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Marie-Michelle Monéreau-Merry
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“MARIE MANJE LA POM NAN.”

**EXAMINING THE COGNITIVE PROCESS OF RESTRUCTURING AND ADVANTAGE
SELECTION IN THE DEFINITE ARTICLE SYSTEM IN HAITIAN CREOLE AMONG
U. S. BORN HERITAGE SPEAKERS OF HAITIAN CREOLE**

by

Marie-Michelle Monéreau-Merry

A dissertation submitted to the Graduate Faculty in Speech-Language-Hearing Sciences in partial
fulfillment of the requirements for the degree of Doctor of Philosophy,
The City University of New York

2017

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This manuscript has been read and accepted by the
Graduate Faculty in Speech-Language-Hearing Sciences
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for the degree of Doctor of Philosophy.

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THE CITY UNIVERSITY OF NEW YORK

Abstract

“Marie Manje La Pom Nan.”

Examining the Cognitive Process of Restructuring and Advantage Selection in the Definite Article System in Haitian Creole Among U. S. Born Heritage Speakers of Haitian Creole

by

Marie-Michelle Monéreau-Merry

Advisor: Valerie Shafer

The distributional patterns of heritage speakers' reanalyzed first language are often grammatically divergent from native speakers. Irrespective of the heritage language, there is converging evidence that the cognitive process of reanalysis of heritage languages is often evident in less salient properties of the language, such as inflectional morphology (Polinsky & Kagan, 2007). Therefore, Haitian Creole (HC) is a candidate for restructuring. In this investigation we compared the morphophonological patterns of the definite article system at the production and perception level between two groups of early learners of Haitian Creole (i.e. native speakers vs. United States (US) born heritage speakers).

The study examined the extent to which heritage speakers showed variability versus systematicity when employing the various forms of the definite articles (a, ã, nã, la, lã). Participants performed a translation production task, and two perception tasks administered through a forced-choice grammaticality judgment experiment using real noun phrases and non-word phrases. Dependent measures were (i) accuracy, and (ii) morphophonological patterns of reanalysis.

At the production level, the results of this investigation indicated significant divergence between heritage and native speakers in their translation production of the morphophonological form of the definite article system. Although variation was predominately noted among the experimental group, an emerging trend of systematicity at the production level was also observed.

Omissions followed by the overgeneralized determiner “*la*”, had advantage in selection among the competing alternatives. Thus “*la*” served as the dominant default property within the determiner inventory. The highest degree of destabilization occurred when the target form was “*ã*” and stabilization was most visible with “*a/ã*”. Thus, it was evident that sizeable populations of heritage speakers in this production task were reinterpreting the morphophonological rules of the definite article system.

Sociological variables such as self-rated proficiency and literacy were also correlated with the translation production experiment. No significant correlation was found between the two sociolinguistic variables and the production of the morphophonological form of the definite articles. Conversely, a significant negative correlation between phonemic cuing and accuracy was reflected among this cohort. Higher phonemic cuing (to facilitate access, if a participant could not find a word) was observed with lower definite article production scores. This occurrence indicated that heritage speakers who had difficulties with lexical access exhibited less native-like definite article proficiency.

Overall, in the production task seven heritage speakers yielded scores of 30 and above (out of 40 items). Measures from the social-language questionnaire indicated more robust input in HC during their childhood for these higher performers. Specifically, these seven speakers resided with grandparents who had limited English proficiency during their childhood.

In the perceptual domain the native speakers outperformed the heritage speakers by a wide margin in grammaticality judgment. The perception experiments consisted of two grammaticality judgment tasks. One involved real noun phrases and the second reflected non-word phrases. Both tasks yielded significant group differences. In both the production task and perception tasks the

definite article “ã” was the most unstable form. However, “la” and “a/ã” were also grammatically reinterpreted, but with slightly lesser frequency than “ã”.

A significant correlation was found between the self-rated proficiency and grammaticality judgments of the real noun phrases, and between self-reported literacy and grammaticality judgments of both real and non-word noun phrases. Heritage speakers who reported that they were literate as a result of attending liturgical services in the heritage languages (HC and French) yielded higher scores when compared to those who did not develop literacy skills in the heritage language. Thus, it appears that reading facilitates some level of native-like grammatical sensitivity among heritage speakers.

Among the U.S. born heritage speakers of HC, the variability in the data affirms the phenomenon of language evolution or the “indigenization” or adaptation process of the language operating in a new locality (Mufwene, 2008). Thus, the emerging trend of overgeneralization observed with the definite article “la” at the expressive level is arguably an indication of an unmarked property having advantage selection over marked features. It is plausible that high frequency features are less taxing on the working memory of heritage speakers and, thus, are easier to acquire (Anderson, 1977). According to our proposed theory, which we reference as the contact vernacular adaptation hypothesis, unmarked features in the heritage language are more adaptable to the process of language shift in a nouveau habitat, and have advantage in selection. Moreover, the flexibility of unmarked properties creates an openness for the inheritance of new features in a language during the “indigenization” or adaptation process in a new locality.

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TABLE OF CONTENTS

	Page
Abstract	iv
Acknowledgements	vii
List of Figures	xii
List of Tables	xiv
Chapter 1: Overview	1
1.1 Heritage Speakers	1
1.2 Heritage Language Continuum	5
1.3 Areas of Reanalysis Among Heritage Speakers	6
1.4 The Distribution of the Definite Article System in Haitian-Creole	10
1.5 The Morphophonological Rules of the Definite Articles	11
1.6 Patterns of Immigration Within the Haitian Diaspora in the United States	17
Chapter 2: Research Questions and Predictions	19
2.1 General Aims	19
2.2 Specific Research Questions and Hypotheses	19
Chapter 3: Methods	25
3.1 Participants	25
3.2 Experiments Analyzed for the Discussion	28
3.3 General Procedures	28
3.4 Sociolinguistic Questionnaire Form	29
3.5 Translation Production Task Experiment 1	29
3.6 Grammaticality Judgment Task Experiment 2	32

3.7 Grammaticality Judgment of Non Words Task Experiment 3	35
3.8 Translation Perception Task Experiment 4	38
3.9 Data Coding and Interrater Reliabilit	41
3.10 Statistical Analyses	42
Chapter 4: Results	43
4.1 Experiment 1: Results from the Definite Article Translation Production Task	43
4.2 Experiment 2: Results from Grammaticality Judgment Task with Real Noun Phrases	48
4.3 Experiment 3: Results from Grammaticality Judgment Task with Non-word Phrases	51
4.4 Correlating Accuracy with Self-Rated Proficiency Variables	53
4.5 Correlating Accuracy with Literacy Variables	55
Chapter 5: Discussion	58
5.1 Impetus of the Investigation	58
5.2 General Research Questions	58
5.3 Experiment 1: Differences in Heritage Speakers Patterns of Morphophonological Production	60
5.4 Experiment 1: Patterns of Definite Article Use in the Translation Production Task	61
5.5 Experiment 1: Phonemic Cuing and Proficiency in Definite Article Use and Duration Time in Translation Production Task	63
5.6 Experiment 1: Correlation Measures of Self-Proficiency and the Translation Production Task	64
5.7 Experiment 1: Correlation Measures of Self-Rated Literacy and the Translation Production Task	65

5.8 Experiment 2: Differences between Native Speakers and Heritage Speakers of HC in the Perception of the Definite Articles with Real Noun Phrases	66
5.9 Experiment 2: Correlation Measures of Self-Proficiency and Grammaticality Judgment of Real Noun Phrases	67
5.10 Experiment 2: Correlation Measures of Self-Rated Literacy and the Grammaticality Judgment of Real Noun Phrases	68
5.11 Experiment 3: Differences between Native Speakers and Heritage Speakers of HC in the Perception of the Definite Articles with Non-word Phrases	69
5.12 Experiment 3: Correlation Measures of Self-Rated Proficiency and the Non-word Grammaticality Judgment Task	70
5.13 Experiment 3: Correlation Measures of Self-Rated Reading Literacy and the Non-word Grammaticality Judgment Task	70
5.14 Differences between the Production and Perception Task	71
5.15 Comparison of Creole and Heritage Languages	72
5.16 Connecting the Results to the Contact Vernacular Adaptation Hypothesis	73
Chapter 6: Clinical Implications and Future Directions	78
6.1 Clinical Implications	79
6.2 Future Directions	80
Appendix A-Heritage Language Questionnaire Form	81
Appendix B-Translation Production Task	88
Appendix C-Real Noun Phrases	91
Appendix D-Non-word Phrases	93
Appendix E	95
Endnotes	100
References	101

List of Figures

	Page
Figure A. Examples of the noun phrases	33
Figure B. Experiment 3: Auditory and Picture Stimuli Utilizing Non-words	37
Figure 1. Heritage vs. Native mean accuracy	44
Figure 2. Translation Production of the Definite Articles Native vs. Heritage Speakers	45
Figure 3. Number of occurrences of each type of reanalysis pattern	46
Figure 4. Correlation between Definite Article Translation Production Score and Phonemic Cuing	48
Figure 5. Mean performance for Native and Heritage speakers on the Grammaticality Judgment Task for real words	49
Figure 6. Individual performance on the Grammaticality Judgment Task for real words	50
Figure 7. Proportion of allomorphs that were “incorrect” for real words	50
Figure 8. Group Differences between Native and Heritage Speakers on the Grammaticality Non-word Judgment Task	51
Figure 9. Individual Differences between Native and Heritage Speakers Non-word Judgment Task	52
Figure 10. Proportion of allomorphs that were “incorrect” for non-words	52
Figure 11. Relationship between Self-Proficiency judgments and performance on the Translation Task	54
Figure 12. Relationship between Self -Proficiency judgments and performance on the real noun Grammaticality Judgment Task	54

Figure 13. Relationship between Self -Proficiency judgments and performance on the real noun Grammaticality Judgment Task	55
Figure 14. Mean Translation Definite Article Production Results	56
Figure 15. Comparison between Literacy levels and Non-word Phrase and Grammaticality Judgment Task	67

List of Tables

	Page
Table 1. Linguistic structures/functions maintained in Heritage Speakers	7
Table 2. Characteristics of Heritage Participants	27
Table 3. Distribution of substitutions for target allomorphs for Heritage Speakers	47

Chapter 1

Overview

1.1 Heritage Speakers

“Linguistic theory is concerned primarily with an ideal speaker-listener, in a completely homogeneous speech-community” (Chomsky, 1965, p. 3)

Language contact is a pervasive phenomenon induced by migration. This results in the blending inheritance of various linguistic properties and structures among a population of world languages. Therefore, linguistic homogeneity in a speech community is a theoretical concept that is challenged in areas of the world such as the United States. In the U.S. there is a robust presence of mass migration which is reflected in the linguistic landscape of America. Thus, in contact vernacular settings the perspective of classic linguistic theory which emphasizes homogeneity, is contradicted by applied linguistics. In reality, what is represented in the psycholinguistic infrastructure of bilingual and multilingual speakers is not linguistically homogenous such as in the case of heritage speakers in the United States. There are competing views when defining heritage speakers which will be discussed later in the review of the literature. However, we define heritage speakers as a distinct group of early bilinguals who are principle agents of language change and evolution due to various ecological conditions. These factors facilitate a series of cognitive processes employed among heritage speakers when conveying their ideas in the heritage language.

The language of immigrants in the U.S. generally does not remain unchanged relative to the language of the home country, due to forces of adaptation imposed by the dominant language(s) of the new locality (Tse, 2001). Immigrants maintain their maternal/paternal language with minor alterations in the nouveau habitat and acquire varieties of English with different degrees of proficiency. Many immigrants typically expose their children to the native language, attempting to

facilitate maintenance of the immigrant language. However, the developmental trajectory and adult language patterns in the heritage language among the second generation, born and raised in the host nation often differ. The outcome is an imperfect replication.

From the perspective of descriptivist linguistics these differences exhibit interlanguage representations. Moreover, they are rule-governed and characterized by systematization. Interlanguage representations are a unique linguistic system characterized by features from two competing languages developed by a language learner in their attempt to approximate the target language. Thus, the heritage language differences reflect the emergence of a new language variety as a consequence of language contact (Otheguy & Stern, 2010). However as posited by Otheguy & Stern (2010) heritage languages are rarely intergenerationally transmitted by the third generation due to language death in a new environment. Therefore, the lack of “grandchildren” among heritage languages in the U.S. does not permit the continuation of a natural evolutionary process of languages being formed as a consequence of contact.

An alternative viewpoint argues that these divergences are evidence of what occurs when there is limited access to the language, absence of continuous quantitative and qualitative input, and attrition (Polinsky & Kagan, 2007; Montrul, 2008). According to the incomplete acquisition hypothesis all these competing factors synchronically lead to an arrested heritage language development (Polinsky & Kagan, 2007; Montrul, 2008). Moreover, heritage speakers represent a population of idiolects with differential reproduction that lacks systematicity.

The concept of incomplete acquisition is generally claimed for late language learners rather than early learners. One popular theory to explain this notion is the critical-period hypothesis. This view posits that there are maturational constraints in the brain for the acquisition of language that result in incomplete or poor mastery of a language, particularly after puberty (Lenneberg, 1967;

Johnson & Newport, 1989). Therefore, failure to obtain native-like proficiency occurs among late second language learners due to closing of this critical period (Birdsong, 1999). The details of these age-related differences are somewhat controversial. Competing claims exist over the age range as well as the extent to which different components of language are affected, such as phonology and syntax (Patowski, 1990; Snow & Höefnagel-Hohle, 1982a). Overall, however, a general consensus among linguists is the agreement that older learners present greater difficulty in the area of phonology (Snow, 1987; Tahta & Lowenthal, 1981). The language differences observed in heritage speakers cannot be easily explained under this hypothesis, because these speakers begin learning the heritage language within the critical period.

The study of heritage speakers is an emerging area in the field of linguistics and education. Proposed models of what constitutes a heritage speaker have included both broad and narrow definitions (Polinsky & Kagan, 2007; Cummins, 2005). In the broad sense, Webb (2003) advances the idea that a “personal and emotional connection” to any language other than the majority language is what defines a heritage speaker. This idea echoes Fishman’s (2001:81) theory of “a particular family relevance to the learner.” Both definitions acknowledge the importance of what Fishman terms “heritage motivation,” which includes both family history and the intimate relationship between culture and language. The broad definition, for heritage speakers, has also been extended to *overhearers*; individuals who hear the heritage language in the home environment but are rarely addressed in that language and have extremely low proficiency.

In contrast, the narrow definition, as presented by Valdés (2000), argues that some level of communicative ability in the heritage language should be evident for a person to qualify as a heritage speaker. This interpretation is congruent to the concept presented by Baker and Jones (1998) which argues that having an affiliation with a particular ethnolinguistic group through

traditions and rituals does not legitimize a person as a heritage speaker, when there is an absence of knowledge of the language.

For the purpose of this study, the narrow definition proposed by Valdés (2000) and the competing viewpoints of Polinsky & Kagan (2007), Montrul (2008), Otheguy (2013), Wong-Fillmore (1991) and theories adopted by Mufwene (2008) in contact-vernacular studies will be employed in describing our extended definition of heritage speakers. The term heritage speakers can be specified as individuals who are reared in a home environment where a language other than the societal language is spoken (Valdés, 2000). They are early bilinguals (simultaneous or sequential), whose home language comes into contact with the societal language which results in “indigenization” in the new locality. As aforementioned, heritage speakers are principle agents of language change. The outcome produces varieties characterized by hybridity such as “Spanglish”, “Kringlish” or “Franglais” which is an adaptation process that is normative in the evolutionary trajectory of language change (Otheguy, 2013; Mufwene, 2008). Moreover, as a result of language shift, heritage speakers lose or “restructure” their heritage language while gaining another (Wong-Fillmore, 1991). In this study we describe language shift as a phenomenon that induces language dominance and preference towards the societal language. This results in the reduction of input in the heritage language which generates the occurrence of reconstruction. Formal education is a catalyst for language shift that facilitates an interruption in heritage language development, which over time is accompanied by attrition (Polinsky & Kagan, 2007; Montrul, 2008). Heritage speakers do not exhibit fossilization in the language. In other words, the heritage language does not remain frozen at the point of the interruption. Rather it experiences a basilectilization process which is marked by competing alternatives within the heritage language continuum. Basilectilization is a phenomenon induced by cognitive processes exhibited by heritage speakers as they reinterpret the

rules of the target language. This process results in divergence from the target language over time. Crucially, heritage speakers have an early knowledge of the heritage language that falls within a strict view of critical period (under 5 years of age). They exhibit various levels of proficiency, but are dominant in the societal language. In this proposed study, the experimental participants fulfill the criteria of the aforementioned narrow description of heritage speakers.

1.2 Heritage Language Continuum

The developmental path of heritage languages embodies the principles of both first and second-language development (Montrul, 2008). Parallel to first language acquisition, exposure to the heritage language occurs from birth and is acquired naturalistically and implicitly, but, similar to second language acquisition, there is great variability in the quantitative and qualitative input received from the environment. The nature of this input will contribute to where heritage speakers fall along the heritage language proficiency continuum. Where heritage speakers are situated along the continuum is determined by the composition of their interlanguage mental representation and the degree of cognitive reanalysis. Reanalysis or restructuring can be characterized as a process that involves cognitive strategies resulting in the reorganization of the mechanical system of the language in an attempt to convey the intended meaning in the heritage language (Mufwene, 2008). The manifestation of these cognitive-linguistic behaviors is characterized by convergence towards the dominant language, overgeneralization, interlanguage representation and structural reduction. Irrespective of the heritage language, heritage speakers engage in the process of reanalysis or restructuring.

According to Polinsky and Kagan's (2007) model, the heritage language continuum is marked by a range of differential reanalysis due to the heterogeneous composition of this population. Heritage speakers represent a population of idiolects with differential reproduction.

Variations among languages account for multiple dialects within a language; therefore, the baseline does not necessarily correspond to the standard form. Thus, the baseline comparison for reanalysis is the variety that a heritage speaker is exposed to in the home (Polinsky, 2008).

Operating within the boundary closest to the baseline along the continuum are acrolect speakers; they exhibit low levels of reanalysis, which generally corresponds to high proficiency in the language. Within the intermediate level are mesolect speakers, who demonstrate moderate levels of reanalysis, generally corresponding to moderate proficiency. Represented at the furthest end along the continuum are basilect speakers, who present evidence of high reanalysis, generally corresponding to low proficiency level.

For the purposes of this investigation, the terms *acrolect*, *mesolect*, and *basilect* will be avoided when discussing interlanguage mental representation in the heritage language. Creolists may argue that the aforementioned terms describe varieties rather than levels of proficiency. Secondly, the language of study in this research is Haitian-Creole, a romance Creole. Therefore, utilization of the terms acrolect, mesolect, and basilect would overlap and may be distracting to the reader. In lieu of these references, native likeness in Haitian-Creole will be conveyed in the terms of low reanalysis, moderate reanalysis, and high reanalysis.

