayer* and *Rhode Island*), or culinary terms used in the kitchen (such as *sugar* and *reheat*). We also attempted to represent as many different consonants and vowels as possible, including those that are not frequently used in the Cape Verdean Kriolu language.

1 pizza [pitsə]	

Figure 2: Example of word list and images used for language sampling.

Phonotactic variations between Cape Verdean American English and SAE were identified in a two-step process. First, the audio-recordings were transcribed to IPA by members of the research group. To ensure accuracy, two people separately performed the transcription

process. When there was a difference between the created transcriptions, the word was discussed, and the "better" transcription was used. After this process, all consonant differences between SAE word pronunciations and the IPA transcriptions of the participants were marked. If more than 4 out of the 6 participants showed a common phonotactic feature different from SAE, it was identified as a "more frequent phonological change." If more than 2 out of the 6 participants showed a common phonotactic feature different from SAE, it was identified as a "less frequent phonological change." Other phonotactic differences were conceived as individual variation, not representative of Cape Verdean Americans as a whole. It is also worth noting that a second round of data collection occurred following the transcription and analysis of the first data sample. This was done to collect examples of phonemes of interest in varying sound environments; the second word data list contained 15 words testing 3 phonemes, /θ/, /z/, and /v/, to further analyze phonotactic realizations unique to Cape Verdean American English. However, due to time constraints and the busy schedule of the Ratty workers, this data was only able to be collected one time.

Results

(I) More Frequent Phonological Changes

(i) Th-stopping

For all research participants, the voiced and voiceless dental fricatives (/ð/ and /θ/) had a tendency to be realized as voiced and voiceless alveolar plosives (/d/ and /t/) . For example, *Thayer* [θɛɪɚ] was often articulated as [tɛɪjɚ], and *mother* [mʌðɚ] as [mʌdɚ]. This phonological change is commonly known as *Th-stopping* (Drummond & Dray 2015). When the voiceless

dental fricative was changed to /t/, there was variation in terms of aspiration ([tʰ]) and duration ([t‿]). Additional data collected show that Th-stopping happens regardless of the location of the phoneme /θ/ within the word.

Participants	**Vicky**	**Jossara**	**Jessica**	**Valdy**	**Octavio**	**Benvida**
Thayer [θɛɪə˞]	θɛɪjə	tɛɪjə˞	tɛɪjə˞	tʰɛɪjə	θɛɪə˞	tɛɪjoʊ
this [ðɪs]	dɛɪs	dɪs	dɪs	dɪs	ðis	dɪs

Figure 3: Th-stopping observed among participants.

The process of Th-stopping among the participants is consistent with the phonemic limitations of Cape Verdean Kriolu. Dental fricatives do not exist in Kriolu (Lang 2013) and like other English speakers (Drummond & Dray, Newlin-Łukowicz 2013), it is likely that participants substituted the dental fricative with a sound easier to realize.

(ii) Devoicing of Labiodental Fricative /v/ and Alveolar Fricative /z/

All six participants showed a tendency to devoice the voiced labiodental fricative /v/ to its counterpart /f/. For example, the word *five* [faɪv] was realized as [faɪf], and the word *violin* [vaɪəlɪn] as [faɪlɪn]. Similarly, the voiced alveolar fricative /z/ also frequently became devoiced to its counterpart /s/. The word *jeans* [d͡ʒiːnz] was realized as [d͡ʒiːns], and the word *cousin* [kʌzɪn] as [kʌsɪn]. Additional data show that the voiced alveolar fricative /z/ is not devoiced when it is word-initial (the zero remained the pronunciation of [zɪɹoʊ]). Similarly, the voiced labiodental fricative /v/ is less likely to become devoiced if it is word-initial.

Participants	**Vicky**	**Jossara**	**Jessica**	**Valdy**	**Octavio**	**Benvida**
violin [vaɪ.əlɪn]	vaɪlin	faɪlɪn	vaɪ.əlɪn	NO DATA	faːɪlɪn	fɑɪlɪn
cousin [kʌzɪn]	kʌzən	kʌzɪn	kʌsɪn	kʌsɪn	kʌzɪn	kʌsɪn

Figure 4: Devoicing of /v/ and /z/ Fricatives

According to Lang (2013), both /v/ and /z/ are phonemes that exist in Kriolu. Thus, our data showed inconsistency with Lang's description of the Cape Verdean language (e.g. the participants tend to pronounce the word-final /v/ as /f/ even if /v/ is in the phonetic inventory of Kriolu.