1.3 Areas of Reanalysis Among Heritage Speakers

Heritage language structures and functions are unstable, and often reanalyzed, but not equally across or within the language domains (i.e. syntax, semantics, phonology, morphology) (Polinsky, 2008; Montrul & Bowles, 2008; Sekerina & Trueswell, 2011). Heritage speakers generally acquire the major syntactic patterns while peripheral grammatical constructions that are less salient such as inflectional morphology are vulnerable to restructuring. Table 1 presents some

of the common properties of heritage languages that are restructured in the subsystem of the language.

Table 1. Linguistic structures/functions that are commonly reanalyzed or maintained in Heritage Speakers.

Category	Reanalyzed	Maintained
Morphosyntax and Phonology	-Reduced morphology; -Agreement restructuring; -Reinterpretation of morphophonemic rules for gender; - -Omission of obligatory preposition; -Unmarked possessive constructions	Native like phonology
Semantics	-Restructuring of gender categories and classifier system; -Reinterpretation of the preterit/imperfect distinction; -Reduction of differential registers; -Low lexical proficiency; -Aspectual pairs are lost, one is maintained; compromised comprehension of object relative clauses	Knowledge of home vocabulary
Processing Factors	-Word retrieval difficulty; -Reduced speech rate	
Literacy	-semi-literate or illiterate -poor writing skills	

In this proposed study the patterns of processing morphophonemic rules, that are particularly applicable to nouns, are of particular interest, because the determiner system in Haitian Creole is morphophonologically governed. The selection of the determiner form (allomorph) is based on the phonological shape of the lexical item (usually a noun) in final position.

Heritage speakers of Russian show reanalysis of gender marking on nouns that is somewhat similar to developmental patterns of reanalysis in monolingual children acquiring Russian as an L1. The Russian language contains a three-way gender system, with feminine, masculine, and neuter

nouns. The statistical distribution of the nominal lexicon is composed of 46% masculine nouns, 41% feminine nouns, and 13% neuter nouns. In addition to being governed by declensional type and semantic gender, phonological factors dictate the assignment of gender. The final position of the noun provides pivotal information with respect to the selection of gender. By age three most monolingual native Russian-speaking children are able to differentiate between masculine, feminine, and neuter nouns (Polinsky, 2008). However, problematic areas among native Russian speaking children are evident in masculine nouns ending in a vowel (e.g. *papa*, “daddy”), which are often regarded as feminine. Additional errors include the interpretation of feminine nouns concluding in a palatalized consonant as masculine, for example *mysʹ* (mouse). This category of error continues to manifest itself beyond the age of three years and is prevalent until 7.9 years of age (Polinsky, 2008).

Stem-stressed neuter nouns are also a developmental challenge. For instance, if the unstressed vowel of a noun is accentuated or maintained, the noun is interpreted as feminine in form (e.g. *poleno*, “log”). In contrast, when the final vowel of a stem-stressed neuter noun is omitted, it is regarded as a masculine noun (e.g. *jabloko* > *jablok*, “apple”) (Polinsky, 2008). These developmental reinterpretations have been reported among heritage speakers of Russian. The age of bilingual acquisition (L2 exposure to the host language) and the amount of input in the heritage language may partly determine the degree of reanalysis.

Language transfer is a structural reanalysis commonly exhibited by heritage speakers, in which a structure/function in one language influences a similar structure/function in the other language (i.e. Au, Knightly, Jun, Oh, & Romo, 2008; Cuza & Frank, 2011). Furthermore, knowledge of a structure in one language can influence the judgment of a grammatical construction in another language, if the structures are asymmetrical. Consider, for example, how the allowance

of bare plural noun phrases is permissible in Germanic languages such as English or German in generic contexts (e.g. “Boys play basketball”). However, in various Romance languages such as French, the omission of plural determiners is a grammatical violation (e.g. *Les chiens ont des queues*/**Chiens ont...*).

Several studies support the suggestion that language transfer can account for some reanalysis patterns. Kupisch & Pierantozzi (2010) examined the use/interpretation of definite articles among German and Italian monolingual and bilingual children. The results indicated an overgeneralization of bare nouns in various ungrammatical contexts among Romance heritage speakers who were dominant in German. Similarly, in generic contexts (e.g. “Boys like machines”), Spanish heritage speakers exhibited transfer effects from English into Spanish on tasks that required the interpretation of definite articles. However, their interpretation of definite articles in inalienable possession contexts was unaffected by the societal language (Montrul & Ionin, 2011).

In another study that addressed the concept of language transfer, Serratrice et al., (2009) examined the metalinguistic abilities of bilingual children's sensitivity to specificity and genericity in the domain of plural noun phrases in symmetrical and asymmetrical language pairs. The participants in this study consisted of English-Italian and Spanish-Italian bilingual children and their monolingual peers in the respective languages. The administered tasks required grammaticality judgments in both English and in Italian. Among the English-Italian participants their knowledge of English interfered with their ability to differentiate between grammatical and ungrammatical sentences in Italian because plural bare noun phrases are acceptable in Germanic languages. Moreover, the English-Italian bilinguals demonstrated significantly more inaccuracies than both the monolinguals and the Spanish-Italian bilinguals by accepting ungrammatical plural noun phrases in generic contexts in Italian. The English-Italian bilinguals were more likely to reject

noun phrases with a definite article.

In sum, there is converging evidence that heritage speakers show differences in knowledge of morphophonological patterns for nouns and noun phrases in the heritage language. In addition, although languages are not identical, there is a fundamental commonality among heritage speakers *irrespective of the language*. As a consequence of language contact, heritage speakers can show the appearance of arrested language development, presumably due to reduction of continuous input, and cross-linguistic influences on the heritage language. Differences in language patterns of heritage speakers may be a result of the cognitive process of reanalysis and/or incomplete acquisition. One goal of this proposal is to examine to what extent differences in morphophonemic patterns of determiner marking in Haitian heritage speakers are systematic, and, thus could be characterized as an emergence of a new variety rather than an incomplete acquisition. However, incomplete acquisition in a language can arguably be one of the variables that facilitate a new variety because it creates the context for cognitive reanalysis which is a reinterpretation of grammatical rules.

1.4 The Distribution of the Definite Article System in Haitian-Creole

The language of study in this investigation is Haitian-Creole, henceforth HC. Although genetically related to a regional French variety, features from the Ewe-Fon groups are significantly present in its properties. HC has been identified as a determiner language since the definite determiner *la* along with its allomorphs and dialect variants is lexical (Zribi-Hertz & Glaude, 2006). The structure and semantic properties of noun phrases in the HC system is characterized by subtle complexities.

The definite articles in HC are situated to the right of the noun. The postposed definite determiners [a, ā, nā, la, lā] are morphophonologically constrained by nouns that precede them.

- 1) bekàn madam nan
bicycle woman Det
the woman's bicycle

In HC the definite articles are “obligatory anaphoric” when conveying specificity (Lefebvre, 1998). In the context of generality, however, the omission of the determiner is also grammatically acceptable and contains an ambiguous meaning which either represents an item or an indefinite quantity. These differences are illustrated below in the following examples:

Utilization of the Definite Article Omission of Definite Article

- | | |
|------------------------|-------------------------------|
| 2) Mwen pe chat la | 3) Mwen pe chat |
| I afraid cat DET | I afraid cat (Sing or Plural) |
| I'm afraid of the cat. | I'm afraid of cat(s). |

In examples 2) and 3) both sentences are grammatically acceptable. The projection of the determiner *la* in example 2), *Mwen pe chat la*, conveys specificity. However, in example 3), *Mwen pe chat*, the sentence interpretation is ambiguous and can indicate that the individual is afraid of a specific cat or an indefinite quantity of cats. In the absence of the determiner, contextual information is used in inferring the appropriate semantic meaning.

1.5 The Morphophonological Rules of the Definite Articles

The distribution of the determiners in HC is characterized by a complex morphophonological system (Valdman, 1978). In the sections below, the semantic roles of the definite determiner are described. The expression of the different allomorphs is indicated below with a modified illustration from Nikemia's (1999) description.

Standard Varieties

The definite article [la] generally occurs with lexical items ending with an oral consonant that is preceded by an oral vowel, such as in the noun phrase *chat la* - the cat. More examples are given below:

A) allomorph [la]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
4) /malad + det/ ⁱⁱ	maladla	the sick
5) /ʃat + det/	ʃatla	the cat
6) /liv + det/	livla	the book
7) /bagay + det/	bagayla	the thing

When the final segment of a noun is an oral consonant that is preceded by a nasal vowel, the allomorph is [lã], such as in the noun phrase *bank lã* - the bank (see examples 8-11).

B) allomorph [lã]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
8) /bãk + det/	bãklã	the bank
9) /plãt + det/	plãtlãl	the plant
10) /lãp + det/	lãplã	the lamp
11) /mãg + det/	mãglã	the mango

Lexical items that end with a nasal consonant require the allomorph, [nan], as in the noun phrase *madam nan*, the lady (examples 12-14).

C) allomorph [nã]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
12) /madam + <i>det</i> /	madamnã	the lady
13) /maʃin + <i>det</i> /	maʃinnã	the car
14) /kaban + <i>det</i> /	kabannã	the bed

Nouns ending with a vowel, require the definite article, [a], such as in the noun phrase, *papa a*, “the father” (examples 15-17).

D) allomorph [a]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
15) / Papa + <i>det</i> /	papaa	the father
16) / Kado+ <i>det</i> /	kadoa	the gift
17) /mato + <i>det</i> /	matoa	the hammer

Nouns ending with **nasalized vowels require** the allomorph [ã], as in the noun phrase *chen an*, “the dog” (examples 18-20). In addition, if a word ends in *mi* or *mou* or *ni* or *nou*, it requires [ã] (examples 21, 22):

E) allomorph [ã]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
18) /Kotõ+ <i>det</i> /	Kotõã	the cotton
19) /Papiyõ+ <i>det</i> /	Papiyõã	the butterfly
20) /ʃ ẽ+ <i>det</i> /	ʃ ẽã	the dog

F) allomorph [an]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
21) / <i>Fanmi</i> + <i>det</i> /	<i>fãmiã</i>	'the family'
22) / <i>Mi</i> + <i>det</i> /	<i>miã</i>	'the wall'

Dialect Variations

As in any language, varieties exist in Haitian Creole associated with the different regions and social dialects on the island. Valdman (2010) reports on the phenomenon of the nasalization of the definite article among bilingual members of the elite class in Port au Prince, at least in samples collected on the island in the mid-1990s. This social language change has been documented in spontaneous speech discourse and is predominately observed in females of the younger generation (Valdman, 2010). Data collected from discourse analysis demonstrated that the participants in the study, who ranged between the ages of 18 and 25 years, were more likely to produce utterances such as *Chat lan bèl* (The cat is pretty) compared to participants who were older than 45 years of age. The older participants were more likely to produce the *la* allomorph following a consonant-final noun (e.g. *Chat la bèl*).

In addition, for this younger generation, [lã] can be employed rather than [la], following nouns ending with consonants for some native speakers. For example:

G) allomorph [lã] in lieu of [la]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
23) / <i>malad</i> + <i>det</i> /	<i>maladlã</i>	'the sick'
24) / <i>ʃat</i> + <i>det</i> /	<i>ʃatlã</i>	'the cat'
25) / <i>liv</i> + <i>det</i> /	<i>livlã</i>	'the book'
26) / <i>bgay</i> + <i>det</i> /	<i>bagaylã</i>	'the thin'

A similar phenomenon of nasalization is also observed with the determiner allomorph [a] following a noun ending in a vowel. Specifically, the allomorph variation [ã], is used in the northern region of the island as an alternative to a (Examples 27-29).

H) allomorph [ã] in lieu of [a]

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
27) /Papa + <i>det</i> /	papaã	‘the father’
28) /Kado+ <i>det</i> /	kadoã	‘the gift’
29) /mato + <i>det</i> /	matoã	‘the hammer’

The [lã] variant rather than [nã] following nouns ending in a consonant is also evident in other regions of the island (Examples 30-32).

<i>Stem + Definite Article</i>	<i>Realized</i>	<i>Gloss</i>
30) /madam + <i>det</i> /	madamlã	‘the lady’
31) /maʃin + <i>det</i> /	maʃinlã	‘the car’
32) /kaban + <i>det</i> /	kabanlã	‘the bed’

Within the determiner system there exists a subset of nouns ending with a nasal or non-nasal rounded vowel that induce epenthesis of [w] in the left periphery of the determiner *ã* (Nikema, 1999) (examples 33-35).

Insertion of [w]

33) /tigosõ + <i>det</i> /	tigosõwã	‘the boy’
34) /bõbõ+ <i>det</i> /	bõbõwã	‘the cookie’
35) /bato+ <i>det</i> /	batowã	‘the boat’

Similarly, insertion of the semi-vowel [j] is observed with nouns that end with a vowel (examples 36-38).

Insertion of ([j])

36) /lapli + <i>det</i> /	laplija	‘the rain’
37) /lapɛ̃ + <i>det</i> /	lapɛ̃jã	‘the sheep’
38) /papje + <i>det</i> /	papjeja	‘the paper’

Plurality in the Definite Article System

The determiner /yo/ expresses plurality and definiteness and is situated on the right periphery of the noun (Zribi-Hertz & Glaude, 2006). When the plural marker /yo/ is used, the singular definite articles are generally omitted in the majority of Haitian-Creole dialects. However, the northern region of the island demonstrates evidence of a singular definite article +yo linear ordering, as indicated in the following (examples 39-40) (Zribi-Hertz & Glaude, 2006). In both examples the noun phrases are semantically equivalent.

39) Vach yo
Cows PL
The cows

40) Vach la yo
Cows the PL

In summary, determiner concordance in Haitian Creole is largely governed by the phonology of the final segment (vowel or consonant) or final two segments (vowel+consonant) of a noun. There are some social and regional variations, but certain combinations are never found for native listeners (e.g. final non-nasal consonant and nan). One question of the current proposal is whether heritage listeners will demonstrate phonologically governed patterns of selection/judgment of the determiner allomorphs or whether selection/judgment will be randomized or systematized.

1.6 Patterns of Immigration Within the Haitian Diaspora in the United States

A significant influx of Haitians to the U.S. occurred in the late 1950s and early 1960s, soon after Francois Duvalier (“Papa Doc”) named himself President-for-life (Zephir, 1996). Political oppression forced many professionals and intellectuals to seek refuge in the U.S. and Canada (Zephir, 2001; Dejean, 2004). This exodus of the former elite and educated Haitians (of higher socio-economic status [SES]) left Haiti with less skilled individuals (Foster, Charles, Valdman, & Albert, 1984). By the mid-1980s, Haitians of lower SES began to join the Haitian urban middle and upper class in North America (Zephir, 2003). In the U.S. they have primarily settled in Florida, Georgia, Illinois, Massachusetts, New Jersey, and New York. Students of Haitian descent are significantly represented in New York City public and parochial schools, primarily in the boroughs of Brooklyn and Queens. Although the linguistic landscape of this ethnolinguistic community is multilingual because it involves three languages (HC, English, and French), HC is the vernacular that binds and marks this ethnic community (Spears, 2010; Zephir, 2003). At the time of this research, according to the 2010 U.S. Census 881,488 Haitian-Americans resided in the United States while 190,178 resided in the city of New York. According to the 2013 demographic report from the Office of English Language Learners over 41% of children enrolled in the New York City Department of Education reside in homes where English is not the primary language spoken in the home environment. HC was identified as one of the top 12 most common non-English language spoken in New York City among a cohort of 180 languages represented by English Language Learners in the New York City Department of Education. Despite the prevalence of HC in New York City and North America, it is underrepresented in bilingual psycholinguistic research. A primary goal of the current proposal is to acquire better knowledge of the language knowledge and skills of Haitian Creole Heritage speakers, in relation to their amount of language experience and

sociolinguistic factors, such as SES and community factors.

The relationship between language use and language proficiency in bilinguals

Many studies have examined the relationship between amount of language input/use, length of residence and language proficiency in late bilingual learners (Flege, et al., 1999; Bialystock, 1997). However, fewer studies have focused on the relationship of amount of language input and language proficiency in early bilinguals, in particular with respect to the heritage language. One of the aims of this study is to evaluate various sociolinguistic variables and to determine if there is a correlation between these variables and the degree of proficiency in the heritage language among early bilinguals.

Chapter 2

Research Questions and Predictions

2.1 General Aims

The underlying mechanisms of the psycholinguistic processes exhibited by heritage speakers involve a complex interaction of both internal and external sociolinguistic factors. This study examined the representation of the morphophonological form of the definite article system among U.S. born heritage speakers of Haitian-Creole. The stimuli utilized in this study are designed to reflect the dialect variations of the definite article systems spoken on the island in Haiti and in the U.S. Evidence suggests that among heritage speakers certain structural/functional relationships are more susceptible to the cognitive process of reanalysis than other relationships. Concordance of the noun and determiner in noun phrases of Haitian-Creole is one area that fits this description. This area of restructuring provide an impetus for this investigation.

2.2 Specific Research Questions and Hypotheses

The current investigation focuses on the following five empirical questions, which were addressed in three experiments (i) translation production task; (ii) grammaticality judgment of real noun phrases; and (iii) grammaticality judgment of non-word phrases. Reaction time will not be addressed in this study at this time. One additional translation grammaticality-judgment experiment was administered, but will not be included in this dissertation.

- 1) Are there differences between native speakers and heritage speakers of HC in the production of the definite articles?
 - a. Hypothesis 1. Heritage speakers will show less systematic patterns of selection of the definite article allomorph. In other words, their responses will not be clearly conditioned by linguistic context.

- b. Hypothesis 2. An alternative hypothesis is that heritage speakers will be systematic, but show a different pattern of rules than the native group.

These hypotheses were tested in a sentence translation task.

Research to Support Hypotheses for Question 1

The hypotheses addressed in the first research question is supported by studies which posit that along the heritage language continuum there is evidence of variability marked by differential cognitive restructuring patterns which lack systematicity (Polinsky & Kagan, 2007; Montrul, 2008). Alternatively, the second hypothesis supports the viewpoint of the emergence of new variety as a consequence of language contact (Otheguy, 2013). Under this hypothesis the structural divergence demonstrated by the heritage speakers reflects an adaptation process marked by competing alternatives and advantage selection in the morphophonological linguistic inventory. This evolutionary phenomenon is triggered by ecological conditions such as language shift in a new locality (Thomason & Kauffman, 1988; Mufwene, 2008).

- 2) What are the patterns of definite article reanalysis among heritage speakers in the translation production task?
 - a. Hypothesis 1. Heritage speakers will select an allomorph more frequently than others.
 - b. Hypothesis 2. Heritage speakers will favor “la”, because it is an “unmarked” and a salient property in the language and therefore has advantage selection.
 - c. Hypothesis 3. Heritage speakers will select “la”, particularly those who receive considerable input in French (as measured on the sociolinguistic questionnaire form). The dominant default property “la” will be more

prone to overgeneralization because it is a feature represented in both heritage languages (French and Haitian-Creole). As a result of the salient nature of the lexical item “la” in both vernaculars there will be less cognitive exhaustion on the working memory because it is more frequently processed than the competing alternatives in the language centers of the brain.

These hypotheses will be tested by examining the linguistic contexts for selecting different allomorphs in the translation production task.