(II) Less Frequent Phonological Changes

(i) Final Consonant Devoicing/Deletion of Alveolar Stops /d/ and /t/

The participants could be prone to devoice or omit alveolar stops when located at the end of words. For example, in the two words of *Rhode Island* [ɹoʊd aɪlənd], many of them realized the ending /d/ as a voiceless /t/ ([ɹoʊt] and [aɪːlənt]), or simply deleted the /d/ ([ɹoʊ] and [aɪlɛn]). Similar to the case of Th-stopping, the devoiced alveolar /t/ was articulated in different ways in terms of articulation and duration. The deletion of /t/ happened less frequently than the deletion of /d/, in words such as *president* [pɹɛzɪdən] and *yogurt* [joʊgɚ].

Participants	**Vicky**	**Jossara**	**Jessica**	**Valdy**	**Octavio**	**Benvida**
Rhode Island [ɹoʊd aɪlənd]	ɹoʊt aɪːlənt	ɹoʊdaɪlɪn	ɹoʊd aɪlənd̚	ɹoʊt aɪlənt^{h}	ɹoʊt̚ aɪlɛn	vɹoʊt^{h} aɪlənt^{h}

Figure 5: Devoicing and Deletion in *Rhode Island*

Previous research does not indicate a similar pattern in Cape Verdean Kriolu. However, according to Osbourne (1996), the phonological process in which syllable-final and word-final consonants are deleted is a common process in second language acquisition for many different language speakers, to simplify the word pronunciation.

(ii) Variation in Alveolar Approximant /ɹ/

Some participants realized the retroflex approximant /ɹ/ with a flap, while others used uvular or alveolar trills. For example, the /ɹ/ within the word 'crust' was frequently pronounced as [ɾ]. This variation is also consistent with previous observation on Cape Verdean Kriolu. Neves (2009) identified that different variations of the consonant /ɹ/ is used in Cape Verde, depending on word and context. The flap [ɾ], the uvular trill [R], and the alveolar trill [r] were all used depending on the island and the word. This explains the change that happens to this data with Cape Verdean Americans.

Discussion

The identified phonotactic variations between the collected data and SAE consisted of differences both consistent and inconsistent with the Cape Verdean Kriolu language. Phonotactic occurrences such as Th-stopping and variation in retroflex approximant /ɹ/ were closely connected with the characteristics of Kriolu, while other findings were not.

The questionnaire and data suggest those who came to the United States as teenagers were more likely to have been enrolled in ESL programs offered through local school districts than their peers who immigrated as adults. Thus, individuals who underwent an ESL course were considerably more proficient at producing and identifying sounds found within SAE's phonetic

inventory but not within that of Kriolu. For example, participants who took an ESL course -- Octavio, Jessica, and Jossara -- while enrolled in high school were noted as much more likely to produce interdental fricatives, a phoneme nonexistent in Kriolu, than those who had not taken ESL.

Limits & Conclusion

The sample size for this research was 6 people, which could be expanded in order to get a more accurate generalization of phonotactic rules that govern Cape Verdean American English. Another point of improvement is the method of transcription. While transcriptions were done through the human ear in this research, a digital recording software with data analysis abilities would allow us to get a more accurate representation of the variations that exist.

This research identified the unique features of a group of people rarely researched in academia in terms of foreign language adaptation. We discovered that like any group, the language of Cape Verdean American was affected by their

The English spoken by Cape Verdean Americans was greatly affected by their mother language, Kriolu. Although the participants' phonetic inventories are based on Kriolu, some of them were able to realize the pronunciation of phonemes nonexistent in Kriolu, possibly due to the contributions of other factors, such as length of residency in the US and the age at which they emigrated. We hope that this research encourages further investigation on the Cape Verdean American community and sheds light on their diverse language.

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