Research to Support Hypotheses for Question 2

The aforementioned hypotheses addressing the second research question were formulated through the conceptual perspective of the Ecology Sensitive Model of Markedness. The principles proposed by Mufwene (2001) relate to contact vernacular studies conducted on Creole languages. As posited by Polinsky (2008) there are significantly although not exclusively overlapping similarities between heritage languages and Creoles. This study aims to build on this theoretical framework because Creoles were and Heritage Languages are both conceived in contact vernacular settings. Moreover, they are outcomes of an imperfect replication and they are products of normal linguistic evolutionary change as a consequence of contact.

Therefore, the restructuring theories utilized in the study of Creole languages will be employed when discussing the reanalysis patterns observed among heritage speakers.

Our predictions made on the pattern of overgeneralization with the determiner “la” were based on the concept of advantage selection among competing alternatives during the process of leveling in contact-induced vernaculars. According to principles of markedness, features such as the allomorph [la] is “unmarked” because it is a core property in the heritage language, and this core

property is innate and governed by universals. Due to the salient nature of this feature we applied the theoretical framework expressed by the Ecology Sensitive Model of Markedness, and predicted that “la” would have advantage selection over “marked” linguistic properties represented in the morphosyntactic feature pool (Mufwene, 2001).

Our hypothesis was also adopted from the viewpoint of Thomason and Kaufman (1988:51) on markedness relations. Thus they posit, “in general, universally marked features are less likely than unmarked ones to be transferred in language contact. Moreover, marked features which are the peripheral structures in a language are not dictated by universal principles and therefore are less likely to be acquired in contact settings” (Anderson, 1977).

3) Is there a relationship between proficiency of definite article use and proficiency in lexical access?

a) Hypothesis 1. Less lexical retrieval difficulties will be correlated with definite article proficiency.

This hypothesis will be tested by examining the extent to which participants need to be phonemically cued to help retrieve a word in the sentence translation task.

Research to Support Hypotheses for Question 3

The motivation to formulate our hypothesis for the third research query emerged from a study that examined knowledge of the Russian gender system (feminine, masculine, and neuter) among heritage speakers (Polinsky & Kagan, 2007). Evidence from this study suggests that slower speech rate was correlated with the degree of cognitive reanalysis in the gender system among heritage speakers. The participants who restructured the three-way gender system of Russian into a two-way gender system by disregarding the neuter form demonstrated slower speech rates. This phenomenon was characterized by word retrieval difficulties. Conversely, the participants who

maintained the three-way gender system with minor degrees of reanalysis exhibited less difficulties with lexical access. The conclusions drawn from Polinsky & Kagan's (2007) study clearly supports the aforementioned hypothesis on the relationship between definite article proficiency and rate of lexical access.

4) Are there differences between native speakers and heritage speakers of HC in the perception of the definite articles?

- a. Hypothesis 1. Heritage speakers will demonstrate systematic patterns of divergence in the grammaticality judgment tasks (real noun phrases and non-word phrases) when compared to native speakers.
- b. Hypothesis 2. Heritage speakers will demonstrate no clear pattern of divergence (real noun phrases and non-word phrases).

These hypotheses will be tested using two separate grammaticality judgment tasks (real noun phrases and non-word phrases).

Research to Support Hypotheses for Question 4

In addressing the fourth research question we based our hypotheses primarily on the studies presented in the review of the literature in this dissertation that examined the processing of morphophonemic rules in gender assignment, and language transfers on noun phrases in asymmetrical and symmetrical language pairs. These studies are strongly correlated to the grammaticality judgments tasks administered in this investigation (Polinsky, 2008; Serratice et al, 2009; Kupisch & Pierantozzi, 2010)

There is converging evidence that heritage speakers reinterpret rules in the heritage language. Therefore, the prediction of divergence was concluded based on these studies.

Additionally, in these studies there was a presence of divergence marked by differential patterns of

reanalysis among the heritage speakers. However, there was also evidence of the selection of features where the role of markedness was governing the process of evolutionary change as a consequence of contact. We will attempt to resolve these competing issues in our later discussion.

5) What sociolinguistic factors influence the pattern of definite article use?

a. Hypothesis 1. Heritage speakers who rate themselves as less proficient will demonstrate a higher density of reanalysis.

b. Hypothesis 2. Heritage speakers who define themselves as being literate in the heritage language will demonstrate native-like definite article proficiency.

These hypotheses will be tested using a self-proficiency, Likert rating scale and a social language questionnaire form.

Research to Support Hypotheses for Question 5

In our fifth and final research question, we examined if there was a correlation with self-proficiency rating and literacy-proficiency rating with proficiency attainment in the production and perception of the morphophonological form of the definite article system. Results from a study conducted on the internal and criterion based validity of the Language Experience And Proficiency - Questionnaire (LEAP-Q) by Marian et al (2007) revealed that self-reports were reliable indicators of language performance. Self-reported speaking proficiency was determined to be a reliable measure of attainment in second language performance. Whereas self-reported reading proficiency was an indicator of first language performance.

Chapter 3

Methods

3.1 Participants

Participants were recruited for this study via referrals and flyers posted in the New York City region. Nine early learners of HC between the ages of 19 and 44, who were born, raised and educated on the island of Haiti until early adulthood served as control participants. Based on their social-language profile these participants were trilingual. These control participants had a mean age of 28.67 (SD=9.29) years. They attended elite French medium schools in Haiti and began acquiring the English language at the age of eight years in the school system. In this setting, they studied HC as a subject whereas French was the language of instruction. All of the control participants completed high school in Haiti and then came to the US and all attended a four-year university and completed professional school or graduate school post-baccalaureate degrees. At the time of the study, mean length of residency in the U.S. was twelve years. According to the social language history obtained from a language background questionnaire, they frequently spent summer vacations with extended families that resided in the United States and in Montreal, Canada, during their childhood.

The experimental group consisted of 20, age-matched US-born heritage speakers with a mean age of 22.75 (SD = 6.78) years. These heritage speakers were dominant in the English language but received exposure to HC in the home environment as the native controls did also. The investigator judged their heritage language ability through informal conversations and based on their relatively good comprehension ability. Even if they responded with conversational appropriateness in English when the investigator spoke exclusively in Kreyol, they qualified as a participant in the study. The twenty heritage speakers were raised and educated in the U.S. Sixteen

out of the twenty participants indicated residing with grandparents with limited English proficiency and five attended liturgical services in both HC and French. The following twenty participants were reared in middle socioeconomic households. This determination was based on their parochial school educational experiences at the elementary and high school levels. With the exception of one heritage speaker, who stopped attending college during her junior year at Northeastern University, all the heritage participants were either currently enrolled in a four-year university or had achieved a college, professional or graduate school education as illustrated in Table 2 located below on the following page.

Table 2: Characteristics of Heritage Participants With Regards to Five Sociolinguistic Variables.

Heritage Speaking Participants	Socioeconomic Status during childhood	Resided with grandparents with Limited English Proficiency	Attended Liturgical Services In French and Kreyol	Educational Attainment	Attended Parochial School through HS
HS 1	Middle class	No	No	Attending College	Yes
HS 2 (Third Generation)	Middle class	No	Yes	Attending College	Yes
HS 3	Middle class	Yes	Yes	Attending College	Yes
HS 4	Middle class	No	No	Graduate School	Yes
HS 5	Middle class	No	No	College grad	Yes
HS 6	Middle class	Yes	Yes	Three years of College at Northeastern University and then dropped out.	Yes
HS 7	Middle class	Yes	No	Graduate school	Yes
HS 8	Middle class	No	No	Attending College	Yes
HS 9	Middle class	No	No	Professional school	Yes
HS 10	Middle class	No	Yes	Graduate school	Yes
HS 11	Middle class	No	No	Attending College	Yes
HS 12	Middle class	No	No	Professional School	Yes
HS 13	Middle class	No	Yes	Attending College	Yes
HS 14	Middle class	Yes	No	Attending College	Yes
HS 15	Middle class	No	No	Attending College	Yes
HS 16	Middle class	Yes	Yes	Attending College	Yes
HS 17	Middle class	Yes	No	Attending College	Yes
HS 18	Middle class	Yes	No	Attending College	Yes
HS 19	Middle class	Yes	No	Attending College School	Yes
HS 20	Middle class	Yes	No	Graduate School	Yes

None of the participants reported in this study were included if they had a prior history of neurological, psychological, learning, hearing, and/or visual impairment. This was determined by the participants' responses on a detailed social language questionnaire form (described below) and through interviews conducted by the principal investigator. One participant who was an audiologist by profession but had a neurological history of meningitis acquired at the age of 5 was excluded from the data analysis. All participants provided verbal and written consent. The consent form was written in English, because all participants were required to have a strong command of the English vernacular. After completing the experimental tasks, each participant was provided with a monetary compensation of \$20.00.

3.2 Overview of Design

Participants were given four experimental tasks and completed a questionnaire form to obtain sociolinguistic information. For this dissertation, the first three experiments, described below, are included. The fourth experiment will be presented in a future paper.

3.3 General Procedures

Each participant was tested individually in a quiet setting; this testing typically took place in the participant's home or in a quiet office at Iona College, or at the CUNY Graduate Center. The experimenter first described the experimental procedures to the participants, after which they were asked to sign a consent form. Participants were administered a sociolinguistic questionnaire form and four experimental tasks: (1) translation production task; (2) grammaticality judgment with real noun phrases on E-Prime; (3) grammaticality judgment with non-word phrases; and (4) translation grammaticality judgment tasks.

3.4 Sociolinguistic Questionnaire Form

The participants were administered a sociolinguistic questionnaire form (Appendix A) which contains sixty-four questions pertaining to various sociolinguistic experiences in the following categories: (i) gender; (ii) socioeconomic status during childhood; (iii) age of arrival of parents in the U.S.; (iv) residence with a non-English speaking grandparent during childhood; (v) personal ethnic identity; (vi) attendance at church services during childhood conducted in the ethnic language; (vii) attitudinal value towards the heritage language; (viii) residence in a community with a significant population of Haitian-Americans; (ix) birth order; and (x) educational attainment.

3.5 Translation Production Task - Experiment 1

3.5.1 Stimuli

In the first experimental task, forty English sentences that convey specificity by means of the definite article (“the”) were presented auditorily to the participants. Each sentence contained a nominal element that when translated into HC, required a specific allomorph of the definite article. The allomorphs are: [a, ã, nã, la, lã]. The nouns were composed of high frequency lexical items that were derived from household vocabulary (e.g. spoon, chair). The sentences were recordings of a native speaker of English. After recording, the stimuli were normalized for intensity using Sound Forge 4. All stimuli were presented at approximately 70 dB SPL.

The stimulus sentences required Haitian translations that made use of all allomorphs of the definite article. There were also dialect variations that have been considered in selecting sentences. Each of the five allomorphs [a, ã, nã, la, lã] were the expected translation of “the” for ten sentences (40 sentences total). Examples of each stimulus sentence were the following and also are exhibited in Appendix B:

1. Marie ate **the apple**. (Marie te manje pom nã)
2. **The house** is beautiful. (Kay la bel)
3. **The fish** died yesterday. (Pwason an te mouri hier)
4. **The knife** fell. (Kouto a tombe)

3.5.2 Procedure

The specific instructions were delivered visually and auditorily and are the following:

“You will hear English sentences auditorily. Then you will be required to translate each English sentence into Kreyòl. Translate the English sentences into the closest possible identical meaning in Kreyòl. For example, if I asked you to repeat a sentence in English such as “Nancy ate the turkey” you should respond by stating, “Nancy ate the turkey”. However, if your response is “Nancy ate turkey”, that sentence is not an exact repetition because the word “the” was removed from the sentence. This task does not require you to translate the English sentences word for word into Kreyòl. However, remember to translate the meaning of the English sentence as close as possible to Kreyòl.

Respond according to your abilities. All responses are acceptable. Before you begin the actual task, you will engage in a practice session. This will allow you to become familiarized with the task”.

Prior to the experiment, the participants engaged in five practice trials with feedback. The feedback consisted of pointing out if the participant produced an indefinite rather than definite article. After the practice trials, the participant proceeded with the experimental portion of the study and received 40 sentences to translate. Each sentence was presented once and then the examiner waited for the participant to translate before proceeding to the next sentence. If the participant had difficulty translating, prompts such as phonemic cuing, were administered. Phonemic cuing

involves the elicitation of the beginning sound of the word to trigger a response when an individual has difficulty accessing their knowledge with automaticity. If the participant was not responsive to phonemic cuing, then the examiner proceeded to the next sentence. Breaks were taken every eight sentences to minimize mental fatigue. The responses were recorded on a digital recording device for later, offline analysis. A high quality, Shure microphone was placed 6 inches from the speaker's mouth, and the volume adjusted during the practice trials to ensure quality recording.

3.5.3 Analysis

Sentence translations were transcribed using broad phonetic transcription. The target definite articles were encoded for the following:

- (i) Native-likeness
- (ii) Omission of the definite article
- (iii) Reanalysis of the definite article
- (iv) Inability to translate
- (v) Phonemic cuing due to word retrieval difficulties.

3.5.4 Predictions on the Translation Production Task - Experiment 1.

1) Restructuring behaviors among heritage speakers of HC will be characterized by overgeneralization and omissions.

2) The definite article *la* will be the most frequent selection, because it is robustly represented in both HC and the competing heritage language French.

3) One allomorph will be highly frequent, due to the influence of English, which has one definite article form.

4) Heritage speakers will have difficulty with lexical access and will require phonemic cuing to ameliorate word retrieval difficulties.

The responses were quantified in terms of “Native” and “Non-native” translations. “Native” translations are those that match with the definite article form selected by Haitian control participants (including dialect variants). Non-native translations are all other translations. In the first analysis, non-parametric Mann-Whitney U was used to determine whether the Heritage group differed in percentage of native responses, with 90% native used as the criterion. In the second analysis, non-native response forms were examined to determine whether one form was selected at a higher percentage rate rather than other forms and whether the phonological properties of the noun influenced allomorph selection. In the third analysis, Pearson’s r was utilized to determine if a correlation existed between phonemic cuing and the number of errors in definite article selection.

3.6 Grammaticality Judgment Task with Real Words - Experiment 2

To examine perceptual knowledge of definite article use in real noun phrases, participants made grammaticality judgments on auditorily presented sentences, some of which contain the correct, native form of the definite article and others that contain unacceptable forms. (Refer to Appendix C)

3.6.1 Stimuli

The forty nouns used in the translation task were employed in this task and paired with the five forms of the definite articles (*a*, *ã*, *nã*, *la*, *lã*). The noun phrases were recorded by a native speaker of Haitian Creole in a sound-shielded booth and ranged in duration from approximately 1000 ms to 1500 ms. The selected stimuli were normalized for intensity using Sound Forge 4.

Figure A. Examples of the noun phrases are the following:

1.  kravát la    the tie
- 2)  mont lan    the watch
- 3)  Kado a    the gift
- 4)  tren nan    the train
- 5)  kokad an    the ribbon

Pictures of the nouns were included to make sure that the intended noun was clear. The pictures were presented in color and the dimensions were 10 x 8 inches wide. Pictures of a smiley and a sad face were used for trial responses. A 100 ms, 1000 Hz tone was used as a warning signal that the trial is about to begin. All stimuli were normalized and presented at approximately 70 dB SPL.

3.6.2 Procedure

E-prime was used to deliver the 200 noun phrases with corresponding pictures (see Figure 2 below). First, participants heard a warning tone followed 500 ms later by the auditory noun phrase and visual picture (for the duration of the auditory stimulus). At the offset of the auditory stimulus, a response screen appeared showing a smiley and sad face. The participant selected one of these. The participant had 2 seconds to respond from stimulus offset.

If the participant perceived the response as accurate, the participant selected the smiley face with a mouse control. However, if the participant determined that the noun phrase was incorrect, he/she selected the sad face. Five practice trials were presented to the participants to insure that they

understood the nature of the task before starting the actual experiment with the directions illustrated below.

Instructions

“You are going to hear some phrases with a picture of the noun presented at the same time. Listen carefully and determine if the phrase sounds grammatically correct to you. If the phrase sounds correct then click on the picture with the happy face; however, if the phrase sounds odd, then click on the picture with the sad face. If you are not certain, make a judgment anyway. Respond according to the best of your ability. You will have 2 seconds to respond, so give your first impression, since you don’t have time to change your mind. We will start with five practice trials to make sure you understand the task.”

3.6.3 Analysis

Participants’ responses were coded for accuracy. In addition, non-native judgments were examined to determine whether particular allomorphs are preferred or whether participants exhibited any consistent patterns of choice (e.g., based on phonology of the noun). Reaction times were collected but will not be reported in this dissertation. Rather, reaction time will be analyzed at a later time to examine whether the Heritage listeners generally took longer to respond than the native listeners.

3.6.4 Predictions for E-Prime Grammaticality Judgment Task with Real Noun-Phrases- Experiment 2

We predicted:

- 1) Heritage speakers would show more “incorrect” responses
- 2) Heritage speakers would demonstrate slower reaction time, due to difficulties with lexical access in their mental lexicon in the target language.

3) Heritage speakers would demonstrate systematic patterns of “incorrect” judgments related to the phonology of the nouns.

3.7 Grammaticality Judgment of Non-words Task-Experiment 3

The purpose of this experimental protocol was to determine whether both native speakers and heritage speakers internalized these morphophonemic rules or acquired them with the selected nouns in their lexicon.

3.7.1 Stimuli

The stimuli for the third experimental task were similarly designed to those employed in Experiment 2 (see Figure 3). Instead of real words, 40 non-words were used containing two to four syllables that reflect the phonetic inventory of HC (Refer to Appendix D). Each of the five definite articles [a, ã, nã, la, lã] was paired with each of the pseudo-lexical items. The stimuli were created and judged for native-likeness by two native speakers. Two hundred non-word noun phrases were paired with images that were already piloted for unfamiliarity by three research assistants. Images that were in agreement and would appear unfamiliar were selected, while those with high agreement of familiarity were discarded.

3.7.2 Procedure

The procedure was largely identical to Experiment 2, except that the directions were slightly different, because it was necessary to explain the nature of the non-words to the participants. Experiment 3 always followed Experiment 2 in administration of the tasks. Thus, the participants practiced with the task using real words first, since the non-word task was more difficult.

The participants were provided with the following directions:

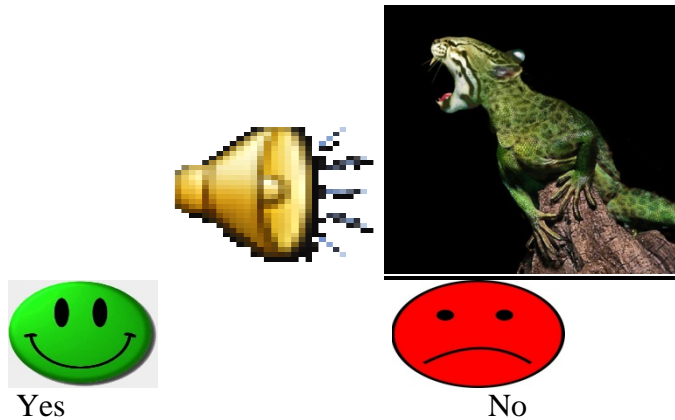
“You will hear phrases that contain words that do not exist in the Haitian-Creole vocabulary. However, the words model the same sound system as in Haitian Creole. For example, the word

“natra” sounds similar to “fatra” (garbage). Therefore, the phrase “natra a” or “natra an” may not exist in the language but yet they sound similar to phrases that exist in the Haitian-Creole language such as “fatra a” “fatra an”. You will hear phrases as the one described above and will make a judgment on whether or not the phrases sound like a possible word in the Haitian Creole language. If the phrases sound like a native-like possibility, click on the happy face. However, if the phrase appears as an impossibility, then click on the sad face. If you are uncertain make a judgment anyway. Remember you are being timed.”

Figure B. Experiment 3: Auditory and Picture Stimuli Presented to the Participants
Utilizing Non-words

Example: Non-word Task

*rapye lan
rapye a
rapye an



3.7.3 Analysis

Participant responses were coded for accuracy. In the first analysis group differences were determined through a non-parametric Mann-Whitney U statistical analysis. In addition, non-native judgments were examined to determine whether particular allomorphs are preferred or whether participants exhibit any consistent patterns of choice (e.g. based on phonology of the noun). Reaction time was collected but will not be reported in this dissertation. Rather, reaction time will be analyzed at a later time to examine whether the Heritage listeners generally took longer to respond than the native listeners.

3.7.4 Predictions for E-Prime Grammaticality Judgment Task with Non-word Phrases - Experiment 3

1. All participants were expected to show more “errors” than found for Experiment 2.

2. Native speakers would perform better on this task (and possibly, near ceiling) because they would apply their implicit knowledge of these phonological rules.
3. Heritage listeners would demonstrate more “errors”.
4. Heritage listeners would demonstrate systematic patterns based on the perception of the morphophonological form of the definite article system that would differ from native listeners.

3.8 Translation Perception Task - Experiment 4

The goal of this task was to determine whether heritage speakers are sensitive to definite article concordance in sentence contexts. As aforementioned although the task was administered and collected, the data was not analyzed for this dissertation. However, the design and the procedure of the task will be described below.

The experimental protocol for the fourth task involved 40 high-frequency lexical items embedded in sentences that were evenly distributed in groups of ten for each of the following definite article categories and their dialect variations.

Definite Articles and their Variations

a/ã,

nã/lã,

la/lã,

ã.

3.8.1 Stimuli

The forty lexical items were embedded into sentences with randomly selected determiners (*a, ã, nã, la, lã*) and other structures such as definite article omission, and the French prenominal determiner *la*. Three Kreyol sentences were constructed for each English sentence. For categories

(a/ã, nã/lã, la/lã) one sentence was incorrect, while the remaining two represented dialect variants. However, for the definite article ã there were two sentences that were incorrect since there is no dialect variation for the definite ã. Overall the stimuli consisted of 120 sentences that were presented on E-prime. Sentence lengths ranging between three- to eight-words characterized the stimuli. The stimuli were recorded by a native speaker and normalized for intensity. The sentences ranged in duration from 5 to 8 seconds.


3.8.2 Procedure


Similar to the aforementioned grammaticality judgment tasks, the presentation of the stimuli was controlled by a PC with E-Prime software. English and HC sentences were presented auditorily with a 10 x 8 inch picture of a loud speaker.


A response page included visual imagery of a smiley face, or sad face. Similar to the previous E-Prime tasks, a happy face represented native-likeness, while a sad face represented reanalysis or inaccuracy. The response time after presentation of the stimulus was 2 seconds. The participants were presented with the following directions:

“You will hear a sentence in English followed by a sentence in Kreyòl. Then you will be presented with a response page. If the sentence in Kreyòl represents an exact translation of the English sentence, then click on the happy face on the mouse control. However, if the sentence does not represent a translation equivalent, then click on the sad face on the mouse control. You will be timed during this procedure.”

Below is an illustration of the following task that was randomized when presented to the participants (Appendix E).

English Sentence  He put the garbage out.
HC sentence Li mete fatra a deyo

English Sentence  He put the garbage out.
HC sentence Li mete fatra an deyo.

English Sentence  He put the garbage out.
HC sentence *Li mete fatra la deyo

Response Page of the Translation Perception Task for Experiment 4



3.8.3 Analysis

Participants' responses were not analyzed or coded for accuracy. However, in the future non-native judgments will be examined to determine whether particular allomorphs are preferred or whether participants exhibit any consistent patterns of choice (e.g., based on phonology of the noun). Reaction times will also be examined in determining whether the Heritage listeners generally took longer to respond than the native listeners.

3.8.4 Predictions for the Translation Perception Task E Prime – Experiment 4

- 1) Native speakers will demonstrate more “correct” judgments.
- 2) Heritage speakers will exhibit more “incorrect” judgments, demonstrating difficulty differentiating between sentences that are grammatical and ungrammatical.

3) Heritage speakers may show patterns of judgment based on the phonology of the nouns (similar to what is predicted for experiments 2 and 3).

3.9 Data Coding and Inter-rater Reliability

Audio files for the translation production task were transcribed, and the focus of the transcription was on the production of the targeted definite articles. Participants' responses to each of the definite article tasks were categorized as follows: (a) correct, (b) reanalysis/substitution, (c) pre-nominal placement, (d) omission, (e) unable to translate, (f) phonemic cuing (providing the initial sound of a word), and (g) patterns of reanalysis. The distribution of errors/reanalysis was calculated.

With respect to Experiments 2 and 3 (real noun phrases and non-word noun phrases), the responses were coded for each experiment separately in the following categories: (a) correct, (b) incorrect, and (c) patterns of reanalysis of the definite articles. The distribution of errors was calculated for each participant. In addition, the errors were examined in relation to the phonology of the noun to identify a trend of systematic patterns (if any). Although reaction time was collected, this data analysis will be analyzed at a later time, and therefore will not be reported in this dissertation.

Data collected from Experiment 4 (the translation equivalent task) for each of the 120 experimental sentences was collected but not analyzed or coded for accuracy (correct/incorrect) or judged in relation to the control group and response time (RT). The data for this experiment will be reviewed in a future study.

V.G., a native speaker of HC and French served as a research assistant that provided inter-rater reliability. Inter-rater reliability was determined at 95% agreement rate. Training was conducted with the research assistant with respect to coding procedures and understanding dialect variations since V.G. is a native born speaker who spoke the unofficial standard form.

3.10 Statistical Analysis

In order to determine statistical significance, a non-parametric Mann-Whitney U test was performed for experiments 1 and 2. The tasks consisted of the translation production task and the real noun phrases grammaticality judgment task. Group membership (native speakers vs. heritage speakers) served as the between-subject factor for the analysis of the definite article translation production task and for the noun phrases embedded in the E-prime grammaticality perception task. A non-parametric test was selected due to the small sample sizes between the two groups ($N = 9$ Native speakers and $N = 20$ Heritage speakers). Pearson's r was utilized to determine if a correlation existed between the number of trials of phonemic cuing and the number of errors in the translation production task. Parametric analysis was conducted for experiment 3, which consisted of the non-word noun phrase grammaticality-judgment task. A t -test was administered to determine if parametric statistics could capture statistical significance within a small sample size of participants. Additionally, Pearson bivariate correlation coefficient was utilized to examine the relationship between the two sociolinguistic variables (i.e., self-rated proficiency level and literacy) and the measurements of definite article proficiency. A significance level $p < 0.05$ was used for all analyses.

Chapter 4

Results

In this present investigation, the results of three experiments will be reported:

i) Experiment 1: definite article translation production task; ii) Experiment 2: real noun phrases grammaticality judgment task; iii) Experiment 3: non-word noun phrases grammaticality judgment task.

4.1. Experiment 1: Results from the Definite Article Translation Production Task

The control participants performed at near ceiling level (ceiling performance is 40); they exhibited minor errors in selecting the correct morphophonological form of the definite articles on the translation production task ($M = 38.89$, $SD = 1.76$). In contrast, the heritage speakers demonstrated more instances of “errors” (reanalysis) ($M = 22.65$, $SD = 11.84$). The non-parametric Mann-Whitney U indicated that the two groups were significantly different ($z = -4.217$, $p = 0.001$). Figure 1 displays the average performance and standard deviation for each group and Figure 2 shows the individual performance. Among the heritage speakers in the definite article production tasks there is a display of considerable variability, which is consistent with the review of the literature on the heritage language continuum (Polinsky & Kagan 2007).

The eight heritage speakers who yielded a score of 30 and above reported on the social-language questionnaire that they resided with grandparents with limited English proficiency and conversed in HC bi-directionally with their grandparents. Specifically, during discourse with their grandparents, the conversation was composed exclusively of the HC language. Moreover, out of the eight participants who demonstrated low reanalysis, six of the participants reported being first-born children. Those who yielded scores of 32 and above out of the 40 stimulus items were first born.

The participants who exhibited high reanalysis (less than 15 of 40 items) responded on the questionnaire that they were reared in households where all members of the family predominately communicated in the English vernacular. Furthermore, they did not reside with grandparents and none were first-born children. For these participants, their diglossic experience with HC was more restricted when compared to the eight that performed closer to the native controls. Diglossia refers to the coexistence of more than one language or variety operating in a speech community. The term diglossia captures the bilingual experiences of heritage speakers in the United States, because heritage speakers navigate between two or more languages.

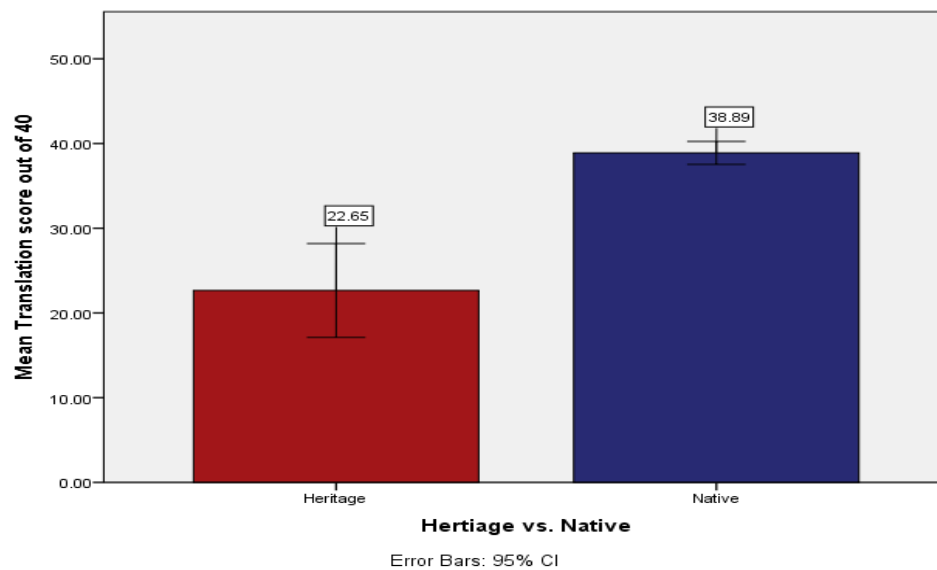


Figure 1. Heritage vs. Native mean accuracy (SD error bars).

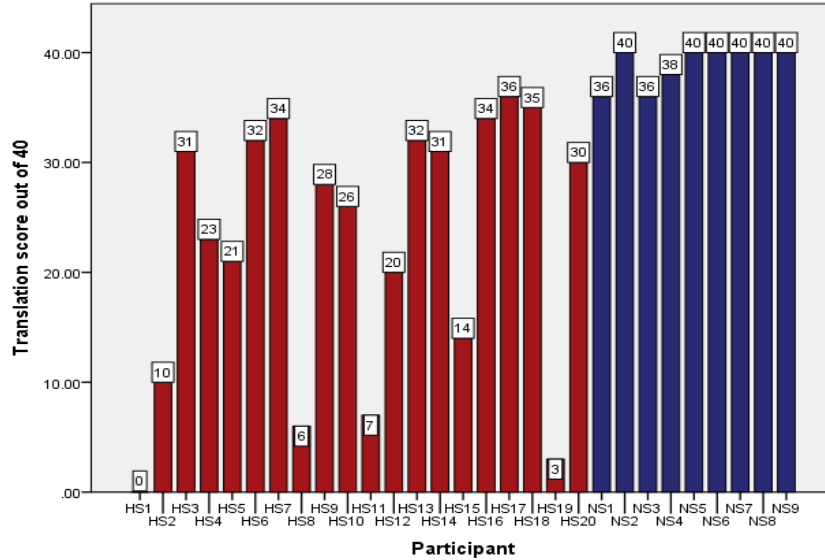


Figure 2. Translation Production of the Definite Articles Native vs. Heritage Speakers.

The differential pattern of reanalysis is captured below in Figure 3. This illustration demonstrates a subset of categories that does not reflect specificity within the category of substitution. Specificity in restructuring is illustrated on a separate graph in Figure 4. Reconstructing patterns in Figure 3 below exhibits a high concentration of omissions, followed by an overgeneralization of the determiner *la*. These reinterpretations were the most frequent patterns of re-analysis. Heritage speakers reduced the definite article system by selecting “*la*” as the default property with a greater frequency rate than the other competing allomorphs. Additional patterns of restructuring were characterized by evidence of the production of the pre-nominal determiner *la*, substitution of other allomorphs (*a/an*, *an*, *nan/lan*) and lastly the production of pre-nominal determiner *le*. With the exception of one heritage speaker who demonstrated comprehension of HC, but significantly struggled at the expressive level, the remaining participants from the experimental group produced translations that were generally closely equivalent in sentence level meaning, despite the restructuring of the definite article system. For example, one participant produced the

translation for the stimulus sentence “Marie ate the apple” (native response: “Marie te manj pom nan”) with the response “Marie te manj pom la”. Although the restructuring of the definite article “nan” was observed, communicative competency was preserved with the substitution of “la”.

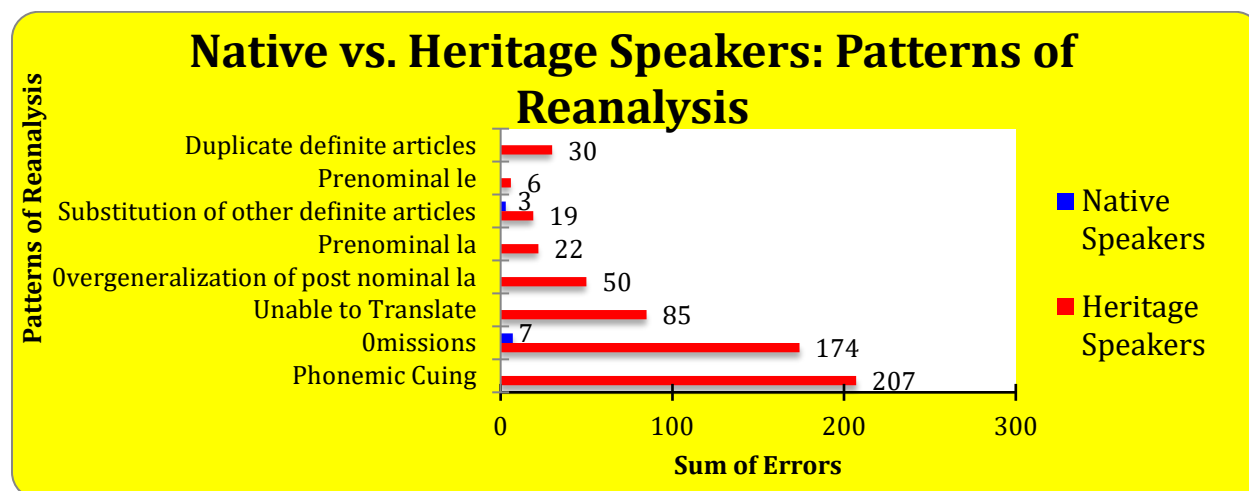


Figure 3. Number of occurrences of each type of reanalysis pattern.

Among the heritage speakers, the restructuring patterns were characterized by both omissions and substitutions during the definite article translation task, as shown in Table 3 below. Approximately 20% of the errors were substitutions. The findings in this investigation displayed evidence of considerable destabilization for the definite articles /nan/lan/, /la/lan/, and /an/. The allomorphs *a/an* were observed to be the most stable category with a reanalysis pattern occurring approximately at 6 percent at the substitution level. For example, the definite article “la” was selected during 5 instances, along with “sa” (this/that) for 2 cases. The allomorph nan/lan was reinterpreted at a 15 percent rate (23 cases) with la/lan being the most common replacement. Prenominal /la/ occurred in 1 case and /sa/ (this/that) in 4 cases.

The data reflected a percentage of error/reanalysis at 36 percent (56 cases of error/reanalysis) for the target definite article “la”. Pre-nominal “la” was selected with a close

approximation of 80 percent (44 cases) in this particular category, while prenominal “le” and the pronoun “li” (it) was selected 6 times each. The highest concentration of destabilization occurred with the target definite article “an” at a 42 percent rate at the substitution level (64 cases of error/reanalysis). According to the data, /an/ was replaced by post-nominal /la/ or /lan/ at a 32 percent occurrence rate for this target form (49 cases). Prenominal “la” was selected for 7 cases and “sa” (this/that) occurred for 8 cases.

On average native speakers demonstrated evidence of mild restructuring at a 2 percent rate; this collectively represented 7 instances of omissions and 3 substitutions employing the pronoun “sa” (this/that) in lieu of the target allomorph.

Table 3. Distribution of substitutions for target allomorphs for Heritage Speakers. Each speaker received 10 sentences for each allomorph, and thus a total of 200 “errors” (20 participants x 10 sentences) was possible.

Allomorph	Total	Substitution	Substitution	Substitution	Substitution	Substitution	Substitution	Substitution
	Number of	La/lan	A/An	Prenominal	Prenominal	Prenominal	Sa	Li (it)
	Reanalysis			la	le	la	that/this	
La/lan	56			44	6			6
a./an	9	7(5 la)					2	
an	64	45(34 la)				7	8	
nan	23	17(13 la)		1			4	

Word retrieval difficulties were observed among the Heritage Speakers. On many trials, the experimenter had to provide a phonemic cue of the noun (i.e. first sound of the word). Pearson's *r* was computed between the participants' translation production scores and the number of times they needed phonemic cuing. The result demonstrated statistical significance with a strong, negative

linear relationship ($r = -.759, p < .001$). That is, as the number of instances of phonemic cuing increased, definite article production scores decreased, as illustrated in Figure 5.

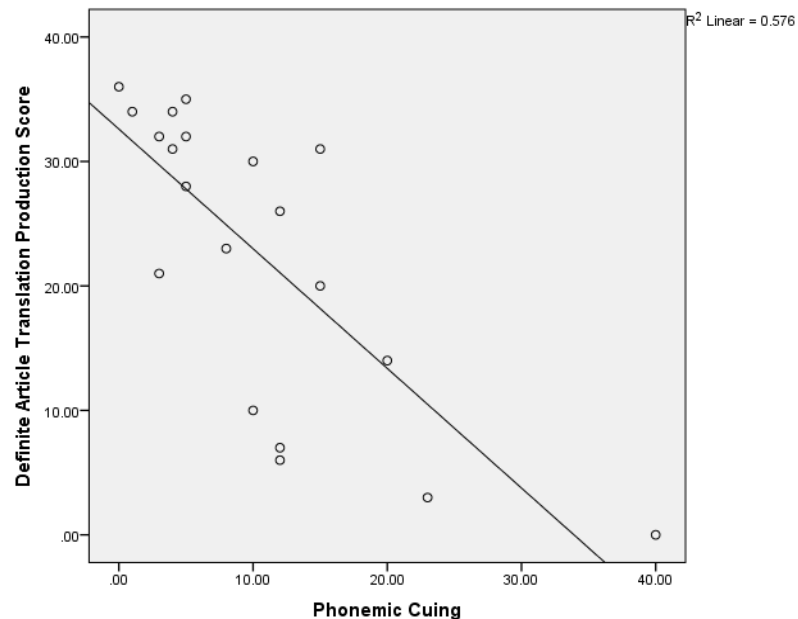


Figure 4. Correlation Between Definite Article Translation Production Score and Phonemic Cuing. The phonemic cuing value represents the number of sentences requiring a cue.

4.2 Experiment 2: Results from Grammaticality Judgment Task with Real Noun Phrases

The Native group showed higher accuracy ($M = 37.11, SD = 2.52$, out of 40 trials) than the Heritage group ($M = 8.30, SD = 5.85$). The Mann-Whitney U revealed a significant difference in performance for the two groups ($z = -4.253, p = 0.001$), as illustrated in Figures 6 and 7. The distribution of reanalysis on this judgment task did not reflect a consistent trend in the pattern of definite article perception among heritage speakers. According to quantitative analysis among the heritage speakers the highest percentage of restructuring occurred with the allomorph *an* (28.94 %), followed by *a/an* (24.55%), and *la/lan* (24.39%) at the intermediate level, and finally *nan/lan* (22.12%) with lowest incidence of reanalysis as illustrated in Figure 8. These observations

reinforced the notion that heritage speakers diverged significantly on grammaticality judgment tasks when compared to native speakers.

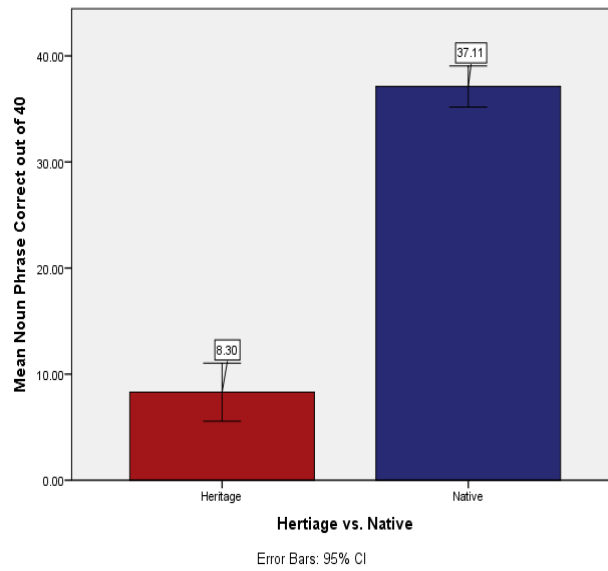


Figure 5. Mean performance for Native and Heritage speakers on the Grammaticality Judgment Task for real words (standard deviation error bars).

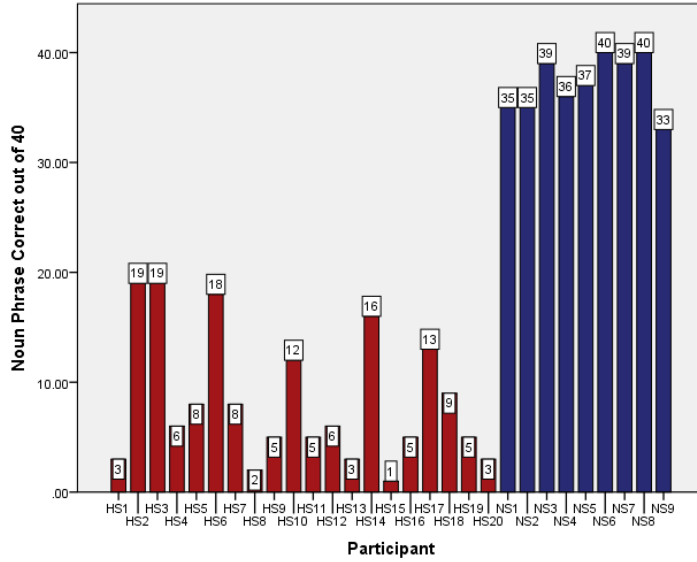


Figure 6. Individual performance on the Grammaticality Judgment Task for real words.

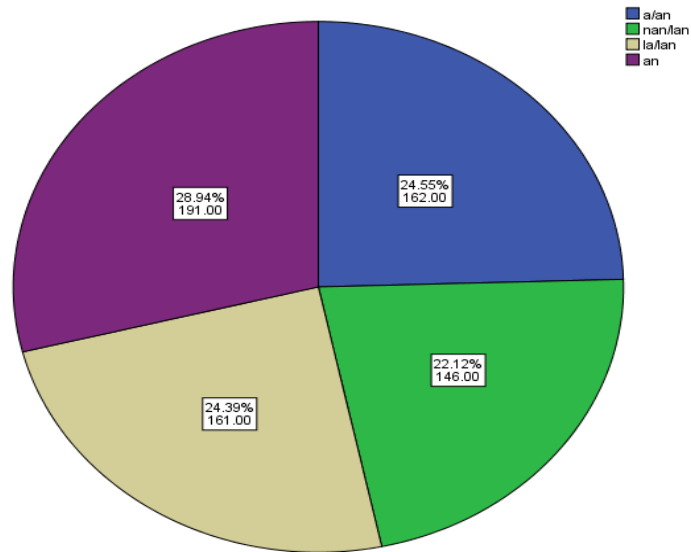


Figure 7. Proportion of allomorphs that were “incorrect” (out of total incorrect) for real words on the Grammaticality Judgment Task.

4.3 Experiment 3: Results from Grammaticality Judgment Task with Non-word Noun

Phrases

The Native group showed near ceiling performance ($M = 39.22$, $SD = 1.20$ out of 40 trials) compared to the Heritage Speakers, who showed very poor performance ($M = 6.35$, $SD = 6.39$). Performance was significantly different between the two groups ($z = -4.253$, $p = 0.001$) as illustrated in Figures 9 and 10 respectively. Patterns of reanalysis, as exhibited in Figure 11, demonstrated that the highest concentration of errors occurred with the definite article *an* yielding a 30.76 % rate of error/reanalysis. This phenomenon was followed by comparable results generated for the allomorphs “*a/an*” and “*nan/lan*”, demonstrating a reanalysis with a mean of 25.85%. Lastly, the definite article *la/lan* showed the lowest level of reanalysis at 17.53 %.

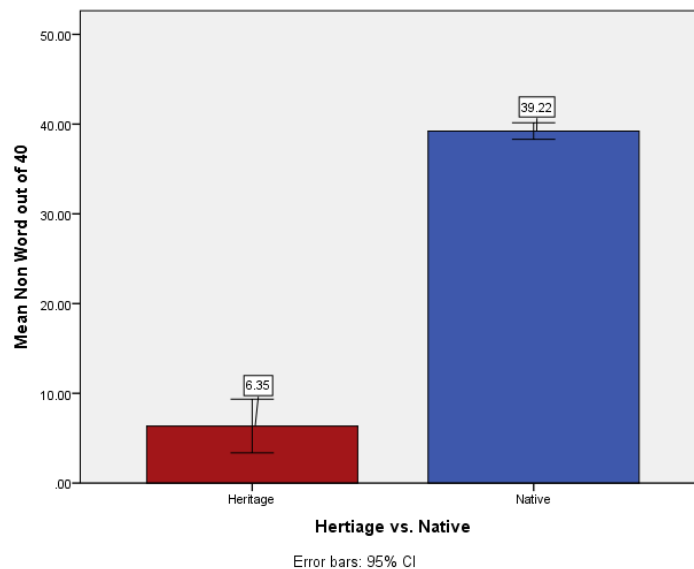


Figure 8. Group Differences Between Native and Heritage Speakers on the Grammaticality Non-word Judgment Task (standard deviation error bars).

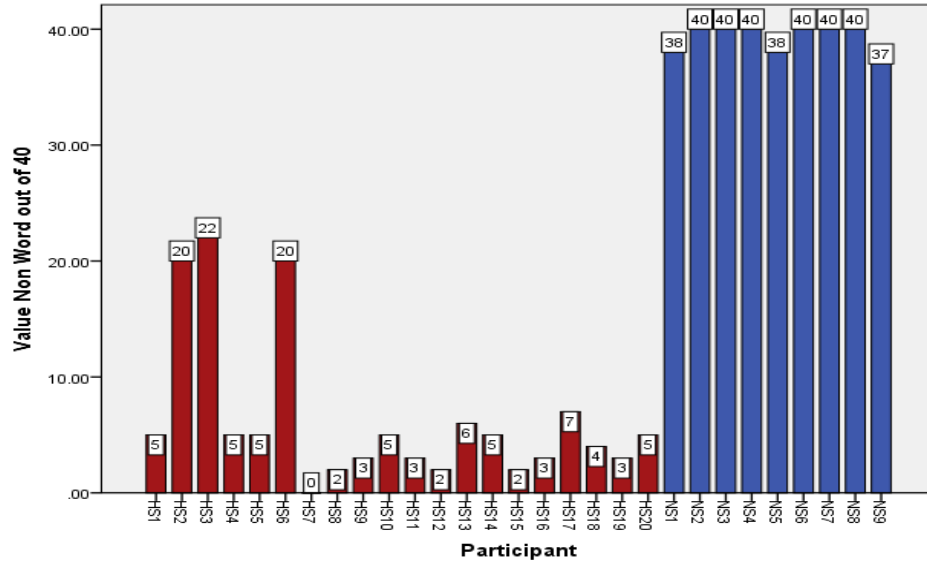


Figure 9. Individual Differences Between Native and Heritage Speakers on the Grammaticality Non-word Judgment Task

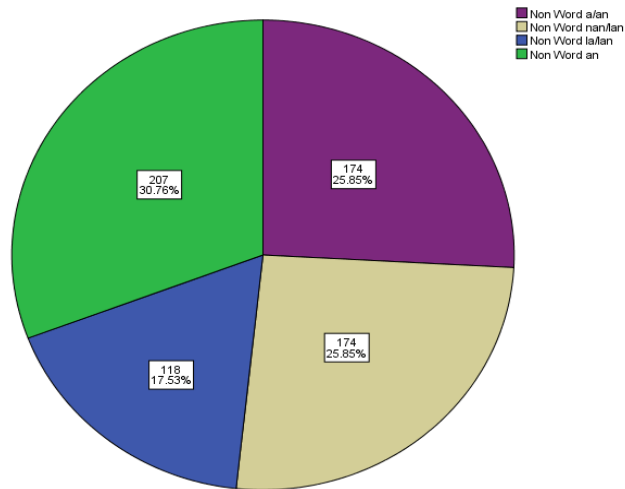


Figure 10. Proportion of allomorphs that were “incorrect” (out of total incorrect) for non-words on the Grammaticality Judgment Task.

4.4 Correlating Accuracy with Self-Rated Proficiency

Self-ratings of proficiency were examined in relation to performance on the experimental tasks. The calculation of self-rating was measured on a Likert scale ranging from 1-5 in which the heritage participants had to respond to the statement, “I can talk about various topics in Kreyol.” Their proficiency levels were assessed in the following categories (1) Strongly disagree, (2) Disagree, (3) Somewhat Disagree, (4) Agree, (5) Strongly Agree. Three separate Pearson bivariate correlation coefficients were calculated. Initially, the strength and direction of the linear relationship between the self-rating and the number correct on the definite article translation production task was assessed. Although the correlation showed a positive linear relationship it did not reach statistical significance ($r = .374, p < .105$) as demonstrated in Figure 12ⁱⁱⁱ.

Additionally, the strength and direction of the linear relationship between the self-rating and accuracy on the real noun phrase grammaticality judgment task was examined. Contrary to the previous findings on the translation production task, this correlation showed a strong, positive linear relationship that was statistically significant ($r = .690, p < .001$) as demonstrated in Figure 13.

In contrast, the correlation between self-rating of proficiency in Kreyol and the score on the non-word grammaticality judgment task, did not reach significance ($r = .428, p < .06$), although it demonstrated a trend towards significance (see Figure 14).

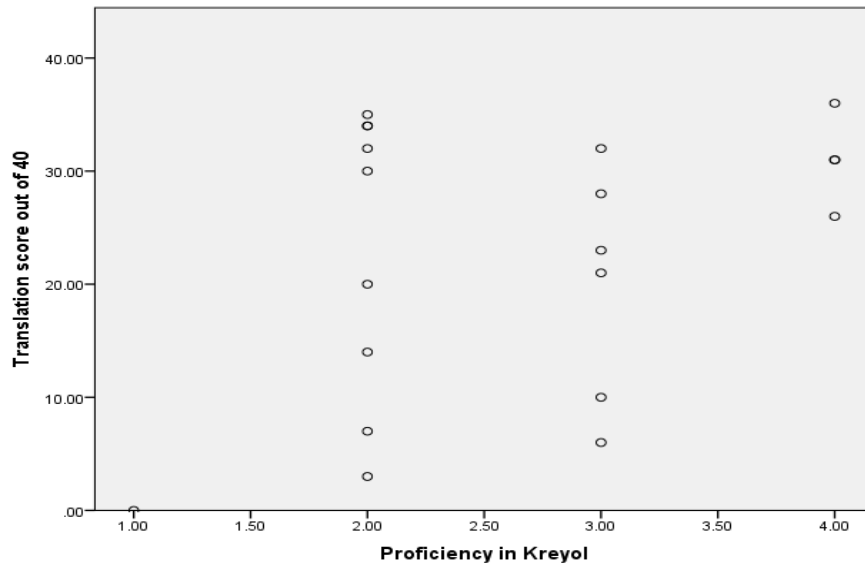


Figure 11. Relationship between Self -Proficiency judgments (on a 4-point scale) and performance on the Translation Task.

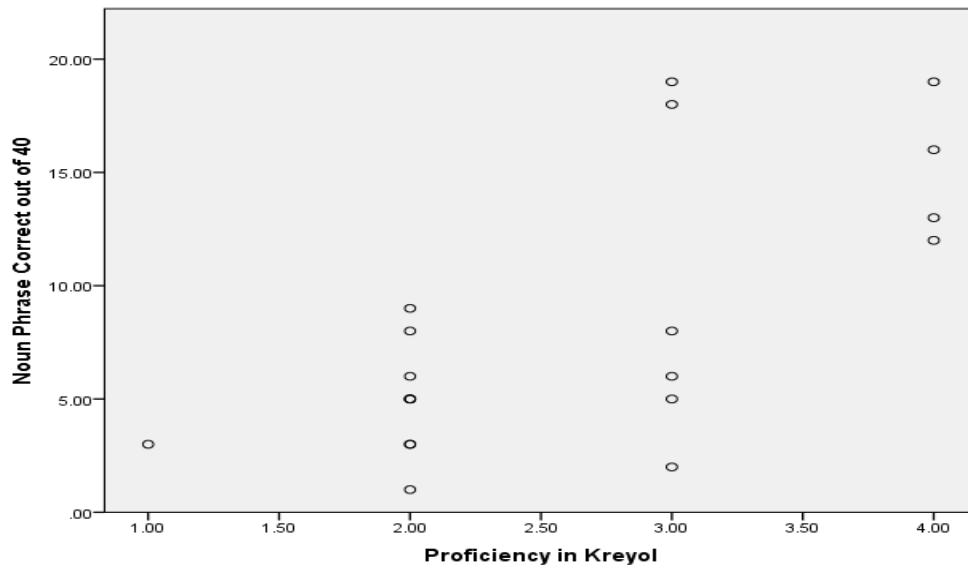


Figure 12. Relationship between Self -Proficiency judgments (on a 4-point scale) and performance on the real noun Grammaticality Judgment Task.

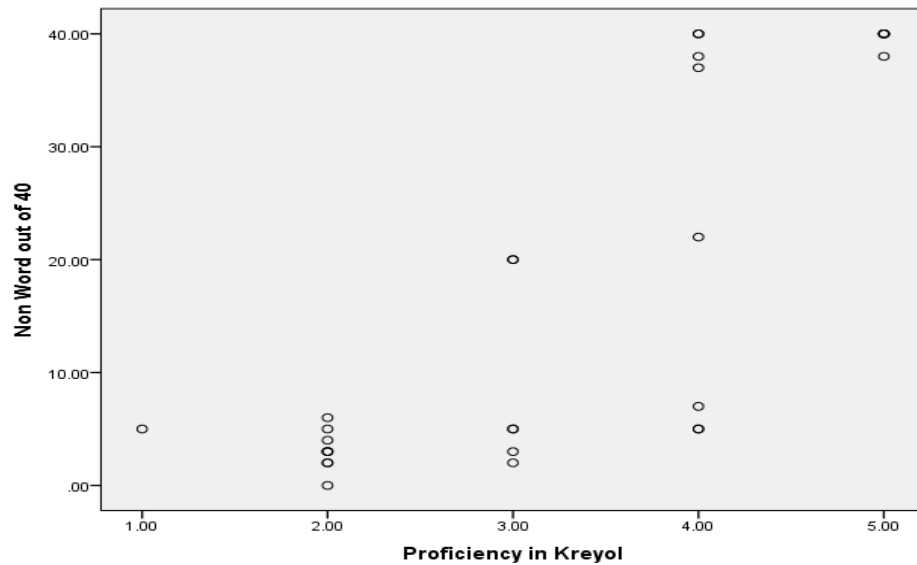


Figure 13. Relationship between Self -Proficiency judgments (on a 4-point scale) and performance on the real noun Grammaticality Judgment Task

4.5 Correlating Accuracy with Literacy Variables

The variable of literacy was also examined in a similar quantitative manner. In order to assess if there is a correlation between literacy and definite article proficiency, two separate Mann-Whitney U Tests were performed. For the first calculation, definite article production scores were used as the dependent variable. The definite article translation production score for those who described themselves as literate ($M = 27.67$, $SD = 9.22$, $N = 6$) was larger than for the Heritage group that did not define themselves as literate ($M = 20.50$, $SD = 12.47$, $N = 14$). However, a non-parametric Mann-Whitney U test did not reveal a statistically significant difference ($z = -1.197$, $p = 0.231$).

A similar analysis was conducted for real noun phrase grammaticality judgment scores as the dependent variable. The self-described literate group yielded higher scores ($M = 16.17$, $SD =$

3.06, $N = 6$) than the self-described non-literate group ($M = 4.93$, $SD = 2.37$, $N = 14$); this difference yielded a statistically significant result ($z = -3.486$, $p = 0.001$).

Finally, heritage speakers who rated themselves as literate in Kreyol were compared with heritage speakers who did not rate themselves as literate in the heritage language on the non-word grammaticality judgment task. The difference between those who were literate ($M = 13.17$, $SD = 8.28$, $N = 6$) and those who were not literate ($M = 3.43$, $SD = 1.65$, $N = 14$) was statistically significant ($t [6] = -2.856$, $p < .034$, 95% CI for the difference $[-18.42, -1.06]$).

Thus, according to this investigation there is evidence that literacy is correlated to greater performance and accuracy in grammaticality judgment among heritage speakers in both noun phrases and non-word noun phrases.

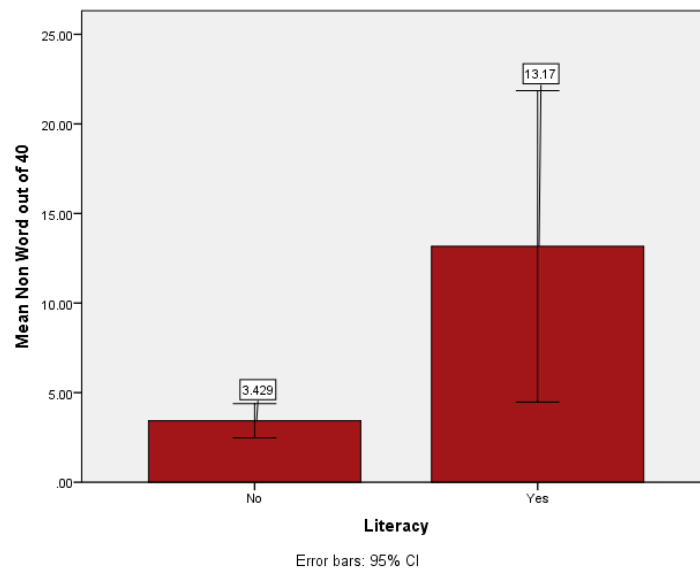


Figure 14. Mean Translation Definite Article Production Results for Literate Versus Non-Literate Heritage Speakers in the Heritage Language (standard deviation error bars).

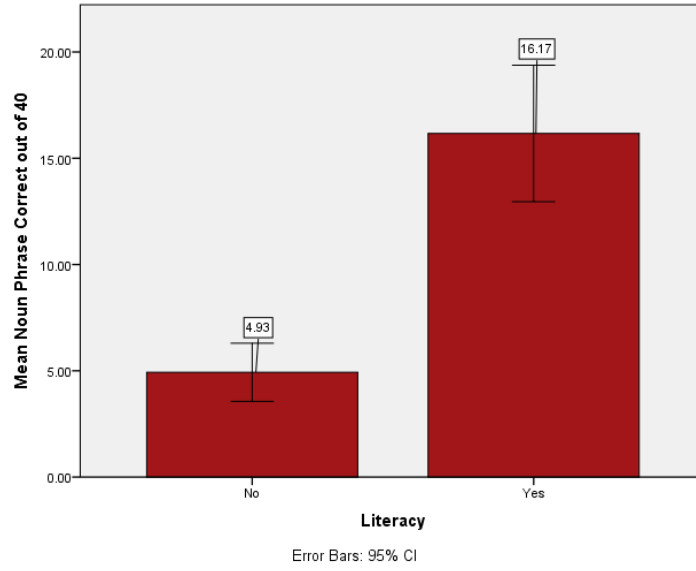


Figure 15. Comparison between Literacy levels and Non-word Phrase and Grammaticality Judgment Task (standard deviation error bars).

Chapter 5

Discussion

5.1 Impetus of the Investigation

Previous studies indicated that heritage speakers, irrespective of the language have a “common signature”. Heritage speakers reinterpret grammatical systems, and specifically, inflectional morphology, even when they preserve many core properties in the heritage language (Montrul, 2008; Benmamoun, Montrul & Polinsky 2010; Montrul, 2008; 2009; 2013; Zapata, Sánchez & Toribio, 2005; Silva-Corvalán, 2003). One question addressed here, was whether this claim would hold for Haitian Creole. The morphophonological-governed definite article system in Haitian-Creole was a clear candidate for restructuring. We examined the production and perception of the morphophonological form of the definite article system between two adult groups of early learners of Haitian Creole.

5.2 General Research Question

Firstly, our overall general research question examined whether there were differences between two groups of early learners of HC in the production and the representation of the definite article system. The results of this investigation provided solid evidence of reanalysis in the production and perception of the definite article system among heritage speakers of HC who were U.S. born. The heritage speakers in this investigation diverged from Haitian-born native speakers on various measures of accuracy in producing and judging as grammatical the target morphophonological forms of the HC definite article system. Thus, there was an absence of evidence in overlap in performance between the heritage speakers and the native controls. Specifically, the native speakers demonstrated near-ceiling performance on these tasks. This pattern should not be surprising because native, first generation speakers define what is grammatical. As

was predicted, heritage speakers did not perform at a similar level to the native group. The restructuring processes of heritage speakers were marked by variability among the heritage speakers and divergence from native speakers. These patterns were reflected in both the production and perception of the HC definite article system. At the production level there was reanalysis in prenominal forms. There was evidence of preferences or advantage selection for reanalysis. Specifically, omissions in many cases and the overgeneralization of the definite article “la” were noted. This form was most frequently selected as the replacement allomorph. In addition, when a translation requiring /la/lan/ was produced in error, the most frequent pattern was to relocate /la/ to the prenominal position. This phenomenon can be interpreted as convergence towards the English language or a language transfer effect inherited from the French vernacular. These results reflect a contact vernacular adaptation process in the new locality that is induced by language shift and contact. Incomplete acquisition and attrition of the heritage language over time contributes to this change.

Additionally, subjective sociolinguistic variables such as self-rated proficiency and self-rated literacy were correlated with certain measures of grammaticality judgment from the heritage speakers. A significant correlation was observed between self-rated proficiency and grammaticality judgment of real noun phrases, and between self-rated literacy and grammaticality judgments of both real and non-word noun phrases. Interestingly, a correlation of literacy and self-rating proficiency at the grammatical production level was not observed.

These findings will be discussed in greater detail in the following order. First, we will discuss the results at the production level in the first experimental task followed by the observations made at the perception/representational level in the second and third experimental tasks. Secondly, we will examine the relationship of the findings to sociological variables of self-proficiency in the

heritage language, and literacy after reviewing each experimental task. Thirdly, we will highlight the differences between the production and perception tasks. Fourthly, we will review the overlapping features between heritage languages and creole languages. Lastly, we will discuss our findings within the theoretical framework of the contact vernacular adaptation hypothesis.

5.3 Experiment 1: Differences in Heritage Speakers Patterns of Morphophonological

Production

In our second research question we posed the following query. Are there differences between native speakers and heritage speakers of HC in the production of the definite articles? We predicted that heritage speakers would show less systematic patterns of selection of the definite article system. Alternatively, we posited that heritage speakers would be systematic, but show a different pattern of rules than the native group.

The patterns of definite article production among the heritage speakers reflected differential reproduction and an emerging trend of systematicity. The reorganization of the definite article system was characterized by a high density of omissions, followed by evidence of overgeneralization with the post nominal article “*la*” as a default property for a sizeable proportion of lexical items. In addition, other patterns of reanalysis included substitution of other allomorphs, and syntactic reordering of pre nominal *la* and *le*. However, different participants selected different strategies of reanalysis. Interestingly, one participant who is a third generation U.S.-born heritage speaker demonstrated an idiosyncratic pattern in relation to the other heritage speakers. The participant marked the target noun both prenominally and postnominally. This resulted in utterances such as “Marie manj la pom nan” (Marie ate the apple) and “La tab la kraze” (The table is broken). This individual, anecdotally, was reported to speak the heritage vernacular in her childhood in a manner that approximated that of a native speaker. It is possible that the prenominal “second”

marker was added at a later age. Longitudinal studies of heritage speakers will be needed to explore how heritage language develops. The idiolect of this heritage speaker exhibited integration or the inheritance of new features in contact induced change. This evolutionary process is influenced by the dominant language, and guided by universal principles.

The distributional patterns of reanalysis in this investigation also indicated that the definite article *a/an* was less vulnerable to restructuring while the allomorph *an* was most unstable. As predicted the category of *la/lan* was most susceptible to overgeneralization both postnominally and prenominally. Moreover, the demonstrative pronouns “sa” (that/this) and “li” (it) were also employed as substitution choices with low but relative density, which was observed among the native controls, as well.

5.4 Experiment 1: Patterns of Definite Article Use in the Translation Production Task

In the third research question we posed the following query. What are the patterns of definite article reanalysis among heritage speakers in the translation production task? We predicted that heritage speakers would select an allomorph more frequently than others, and heritage speakers would gravitate towards “la”, particularly those who received considerable input in French (as measured on a language input questionnaire). Although practice trials were administered prior to the actual experiment to stimulate definite article production the heritage speakers produced a high level of omission. This phenomenon was followed by overgeneralization of the morphophonological form “la” which occurred at a 34% substitution reanalysis rate. From one perspective, omission and the over-generalization of the definite article “la” serves as evidence of emerging systematicity. However, those who ascribe to prescriptivism would likely provide a counter argument because differential reproduction was clearly evident in the data. New varieties require a pattern of collective systematicity rather than being marked by free variations.

When languages in contact are not typologically congruent to one another, reduction and reanalysis is a natural phenomenon. The distributional patterns of the definite article system of HC and English are differential. Therefore, the lack of congruency makes this property in the language prone to restructuring. It is conceivable that the emerging trend of overgeneralization with the definite article “la” is a restructuring process aimed at evolving to convergence with the English language. Restructured innovations that are lexically, semantically and morphosyntactically influenced by the dominant societal language have been reported among heritage speakers in crosslinguistic studies and these innovations are claimed to be due to the dynamics of language contact (Clyne, 2003).

According to Thomason and Kauffman (1988) universally marked features are less likely to be transferred in contact vernacular environments. Clyne (2003) provides an example for this phenomenon by referencing the lexical item *sheep* in English, which is unmarked, because it is semantically a basic nominal element. Contrarily, the word *ewe* is marked because it exclusively refers to a female sheep and therefore less transferable due to specificity. In a similar vein, OSV word order is a marked syntactical paradigm (i.e., “This I cannot accept”) whereas SVO which is employed with greater frequency is unmarked (Clyne 2003). Therefore, it appears that marked features in the definite article system in HC (, such as “*an*”, “*nan*”) are more difficult to acquire in a context where input is restricted (Andersen, 1977; Clyne, 2003).

In the presence of language shift, which results in an imperfect replication of the heritage language, “la” was maintained as the default option because arguably it is reflected in both HC and the competing heritage language French. It is plausible that “la” is a more frequent construction form in HC. Due to its transparency “la” is unmarked, and therefore has advantage selection among the competing alternatives in the linguistic feature pool (Mufwene, 2008). However, it is important

to point out that this explanation is circular because linguistic forms are often identified as being marked simply because they are less common and more difficult to acquire and thus, claiming that markedness leads to these facts is not an explanation.^{iv}

According to the social-language questionnaire form, 18 participants studied French in high school as a modern language and six were exposed to literacy in both heritage languages in the liturgical setting. Additionally, it is possible that token frequency of nouns in HC could influence which allomorphs are most common in reanalysis. Thus, the high occurrence of “la” in the reanalysis patterns of these heritage speakers could be related to which nouns they are cognizant of in the heritage language, and the frequency with which they are employed. This token frequency information is not currently available. However, it would be interesting to explore the distributional pattern of the allomorphs in a future study.

5.5 Experiment 1: Phonemic Cuing and Proficiency in Definite Article Use and Duration Time in the Translation Production Task

In the fourth research question we posed the following query. Is there a relationship between proficiency of definite article use and proficiency of lexical access? We predicted that less phonemic cuing would be correlated with definite article proficiency in the translation production task. Evidence of word retrieval difficulties was observed among a sizeable number of heritage speakers. On many trials, the investigator had to provide a phonemic cue to elicit the noun (i.e., first sound of the word) when word retrieval difficulties were presented. The more that phonemic cuing was required, the lower the score was for selecting the correct definite article in the production task. Conversely, less phonemic cuing yielded higher scores in the production task thus exhibiting less difficulty with lexical access. The results indicated a strong, positive linear relationship between phonemic cuing and definite article proficiency (accounting for 64% of the variance), indicating

that those with weaker lexical retrieval skills also showed more reanalysis of the definite article system.

Polinsky & Kagan (2007) describe that heritage speakers have difficulty with lexical access in the heritage language resulting in slower speech rate when compared to baseline controls. Although duration time in the production task was not a variable that was being measured from our original research questions the heritage speakers in this study were observed to engage in the experimental task for a longer period of time than the native controls.

Translation interruptions were marked by word retrieval issues, and repairing behaviors such as pauses and repetitions. During translation production, duration time among the U.S. born heritage speakers ranged from 6.21 to 12.13 minutes with a mean of 7.61 minutes. However, the duration time of the native controls ranged between 3.15 to 5.56 minutes with a mean of 4.19 minutes. Thus, there was approximately a 4-minute difference between the two groups when engaged in this experimental task. This difference is consistent with Polinsky & Kagan (2007).

5.6 Experiment 1: Correlation Measures of Self-Proficiency and the Translation Production

Task

In our fifth research question we examined the socio-linguistic element of self-rated proficiency and its relationship to the pattern of definite article use at the production level with the translation production task. This analysis was conducted based on the responses reflected on the social language questionnaire form provided by the participants.

We predicted that heritage speakers who rated themselves on the higher end of the Likert scale ranging from 1-5 would demonstrate native-like proficiency, whereas heritage speakers who rated themselves on the lower end would exhibit a higher density of reanalysis. Although the correlation measures between definite article proficiency on the production task and self-rating

showed a linear relationship that trended towards significance, statistical significance was not attainable.

It is possible that this relationship was not stronger because the variable of self-rating in language proficiency is a subjective measure. It is conceivable that the main objective of heritage speakers is to achieve communicative competency. Arguably, heritage speakers did not judge their heritage language proficiency based on their parents' native-like grammatical knowledge. In a new locality, heritage speakers are early bilinguals who are principle agents of language change. This was illustrated by the third generation participant who utilized two forms of the definite article system both prenominal and postnominal (Marie manj la pom nan). Although she yielded a score of 10 on a task valued at 40 points she rated herself as a highly proficient speaker by selecting number 4 on the Likert scale.

We can argue that native speakers residing in the U.S. understand the interlanguage representation of heritage speakers in the heritage language. This accommodation is likely to influence the perception of proficiency in the heritage language among heritage speakers. Therefore, if heritage speakers are able to convey their ideas in a comprehensible manner, it is arguable that they will perceive themselves as being proficient as native speakers. We could speculate that less emphasis is placed on native-like grammatical constructions because the language is going through an indigenization or adaptation process in a new habitat.

5.7 Experiment 1: Correlation Measures of Self-Rated Literacy and the Translation

Production Task

In our sixth research question we examined the relationship between the variable of literacy and definite-article proficiency in the translation task. We predicted that heritage speakers who

defined themselves as being literate in the heritage language would demonstrate native like definite article proficiency on the translation definite article production task.

The definite article production score for heritage speakers who described themselves as literate was higher than those who did not define themselves as being literate. However, statistical significance was not evident at the production level. Thus, literacy was not a variable that correlated to proficiency in the definite article system among heritage speakers at the production level.

While we are not dismissive of the idea that the vehicle of reading enhances linguistic knowledge, reading is not a necessary component to the development of language. Presently, many populations residing in third world nations are bilingual and multilingual and have acquired language naturally, outside the context of education. According to our results, quantitative and qualitative input in the heritage language in a natural context is a strong predictor of native-like proficiency. Interestingly, among the experimental cohort, nine participants yielded scores that approximated the scores of the baseline controls (30-36 in a task valued at 40 points). According to the social-language questionnaire form the aforementioned nine participants resided with grandparents with limited English proficiency during their childhood. Therefore, residency with a grandparent with limited English proficiency reduced grammatical divergence between heritage speakers and native speakers in the production of the morphophonological form of the definite article system, rather than literacy.

5.8 Experiment 2: Differences between Native Speakers and Heritage Speakers of HC in the Perception of the Definite Articles with Real Noun Phrases

In the fifth research question we posed the following query. Are there differences between native speakers and heritage speakers of HC in the perception of the definite articles during the grammaticality judgment task with real noun phrases? We proposed that heritage speakers would

demonstrate significant divergence in the grammaticality judgment task when compared to native speakers.

Our findings indicated that the difference between the two groups of early learners of HC was robustly statistically significant. The distributional patterns of reanalysis on grammaticality judgment indicated an absence of systematicity. Similar to the production task, the definite article *an* was the most unstable allomorph. It is plausible that *an* is less salient and is a highly marked form. The remaining definite articles were restructured in their mental representation at comparable percentage rates including the allomorph “la”.

In this study we put forward the claim that the definite article system in English influenced the performance of heritage speakers at the perception level. It is conceivable that during the indigenization or adaptation process of the heritage language, convergence towards the societal language is being established. Therefore, for a sizeable population of the participants, the noun that was embedded in the noun phrase provided them with sufficient meaning. As aforementioned, the main objective of heritage speakers is to achieve communicative competency rather than native-like grammatical accuracy. They accommodate the differential reproduction of idiolects along the continuum. Therefore the competing alternatives [pom la, pom nan, pom a, pom an, and pom lan] (the apple) are not differentiated during the evolutionary process of the language.

5.9 Experiment 2: Correlation Measures of Self-Proficiency and Grammaticality Judgment of Real Noun Phrases

In our sixth research question we examined the sociolinguistic element of self-rated proficiency and its influence on the pattern of definite article use at the perception level on grammaticality judgment that examined real noun phrases. This analysis was conducted based on the responses reflected on the social language questionnaire form provided by the participants.

According to our analysis there was a correlation between grammaticality judgment performance and self-rated proficiency. Thus, higher self-ratings on the Likert scale (1-5) correlated with better performance on the grammaticality judgment task among the heritage-speakers. However, collectively, heritage speakers performed rather poorly on this task. Contrary to translation, which is a common metalinguistic function performed by heritage speakers, an online grammaticality judgment task is not an organic experience that heritage speakers encounter.

5.10 Experiment 2: Correlation Measures of Self-Rated Literacy and the Grammaticality Judgment of Real Noun Phrases

In our seventh research question we examined the relationship between the variable of literacy and definite article proficiency at the perception level. We predicted that heritage speakers who defined themselves as being literate in the heritage language would demonstrate native-like definite article proficiency in the real noun phrases experimental task. Therefore, we examined if a correlation existed between definite article perception and literacy.

Consistent with studies conducted on second language acquisition, literacy is arguably a prerequisite to grammaticality judgment (Otheguy, 2015). Collectively, the mean score on grammatical judgment was low among the heritage speakers. However, seven participants, who identified themselves as being literate performed at a slightly higher rate. Among the experimental cohort, the seven who reported to be literate in the heritage language indicated that they attended ethnic liturgical services during childhood. Therefore, they were provided with input in the orthography of both languages (HC and French). Arguably, this social-linguistic experience facilitated semi-literacy, which provided some level of support in establishing more native-like grammatical conclusions.

5.11 Experiment 3: Differences Between Native Speakers and Heritage Speakers of HC in the Perception of the Definite Articles with Non-word Phrases

In our eighth research question we explored whether there were differences between native speakers and heritage speakers of HC in the perception of the definite articles during the non-word grammaticality judgment task. We proposed that heritage speakers would demonstrate significant divergence in the grammaticality judgment task when compared to native speakers. We were also interested in determining if native speakers internalized the morphophonological rules when presented with non-words that reflected the phonetic inventory of the lexicon of HC.

Similar to the grammaticality judgment task with the real noun phrases the non-word experimental task yielded clear differences between the two groups of early learners. The highest concentration of errors occurred with the definite article *an*. This phenomenon was followed by comparable percentage rates generated for the noun elements embedded with allomorphs [a/an] and [nan/lan], which demonstrated reanalysis. Lastly, the definite article [la/lan] was quantitatively most stable with a lower rate of restructuring.

The near ceiling level performance among the native controls provide evidence that they internalized the morphophonological rules and were able to extrapolate this knowledge with non-word stimulus items. Consistent with the review of the literature grammaticality judgment is a task in which heritage speakers display significant instability. Furthermore, similar to Levine's (2000) study on heritage speakers of Yiddish on grammaticality judgment, the experimental group approached this task with greater trepidation. We suspect that participants found the non-word stimulus items more stressful.

5.12 Experiment 3: Correlation Measures of Self-Rated Proficiency and the Non-word Grammaticality Judgment Task

In our ninth research question we examined the socio-linguistic variable of self-rated proficiency and its influence on the pattern of definite article use at the perception level with the grammaticality judgment task of non-word phrases. When correlations were examined between self-rating of proficiency in HC and native-like accuracy on the non-word grammaticality judgment task, the results demonstrated a trend towards significance. However, statistical significance was not attained. It is likely that the non-word task was more difficult.

5.13 Experiment 3: Correlation Measures of Self-Rated Reading Literacy and the Non-word Grammaticality Judgment Task

In our final research question we examined the socio-linguistic variable of self-rated literacy and its influence on the pattern of definite article use at the perception level with the grammaticality judgment task of non-word phrases. This analysis was conducted based on the responses reflected on the social language questionnaire form provided by the participants. The difference between those who were literate and those who were not literate was statistically significant. The results of this investigation suggest that literacy is correlated with greater accuracy in grammaticality judgment among heritage speakers in a non-word noun phrase task. According to research in second language acquisition studies, literacy may be required as a prior condition to more easily perform a metalinguistic task. Reading provides an advantage and support on tasks that measure online grammaticality judgment in the standard variety (Bialystok & Ryan, 1985; Birdsong, 1989; Bialystok, 1986; Otheguy, 2013).

5.14 Differences between the Production and Perception Task

Of particular interest was the variability in performance between the production task and both grammaticality judgment tasks. The patterns on the perception tasks were different from the production task, where the heritage-speaking participants demonstrated relatively good translations (over 70% of the 40 items), which significantly diverged from their performance on grammaticality judgment experiments. Furthermore, based on their production performance it is arguable that they should have demonstrated native-like performance on about half of the nouns at the perception level.

We posit that this divergence between the production and perception experiments is reflected because HC speakers are accommodating competing alternatives at the perception level. The differential features are considered “acceptable” even though in their own productions, they selected a closer replication of the native forms. In other words, they may be more tolerant of selection of the “reinterpreted” form than a native speaker at the perception level because the language is going through an indigenization or an adaptation process.

Alternatively, however, tolerance on behavioral measures may deviate from measures captured through neuroimaging studies. A study by San Sebastian, et al (1999) conducted on bilingual Catalan-Spanish listener’s demonstrated tolerance for mispronunciations of a Catalan vowel through behavioral measures by Spanish-dominant bilinguals, but their patterns of cortical activation revealed sensitivity to this error in a neuroimaging methodology. This difference between performance on the translation production task and the grammaticality judgment task suggests that a similar phenomenon may be occurring. Thus, neural measures of processing could be used to test this aspect in a future study.

5.15 A Comparison of Creole and Heritage Languages

Irrespective of the heritage language heritage speakers exhibit a “common signature” (Montrul, 2008). The aforementioned concept and phraseology “a common signature” echoes the theoretical position proposed by certain creolists. These studies posit that Creoles are more “similar to one another” than to “non creoles”. Certain scholars in creology have described that the inaccessibility of input in the lexifier language resulted from a “break in transmission” (Thomas and Kaufman, 1988). Similarly, circumstances resulting in the imperfect replication of the heritage language have been proposed as a “break in linguistic tradition” among children of immigrants (Anderson, 1982).

In this investigation the results suggest a parallelism between the restructuring patterns of heritage speakers and the creators of creole languages. The common thread that binds the “principle agents of language change” are ecological conditions such as language contact and language shift. Differential input is a principle facilitator of an accelerated evolutionary process in languages conceived in contact. However, they are not epistemologically special languages because they are natural as noncreole languages (Mufwene 2001).

Cognitive restructuring patterns are evident in both populations. Imperfect replication, and transmission error are features found among the “principle agents of language change.” These ecological circumstances produced a population of idiolects with differential reproduction. The fundamental difference between Creole languages and heritage languages is that Creole languages are experiencing a continuous evolutionary process. Contrarily, as posited by Otheguy (2013) there is an absence of grandchildren among immigrant languages in the U.S. and historically a language death occurs resulting in monolingualism by the third generation.

5.16 Connecting the Results to the Contact Vernacular Adaptation Hypothesis

Since the 19th century languages have been viewed from a biological perspective. It is useful to interpret our results utilizing a Darwinian biological metaphor. This concept is extrapolated from Mufwene's (2001) research on contact vernaculars. Language is an organism, and a living entity because it develops, procreates, and experiences language death. Furthermore, it is equipped with a complex adaptive mechanism. This mechanism permits the language organism to adapt and evolve during the phenomenon of evolution.

In the new locality, the adaptive mechanism of the language organism is triggered to adapt to its new environment. These externally motivated changes emerge from differential qualitative and quantitative input in a language that leads to a continuum marked by heterogeneity. Variability triggers the evolutionary process of a language organism.

Language change first begins at the level of the idiolect (Mufwene, 2008). Idiolects give rise to communal languages during the trajectory of the evolutionary process. During the process of language change there is an absence of collective systematicity along the language continuum. Our research data confirms this viewpoint. However, the idiolects are systematized. This was demonstrated among the participants in this investigation. For example, incorporating the definite articles both prenominal and postnominal was a relatively consistent pattern performed by the third generation heritage speaker of HC ("Marie manj la pom nan").

Despite differential reproduction along the continuum, due to the notion of accommodation, systematicity is not required to achieve comprehensible communication in a speech community. However, in the long-term, we posit that it is a natural phenomenon of a language organism to facilitate collective systematicity because languages are naturally rule governed. During linguistic evolution, collective systematicity is compromised. In an attempt to resolve the issue of

inconsistency and variability the complex adaptive mechanism of the language organism is triggered.

According to Mufwene (2001) in his study on contact vernaculars, variability in a language system catalyzes the process of natural selection. Competition and selection play a fundamental role in the process of linguistic evolution. It is “the invisible hand of language change” (Keller, 2005). We posit that the underlying cognitive mechanism leading to change for heritage speakers is guided by markedness. According to the ecology sensitive model of markedness, unmarked features have advantage selection over marked features (Mufwene, 1991a). Among the competing alternatives the structures that are selected are more common, salient, and transparent. Contrarily, the morphosyntactic properties of the language that are opaque, less frequent and salient, are not favored. This was clearly evident in the data with the overgeneralization of the definite article “la” and the high density of errors with the allomorph “an”.

According to McWorther (2001) in his manuscript “The world’s simplest grammars are creole grammars”, certain features in a language emerge as a product of a long-term evolution process. This is especially evident among mature grammars such as Romance languages, Hausa, and Korean because it is an available property in the mechanism of Universal Grammar. However, the inclusion of certain devices in a language does not necessarily serve a communicative need. One specific example is grammatical gender. McWorther (2001) argues that although grammatical gender is a complex property it exhibits overspecification. Thus, he views this structure as an “ornamental elaboration” (McWorther 2001). Furthermore, grammatical genders are semantically devoid of meaning, and have relatively low functional use. Unlike natural gender such as “*abuelito* vs. *abuelita*” grammatical gender utilizes unnecessary cognitive-linguistic resources.

Trudgill (1999) espouses a similar view that grammatical gender represents complexity and redundancy. Thus, he postulates that grammatical gender is like “linguistic male nipples”. In contact vernacular settings they are not selected as the rebuilding materials or the “*matériaux de construction*” in the morphosyntactic inventory. This is illustrated among romance creoles such as the language of study in this investigation, which does not contain gender.

Trudgill (1999) supports his argument on the superfluous nature of grammatical gender by referencing the language of Afrikaans. This language derives from the Dutch language and typologically is creoloid (Roberge, 1995). It has been documented that by 1797, 150 years after the first Dutch settlement one significantly pronounced property in the language that was restructured was the three-way grammatical gender system. Contemporarily, in the Afrikaans language only the neutral gender “*die*” has been maintained (Ruberg, 1995).

The concept of overspecification associated with grammatical gender can be extrapolated to the morphophonological form of the definite article system in HC. Based on the results in this investigation it is conceivable that heritage speakers perceived the various forms of the allomorph “*la*” as a redundant feature in the definite article system. The transferability of many of the competing allomorphs was likely constrained during the competition and selection process because they are too taxing on the working memory. Furthermore, the system is not typologically congruent to the societal language. Therefore, at the production level omission and the overgeneralization of the definite article “*la*” supports the ecological sensitive markedness model. The morphological system is marked, therefore during many instances it became a deleted category. However, when it was maintained “*la*” had an advantage in selection due to its saliency and frequency found in both heritage languages (French and HC). Moreover, convergence towards the English language, which

does not show allomorphy for the singular definite article arguably played an essential role in the overgeneralization of the definite article “la”.

As “principle agents of language change” the heritage speakers in this investigation are reinterpreting the definite article system similar to the creators of Afrikaans with the three-way gender system. In the new locality the language organism attempts to adapt to its new environment. Therefore, what is viewed as a reduction is part of the indigenization process that is engineered by the adaptive mechanism of the language. Reduction in a language creates flexibility and permeability during the indigenization process. The language returns to its basic core infrastructure. This modification allows the language organism to adapt by being receptive to the inheritance of new forms that are reflected in the linguistic landscape of the new habitat. Reduction or simplicity is the outcome of advantage selection among the competing alternatives.

According to our contact vernacular adaptation hypothesis, during the process of linguistic evolution “survival of the most adaptable” features are governed by universal principles. Unmarked features have an advantage in selection over peripheral structures because they are features found in most languages, and therefore are robust in nature. They are adaptable in a new locality because they are innate properties. Conversely, marked features are peripheral structures that are idiosyncratic in nature, and not guided by universal principles. Rather they are a reflection of their indigenization process and their unique social-historical origin. Features that are “marked” are maladaptive in a new locale. Therefore, when a language organism is operating in a new habitat, properties that are not linguistically innate are vulnerable to restructuring or have disadvantage selection. This phenomenon was clearly evident in the results of this investigation based on the presence of omissions, and the overgeneralization of the definite article “la”.

On a final note, the contact vernacular adaptation hypothesis amalgamates the competing viewpoints of the disciples of the incomplete language acquisition hypothesis and proponents of the emergence of a new language variety because it validates the principles of both theories. Incomplete acquisition and language contact culminates in an imperfect replication marked by competing alternatives, which facilitates language evolution. As posited by Otheguy (2015) when analyzing the grammatical system created by heritage speakers, one should expect “the fruit to fall far from the tree” because heritage languages are adapting “in the wild”.

Chapter 6

Clinical Implications and Future Directions

6.1 Clinical Implications

The impetus for this investigation was clinically motivated from the field of speech-language pathology. Among the culturally and linguistically diverse populations, psychometric assessments do not capture the manifestations of the ecology of language. Incomplete acquisition, attrition, language contact, and language shift leads to the restructuring process of heritage languages due to natural selection. Therefore, reanalysis (perceived as errors by native speakers) of inflectional morphology cannot be utilized as a clinical marker of a language-based learning disability such as specific language impairment.

During the genesis of language shift, a sizeable population of heritage speakers experience an interlanguage phase in their communicative competency. This controversial phase is known as semi-lingualism. During this period the heritage speaker does not have a command of either vernacular. As posited by Wong-Fillmore (1990) “Losing a First Language While Gaining a Second Language” is a common phenomenon experienced among heritage speakers. Therefore, it is important for teachers, speech-language pathologists, and educational psychologists to understand how the principles of bilingualism operate within the heritage language continuum to avoid false positive identification and under identification of a language pathology.

In this investigation, according to the social-language questionnaire certain U.S.-born heritage speakers identified themselves as emerging English-language learners during their childhood in a parochial school setting at the kindergarten level. As postulated by Cummins (1979) the language profile of emerging bilinguals can be divided into two parts, BICS and CALP. BICS represents basic interpersonal communication skills otherwise known as playground English. The

rapid development in this domain of language acquisition among young early sequential bilinguals gives a misconception that all components of language learning are acquired so rapidly among young heritage speaking children prior to the critical period for language learning. According to Cummins it takes approximately seven years to develop the linguistic competency needed to acquire cognitive academic language proficiency (CALP) to access science, social studies, English, and other various subjects.

Dynamic assessment presents a solid pedagogical alternative to traditional psychometric assessment. The zone of proximal development is defined as,

"The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86).

In this method of differential diagnosis, there is less focus on the bilingual child's zone of actual development. Rather more emphasis is placed on the knowledge they acquire through mediation provided by the clinician. After examining the problematic areas that are revealed from static assessment the clinician will target these challenging areas through mediation. The mediation process provides an arena for the clinician to determine the degree of stimulability. This is conducted by teaching a child a feature in a language that has eroded, not been fully acquired, or has been reanalyzed. For example, a particular device that may be problematic is grammatical gender in Spanish or the definite article system in HC.

During the training session scaffolding is implemented because the child's level of development does not allow for one to process this information efficiently. Scaffolding involves using various educational approaches through the vehicle of differential instruction. This process facilitates a progressive understanding of the concept and ultimately independent learning. Through guidance the child will engage in problem solving and as they master the target goal, the

scaffolding is removed (Wood, et al., 1996). During this phase, children with a language-based learning disability will exhibit difficulty due to problems with executive function. Scaffolding will be required for a greater period of time. After several training sessions the child is retested on the items that were targeted in the lesson plan. Measuring the child's development from baseline to their zone of proximal development, including the degree of their response to therapy is the litmus test with respect to differential diagnosis.

Children who demonstrate a language-based learning disability will exhibit problems with executive function that will impact their language skills. Alternatively, children who are typical language developing will demonstrate their knowledge in their performance by reactivating structures that may have been attrited, reanalyzed or not fully acquired. Additionally, their ability to acquire novel structures in the language will be revealed during the retesting phase. Dynamic assessment serves as immunity towards misdiagnosis among the culturally linguistically diverse population. This diagnostic approach is not determined by the divergence between heritage speakers and full-fledged native speakers. Rather, the degree of stimulability through scaffolding during the "relearning or learning" process is the predicting factor in making an accurate diagnosis.

6.2 Future Directions

One weakness in this design was the absence of heritage speaking children of HC. A cross sectional study would provide information on whether or not restructuring behaviors in the definite article system are exhibited among HC speakers in their childhood. Additionally reaction time measures between the two groups of early learners of HC will be analyzed. The fourth experiment (translation perception task) will be analyzed as a separate study. Areas of concentration for this fourth experiment will target accuracy, patterns of reanalysis, and reaction time.

Appendix A
Heritage Language Questionnaire Form

Name _____
Age _____
Date _____

Year of Birth _____
Gender _____

I. Language History.

1) Were you born in the U.S.? Yes/No

If not born in the U.S., please specify the age at which you arrived to the U.S.

2) Where did you grow up?

- a) Country _____
- b) State _____
- c) Borough _____
- d) City _____

3) What is the name of your elementary school? Please specify if it was a public or private school.

- a) Public
- b) Private

4) What is the name of your high school? Please specify if it was a public or private school.

- a) Public
- b) Private

5) Did you study a foreign language at school? Yes/No

6) If yes, what language did you study? _____

7) How many years did you study the foreign language? _____

8) Have you ever received any speech-language services? Yes /No

9) Which hand do you write with?

- a) Left
- b) Right
- c) Both

10) Are any members of your family who are biologically related to you left-handed? Yes/No

11) Are any members of your family who are biologically related to you ambidextrous (use both hands to write with)? Yes/No

12) Did you go to college? If so, how many years? _____

13) Did you go to trade school? If so, how many years? _____

14) Identify your educational level. Please clarify the highest level **you completed**

a) High School

b) GED

c) Associate's Degree

d) College

e) Graduate School/Professional School

f) Other (specify) _____

15) Are you currently a student? Yes/No

16) What is your profession or trade? _____

17) What is your mother's first language? _____

18) What is your father's first language? _____

19) Were you exposed to French in your childhood? Yes/No

20) If you were exposed to French in what context were you exposed to the language?

a) home

b) school

c) church

21) How well did your mother speak English while you were growing up?

a) High Proficiency

b) Moderate Proficiency

c) Low Proficiency

22) How well did your father speak English while you were growing up?

a) High Proficiency

- b) Moderate Proficiency
- c) Low Proficiency

23) Please list **all** of the languages, other than English, with which you have some proficiency either in speaking or in comprehension:

24) In which language do you have the most proficiency? _____

25) In which language are you least proficient? _____

26) Can you read Kreyòl? Yes/No

27) Have you been taught Kreyòl in a formal class setting (e.g., school or church)? Yes/No

28) Do you belong to any Haitian-American organization? Yes/No

29) When you were growing up did you go to church? (Yes/No)

30) If your response is yes, in what language were the services conducted in?

- a) English
- b) Kreyòl
- c) French
- d) Kreyòl and French
- e) Kreyòl and English
- f) Kreyòl, French, English

31) Do you continue to attend church services that utilize Kreyòl and French? Yes/No/Have never attended services

32) Did you visit Haiti as a child? Yes/No

33) If you visited Haiti as a child, how often did you visit?

- a) Rarely
- b) Sometimes
- c) Many times

34) When you were growing up, did your neighborhood consist primarily of first and second generation Haitians? Yes/No

35) How would you describe the percent of first and second generation Haitians in the neighborhood that you grew up in?

- a) None
- b) Small representation
- c) Moderate representation

d) Large representation

36) Do you believe that it is important for children of Haitian descent to learn or to continue to speak Kreyòl with their family members?

- a) Yes
- b) No
- c) Does not matter

37) Were you ever uncomfortable speaking Kreyòl as a child?

- a) Yes
- b) No

38) Is it practical to learn to speak Kreyòl?

- a) Yes
- b) No

39) Would you feel comfortable speaking Kreyòl in front of non-Haitian co-workers?

- a) Yes
- b) No

40) Do you have any brothers and sisters? Yes/No

If so, what is your birth order?

- a) First child
- b) Second child
- c) Third child
- d) Fourth child
- e) Fifth child
- f) Sixth child
- g) Etc..._____

41) What is the age gap in years between each sibling?

- a) First child _____
- b) Second child _____
- c) Third child _____
- d) Fourth child _____
- e) Fifth child _____
- f) Sixth child _____
- g) Etc..._____

42) Mother's occupation upon arrival to the U.S. _____

43) Father's occupation upon arrival to the U.S. _____

44) Mother's present occupation _____

45) Father's present occupation _____

46) What was your mother's occupation in Haiti? _____

47) What was your father's occupation in Haiti? _____

48) At what age did your mother arrive in the U.S.? _____

49) At what age did your father arrive in the U.S.? _____

50) Did your grandparents live with you while growing up? Yes/No

51) What term best identifies your ethnicity?

- a) African-American
- b) African-American of Haitian descent
- c) Haitian
- d) Haitian-American
- e) Caribbean
- f) American
- h) West Indian
- i) Other

52) Estimate how often the people below used Kreyòl and English when they spoke to you as a child

a. Father	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
b. Mother	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
c. Siblings	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
d. Friends	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
e. Grandparents	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
f. Children	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
g. Spouse	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	

53) Estimate how often you used English and Kreyòl when you spoke to the people below as a child.

a. Father	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
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b. Mother	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
c. Siblings	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
d. Friends	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
e. Grandparents	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
f. Children	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	
g. Spouse	Always English	Mostly English	Equal	Mostly Kreyòl	Always Kreyòl	NA	

54) Did you read any printed materials in Kreyòl during your childhood?

Never	Seldom	Sometimes	Often	Always
-------	--------	-----------	-------	--------

55) Do you currently read any printed materials in Kreyòl?

Never	Seldom	Sometimes	Often	Always
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Self-assessed Proficiency

56) I can talk about various topics in Kreyòl.

Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
-------------------	----------	----------------	-------	----------------

57) My pronunciation (accent) in Kreyòl is native-like.

Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
-------------------	----------	----------------	-------	----------------

58) When I speak Kreyòl I include many English words in my conversation.

Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
-------------------	----------	----------------	-------	----------------

59) When I speak Kreyòl I include many French words in my conversation.

Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
-------------------	----------	----------------	-------	----------------

60) I can read a newspaper in Kreyòl and understand most of it.

Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
-------------------	----------	----------------	-------	----------------

61) I can write a letter in Kreyòl to a relative with very limited English.

Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree
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62) Are you married? Yes/No

63) If so, is your spouse of the Haitian descent? Yes/No

Appendix B

Translation Production Task

La or *lan* (allowances for dialect variations)

- 1) The bell was ringing. (kloch la)
- 2) Open the door. (pòt la)
- 3) The snake is long. (koulèv la)
- 4) Rachel sat on the chair. (chez la)
- 5) Read the book. (liv la)
- 6) The pocketbook is big. (Valiz la)
- 7) The house is beautiful. (Kay la)
- 8) Pierre likes the cat that lives next door. (chat la)
- 9) The towel is wet. (sèvyèt la)
- 10) Paul broke the table (tab la).

Nan (make allowances for *lan*)

- 1) Don't jump on the bed! (kaban nan)
- 2) The sugar cane is sweet. (Kann nan)
- 3) Esperance ate the turkey that was on the table. (kodenn nan)
- 4) Don't eat the apple that is spoiled. (pom nan)
- 5) The telephone is ringing. (telefon nan)
- 6) The child fell while running. (timoun nan)
- 7) The kitchen in this house is small. (kwizin nan)
- 8) Tamara poured the flour into a bowl. (farinn nan)

9) Paul ate **the plantain and then threw up.** (bannann nan)

10) **The eggplant** is spoiled. (berejèn nan)

An

1) Look at **the butterfly on the flower!** (papiyon an)

2) **The dog** is barking too loudly. (chyen an)

3) **The soap** smells nice. (savon an)

4) **The fish** died yesterday. (Pwason an)

5) Joelle broke **the toothbrush.** (brosdan an)

6) Marcel placed **the pants** inside her bag. (Patalon an)

7) The mouse ate **the poison** . (pwazon an)

8) **The belt** is too long. (sentiron an)

9) Jasmine is walking on **the road** . (chemen an)

10) **The pig** is dirty. (kochon an)

A or an is acceptable

1) **The curtain** is blue. (rido a)

2) Cut **the avocado!** (zaboka a)

3) **The cake** is delicious. (gato a)

4) **The knife** fell. (kouto a)

5) Rachel lost **the doll.** (poupe a)

6) Look at **the tree** . (pye bwa a)

7) **The boat** sailed on the sea. (bato a)

8) Joëlle is going to swim in **the river**. (larive a) (riviere a)

9) Yolette bought **the washing** machine. (machin a lave a)

10) **The light** in the room is off. (lumiere a)

Appendix C

Real Noun Phrase^v

- 1) The boy- tigason a, ã, nã, la, lã
- 2) The spoon- a, ã, nã, la,
- 3) The comb- a, ã, nã, la, lã
- 4) The school- lekòl a, ã, nã, la, lã
- 5) The ball- boul a, ã, nã, la, lã
- 6) The flag- drapo a, ã, nã, la, lã
- 7) The house- kay a, ã, nã, la, lã
- 8) The eggplant- berejenn a, ã, nã, la, lã
- 9) The door- pòt a, ã, nã, la, lã
- 10) The child- timoun a, ã, nã, la, lã
- 11) The apple- a, ã, nã, la, lã
- 12) The plantain- a, ã, nã, la, lã
- 13) The chair- chèz a, ã, nã, la, lã
- 14) The truck- kamyon a, ã, nã, la, lã
- 15) The table- tab a, ã, nã, la, lã
- 16) The cat- chat a, ã, nã, la, lã
- 17) The sugarcane- kann a, ã, nã, la, lã
- 18) The plastic bag- a, ã, nã, la, lã
- 19) The kitchen- a, ã, nã, la, lã
- 20) The toothbrush- a, ã, nã, la, lã
- 21) The flour- a, ã, nã, la, lã
- 22) The telephone- telefonnen a, ã, nã, la, lã
- 23) The towel- a, ã, nã, la, lã
- 24) The snake- a, ã, nã, la, lã
- 25) The soap- a, ã, nã, la, lã
- 26) The curtain- a, ã, nã, la, lã
- 27) The book- liv a, ã, nã, la, lã
- 28) The road- wout a, ã, nã, la, lã
- 29) The butterfly- a, ã, nã, la, lã
- 30) The washer- a, ã, nã, la, lã
- 31) The room- chanm a, ã, nã, la, lã
- 32) The dog- chen a, ã, nã, la, lã
- 33) The avocado- a, ã, nã, la, lã
- 34) The poison- pwazon a, ã, nã, la, lã
- 35) The knife- kouto a, ã, nã, la, lã

- 36) The cake- a, ã, nã, la, lã
- 37) The pants- kanson a, ã, nã, la, lã
- 38) The bed- kabann a, ã, nã, la, lã
- 39) The river- rivyè a, ã, nã, la, lã
- 40) The doll- a, ã, nã, la, lã
- 41) The pig- kochon a, ã, nã, la, lã
- 42) The tree- pye bwa a, ã, nã, la, lã
- 43) The boat- a, ã, nã, la, lã
- 44) The fish- a, ã, nã, la, lã

Appendix D

Non-word Phrases

- 1) The lato- a, ã, nã, la, lã
- 2) The plag- a, ã, nã, la, lã
- 3) The koul- a, ã, nã, la, lã
- 4) The shab- a, ã, nã, la, lã
- 5) The atrig- a, ã, nã, la, lã
- 6) The gret- a, ã, nã, la, lã
- 7) The lafal- a, ã, nã, la, lã
- 8) The griy- a, ã, nã, la, lã
- 9) The chaliz- a, ã, nã, la, lã
- 10) The briv- a, ã, nã, la, lã
- 11) The forveyt- a, ã, nã, la, lã
- 12) The prat- a, ã, nã, la, lã
- 13) The prido- a, ã, nã, la, lã
- 14) The krido- a, ã, nã, la, lã
- 15) The anapo- a, ã, nã, la, lã
- 16) The flaboka- a, ã, nã, la, lã
- 17) The anipoze- a, ã, nã, la, lã
- 18) The plwa- a, ã, nã, la, lã
- 19) The anoupe- a, ã, nã, la, lã
- 20) The rapye- a, ã, nã, la, lã
- 21) The fimatize- a, ã, nã, la, lã
- 22) The suto- a, ã, nã, la, lã
- 23) The sapiwon- a, ã, nã, la, lã
- 24) The shantalon- a, ã, nã, la, lã
- 25) The lanalson- a, ã, nã, la, lã
- 26) The klavon- a, ã, nã, la, lã
- 27) The plemen- a, ã, nã, la, lã
- 28) The kravon- a, ã, nã, la, lã
- 29) The kwazon- a, ã, nã, la, lã
- 30) The latiwon- a, ã, nã, la, lã
- 31) The drason- a, ã, nã, la, lã
- 32) The slabon- a, ã, nã, la, lã
- 33) The fran- a, ã, nã, la, lã
- 34) The riden- a, ã, nã, la, lã
- 35) The beleton- a, ã, nã, la, lã
- 36) The aklun- a, ã, nã, la, lã

37) The meriten- a, ã, nã, la, lã

38) The blim- a, ã, nã, la, lã

39) The jeremen- a, ã, nã, la, lã

40) The glum- a, ã, nã, la, lã

Appendix E

For each English sentence there will be one Kreyol sentence that is incorrect for all the definite article categories with the exception of definite article (ã,). The definite article ã, does not **have** a dialect variant. The sentences that are not correct or do not convey specificity (omissions) are marked with an asterisk.

A or An,

1) She cleaned the spoon.

- a) She cleaned the spoon. Li te netwaye Kiyè a.
- b) She cleaned the spoon. Li te netwaye Kiyè an.
- c) *She cleaned the spoon. Li te netwaye Kiyè lan. (lan)

2) The flag is torn

- a) The flag is torn. Drapo a chire.
- b) The flag is torn. *Drapo an chire* .
- c)* Flag torn. Drapo chire . (omission)

3) The bag has a hole.

- a) The bag has a hole. Sachè a gen yon tou
- c) The bag has a hole.(Sache') an gen yon tou
- c) *The bag has a hole. La (sache') gen yon tou . (prenominal la)

4) The avocado is ripe.

- a) The avocado is ripe. Zaboka a mi.
- b) The avocado is ripe. Zaboka an mi.
- c) *The avocado is ripe. Zaboka nan mi. (nan)

5) The food tastes delicious.

- a) The food tastes delicious. Manje a gen bon gou
- b) The food tastes delicious. Manje an gen bon gou
- c) *The food tastes delicious. Manje la gen bon gou (la)

6) The present is small.

- a) The present is small. Kado a piti.
- b) The present is small. Kado an piti.
- c) *The present is small. Kado lan piti. (lan)

7) He put the garbage out.

- a) He put the garbage out. Li mete fatra a deyo a.
- b) He put the garbage out. Li mete fatra an deyo.
- c) *He put the garbage out. Li mete fatra la deyo. (la)

8) The boat capsized.

- a) The boat capsized. Bato a te chavire
- b) The boat capsized. Bato an te chavire
- c) *The boat capsized. Bato nan te chavire . (nan)

9) She spread the frosting on the cake.

- a) She spread the frosting on the cake. Li mete krèm sou gato a.
- b) She spread the frosting on the cake. Li mete krèm sou gato an.
- c) *She spread the frosting on the cake. Li mete krèm sou la gato . (prenominal la)

10) You washed the tray

- a) You washed the tray. Ou te lave plato a.
- b) You washed the tray. Ou te lave plato an.
- c) *You washed tray. Ou te lave plato . (omission)

la/lan

1) She likes the school

- a) She likes the school. Li renmen lekòl la
- b) She likes the school. Li renmen lekòl lan
- c) *She likes the school. Li renmen lekòl a (a)

2) The ball is lost

- a) The ball is lost. Boul la pèdi
- b) The ball is lost. Boul lan pèdi
- c) * Ball lost. Boul pèdi (omission)

3) The cat is hungry

- a) The cat is hungry. Chat la grangou
- b) The cat is hungry. Chat lan grangou
- c) *The cat is hungry. Chat an grangou (an)

4) She bought the house

- a) She bought the house. Li te achte kay la.
- d) She bought the house. Li te achte kay lan.
- c) *She bought the house. Li te achte kay nan. (nan)

5) I don't see the snake.

- a) I don't see the snake. Mwen pa wè koulèv la.
- b) I don't see the snake. Mwen pa wè koulèv lan.
- c) *I don't see the snake. Mwen pa wè la koulèv. (prenominal la)

6) The door is close

- a) The door is close. Pòt la femen
- b) The door is close. Pòt lan femen
- c) *The door is close. Pòt a femen (a)

7) The book is torn

- a) The book is torn. Liv la chire
- b) The book is torn. Liv lan chire
- c) *The book is torn. Liv an chire (an)

8) She sat on the chair.

- a) She sat on the chair. Li te chita sou chèz la.
- b) She sat on the chair. Li te chita sou chèz lan.
- c) *She sat on the chair. Li te chita sou chèz nan. (nan)

9) Don't dirty the towel.

- a) Don't dirty the towel. Pa sal sèvyèt la
- b) Don't dirty the towel. Pa sal sèvyèt lan.
- c) *Don't dirty the towel. Pa sal la sèvyèt. (prenominal la)

10) The table is high.

- a) The table is high. Tab la wo
- b) The table is high. Tab lan wo.
- c) * Table is high. Tab wo. (omission)

Nan or Lan

1) The apple is delicious

- a) The apple is delicious. Pòm nan gen bon gou.
- b) The apple is delicious. Pòm lan gen bon gou.
- c) *The apple is delicious. Pòm la gen bon gou. (prenominal la)

2) It is dark in the room.

- a) It is dark in the room. Li (fè) nwa nan chanm nan
- b) It is dark in the room. Li (fè) nwa nan chanm lan
- c) *It is dark in the room. Li (fè) nwa nan chanm a (a)

3) The bed isn't properly assembled.

- a) The bed isn't properly assembled. Kabann nan pa (te) byen ranje.
- b) The bed isn't properly assembled. Kabann lan pa (te) byen ranje.
- c) * The bed isn't properly assembled. Kabann an pa (te) byen ranje. (an)

4) You unplugged the telephone.

- a) You unplugged the telephone. Ou te deploge telefòn nan.
- b) You unplugged the telephone. Ou te deploge telefòn lan.
- c) *You unplugged the telephone. Ou te deploge telefòn . (omission)

5) He bought the flour.

- a) He bought the flour. Li te achte farin nan.
- b) He bought the flour. Li te achte farin lan.
- c) *He bought the flour. Li te achte la farin . (prenominal la)

6) The turkey isn't cooked.

- a) The turkey isn't cooked. Kodenn nan pa (te) kwit.
- b) The turkey isn't cooked. Kodenn lan pa (te) kwit.
- c) *The turkey isn't cooked. Kodenn la pa (te) kwit. (la)

7) She ate the plantain.

- a) She ate plantain. Li te manje bannann nan
- b) She ate plantain. Li te manje bannann lan.
- c) *She ate the plantain. Li te manje la bannann. (prenominal la)

8) The child is sick.

- a) The child is sick. Timoun nan malad.
- b) The child is sick. Timoun lan malad
- c) Sick child. Timoun malad. (omission)

9) The sugarcane is spoil.

- a)The sugarcane is spoil. Kann nan gate
- b)The sugarcane is spoil. Kann lan gate
- *c)The sugarcane is spoil. Kann an gate . (an)

10) The mountain is very high.

- a) The mountain is very high. Mòn nan wo anpil.
- b) The mountain is very high. Mòn lan wo anpil
- c) *The mountain is very high. Mòn a wo anpil. (a)

An (For this definite article, there are no dialect variations. Therefore, there will be two errors in Kreyol for each English sentence) The errors or the sentences that do not convey specificity are marked with an asterisk.

1) Don't step on the butterfly

- a) Don't step on the butterfly. Pa pile papiyon an.
- b) *Don't step on the butterfly. Pa pile papiyon nan. (nan)
- c) *Don't step on the butterfly. Pa pile papiyon a. (a)

2) The dog is pregnant.

- a) The dog is pregnant. Chyen an ansent
- b) *The dog is pregnant. Chyen la ansent. (la)
- c) * Dog is pregnant. Chyen ansent (omission)

3) The soap slipped out of her hand.

- a) The soap slipped out of her hand. Savon an te glise nan men li.
- b) * The soap slipped out of her hand. Savon lan te glise nan men li. (lan)
- c) The Soap slipped out of her hand. La savon te glise nan men li. (prenominal la)

4) Nadege ate the fish

- a) Nadege ate the fish. Nadèj te manje pwason an.
- b) *Nadege ate the fish. Nadèj te manje pwason a (a)
- c) *Nadege ate the fish. Nadèj te manje pwason nan (nan)

5) Michelle lost the toothbrush.

- a) Michelle lost the toothbrush. Michèl te pèdi bròs dan an
- b) *Michelle lost the toothbrush. Michèl te pèdi bròs dan la (la)
- c) *Michelle lost the toothbrush. Michèl te pèdi la bròs dan prenominal la

6) Rachel bought the pants.

- a) Rachel bought the pants. Rachel te achte pantalon an.
- b) *Rachel bought pants. Rachel te achte pantalon (omission)
- c) *Rachel bought the pants. Rachel te achte pantalon lan (lan)

7) Jasmine wore the belt last night.

- a) Jasmine wore the belt last night. Jasmin te mete sentiron an yeswa
- b) *Jasmine wore the belt last night. Jasmin te mete sentiron a yeswa (a)
- c) *Jasmine wore the belt last night. Jasmin te mete sentiron nan yeswa (nan)

8) The road is very long .

- a) The road is very long. Chemen an (tre') long.
- b) *The road is very long. La Chemen (tre') long. prenominal la
- c) * The road is very long. Chemen la (tre') long. (la)

9) Tamara killed the pig.

- a) Tamara killed the pig. Tamara te tiye kochon an.
- b) *Tamara killed the pig. Tamara te tiye kochon la. (la)
- c) *Tamara killed the pig. Tamara te tiye kochon lan. (lan)

10) The boy is walking.

- a) The boy is walking. Gason an ap mache.
- b) *The boy is walking. Gason a ap mache. (a)
- c) *Boy is walking. Gason ap mache. (omission)

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Notes

ⁱ A special thanks to Dr. Peggy S. Conner, who served as outside reader, and helped edit this document post-humously.

ⁱⁱ This dissertation is neutral on which allomorph should be considered “underlying”, and thus “det” is used to indicate this. A constraint-based approach may work best for this system because it is not straightforward to “generate” [l] from [n] or [n] from [l] in a rule-based system.

ⁱⁱⁱ This relationship may be significant using logistic regression.

^{iv} Further reading on typological markedness can be found in Eckman, F. R. Typological markedness and second language phonology. (2008) In Hansen-Edwards J.G. and Zampini M.L. (Eds.) *Phonology and Second Language Acquisition*, pps. 95-115. John Benjamins Publishing Company.

^v Some of these have translation equivalents and some do not.