NON-FLUENT APHASIA IN ENGLISH-BASED CARIBBEAN CREOLES

CHARACTERIZING NON-FLUENT APHASIA IN ENGLISH-BASED CARIBBEAN CREOLE LANGUAGES: A CASE STUDY

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TITLE: Characterizing Non-Fluent Aphasia in English-Based Caribbean Creole Languages: A Case study

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ABSTRACT

Impairment caused by non-fluent aphasia often results in the omission and substitution of inflectional markers. Cross-linguistic work has revealed differential patterns of aphasic impairment across languages. This study aims to determine how non-fluent aphasia is manifested in English-based Caribbean creole languages, namely Jamaican Creole English (JCE) and Guyanese Creole (GC). The use of inflectional morphology is variable in English-based Caribbean creole languages. Therefore, in aphasic creole speech, it is difficult to ascertain the status of a grammatical omission as a valid creole feature or as a sign of impairment. I argue that Seymour's et al. (1998) contrastive-noncontrastive schema can be useful for differentiating between normal and disordered creole features. The data in this study was obtained from a creole speaker with aphasic impairments. The data was later transcribed and analyzed. The results of this study appear to suggest that grammatical markers may form a hierarchy of susceptibility to aphasic impairment. Tense, agreement and aspectual markers along with auxiliaries and copulas appear to be more susceptible to impairment in disordered creole speech than plural markers, personal and demonstrative pronouns and articles.

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DECLARATION OF ACADEMIC ACHIEVEMENT

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1.0 Introduction

Aphasia is a neurological disorder that can significantly impair language production and comprehension. The onset of aphasia is often triggered by stroke or other severe brain trauma. There are two types of aphasia: non-fluent and fluent. Non-fluent aphasia is the focus of this paper. Early theoretical work, mainly based on the language production of English-speaking aphasics, also described agrammatism as a common symptom of non-fluent aphasia (Goodglass & Berko, 1960; Goodglass, 1976; Stemberger, 1985; Menn & Obler, 1990), and characterized agrammatism as the frequent omission of inflectional morphology and functional markers. However, more recent cross-linguistic studies of non-fluent aphasia have revealed that agrammatic symptoms are not universal (Bates, 1987; Bates, Friederici & Wulfeck, 1987). In highly inflected languages such as Italian and Russian, non-fluent aphasia is characterized by the confusion of inflectional morphemes rather than the omission of these markers (Grodzinsky, 1984). Very little is known about the characteristics of non-fluent aphasia when a non-standard or contact variety of language is affected. This study seeks to describe how non-fluent aphasia manifests in Jamaican Creole English (JCE) and Guyanese Creole (GC).

2.0 Previous Aphasia Research

The linguistic output of non-fluent aphasia has been studied extensively over the last four decades. Goodglass (1976) stated that difficulty employing grammatical markers is a common symptom of non-fluent aphasia in English.

Specifically, Goodglass (1976) described agrammatism as a syntactic deficit caused by damage to brain areas responsible for language production. As stated above, agrammatism is characterized by the omission of functional items such as auxiliaries, copulas and tense markers. Goodglass (1976) mentioned that several researchers have attempted to determine the element that triggers the onset of agrammatic aphasia, however the results of this work are inconclusive. These researchers then suggest that agrammatism may be motivated by several of the following factors: a desired reduction of the cognitive demands of speech, loss of abstractness, inability to use words out of context and a difficulty in grouping phonological and grammatical elements into larger units (Goldstein, 1948; Jakobson & Halle, 1956).

Kean (1977) described agrammatism as a phonological disorder in English. More specifically, the author argued that all linguistic deficits frequently observed in aphasic speech are the result of impairments at the phonological level. The phonological module within the grammar system regulates the sound pattern of morphological units and sentential structures. Accordingly, impairment to the phonological sub-system can result in deviant articulation patterns. This impairment can lead to the misrepresentation of the phonological information associated with a given lexical item and in turn, can cause the phonemic paraphasias often associated with aphasic speech.

Kean (1977) also mentioned that there is a direct relationship between the phonological saliency of a given morphological unit and the likelihood that it will

be retained in aphasic speech. Kean (1977) described a phonological word as, "...The string of segments, marked by boundaries, which function in the assignment of stress to a word (in English)" (p. 22). Because function words and affixes do not have phonological prominence in normal speech, individuals with aphasia often omit them.

Kean (1977) went on to explain that the standard pattern of inflectional omissions in aphasic speech is the result of normal patterns in language processing and production. She asserted that in normal speech, inflectional markers are more likely to be omitted than derivational markers; given that many derivational markers have lost their morphologically productivity. These markers carry important semantic information which makes them resistant to loss. For example, consider the speech errors in (1) - (3) below[1].

(1) **Al see her every week.*

(Intended: Al sees her every week.)

(2) **The prof lecture is boring.*

(Intended: The prof's lecture is boring.)

(3) **Alicia is wonder.*

(Intended: Alicia is wonderful.)

In both (1) and (2), inflectional markers are omitted— the third-person singular morpheme and the genitive marker respectively, while in (3) a derivational affix is omitted. According to Kean (1977), the errors in (1) and (2),

[1] Examples based on (Kean, 1977, p. 28-32).

are more likely to occur in both normal and aphasic speech than the error in (3). In (3), the nominal suffix –*ful* is no longer productive in English. As such, it is unlikely that this marker would be deleted, as English speakers may perceive it as being inseparable from the verbal stem.

Grodzinsky (1984) challenged the classic views of agrammatism. He argued that certain languages do not permit the omission of inflectional morphemes, and as such aphasia is manifested differently in these languages. Grodzinsky (1984) grouped languages into three general categories based on possible relationships between bound inflectional morphemes and morphological structure. He classified "Type A" languages as those that permit lexical items to exist independently of inflectional morphemes. For example, in English the uninflected lexical item *boy* is a well-formed word. In "Type B" languages, a lexical item can be phonologically, but not morphologically, well formed without inflection. For instance, in Italian, the uninflected root form of 'friend' is *amic*; while it is technically possible to pronounce this root form, it is a non-word in Italian. The root must be inflected for gender and number in order to be considered an independent Italian word as in *amico* 'male friend' and *amica* 'female friend'. "Type C" languages are those in which lexical items require inflection to be both morphologically and phonologically well formed. In Hebrew, words are formed from a combination of tri-consonantal roots and vocalic sequences that have inflectional functions. Tri-consonantal roots cannot stand alone as independent morphological or phonological units. For example, the notion of writing

corresponds to the Hebrew root 'k-t-b'. This tri-consonantal sequence is an unpronounceable non-word in Hebrew; the form must undergo inflectional and derivational concatenation in order to be a pronounceable Hebrew word as in *katab* 'wrote'. Grodzinsky (1984) showed that there is a relationship between this typological schema and the characteristics of agrammatic aphasia. Generally, inflectional morphemes will be retained in aphasic speech if they are required to make a well-formed word as seen in type B and C languages. Agrammatic speakers of type B and C languages do not frequently omit inflectional markers; instead, they often confuse inflectional markers and use them erroneously. In type A languages, where it is not necessarily the case that inflectional morphology is required to ensure the well-formedness of word, an unmarked word form is often selected by an individual with agrammatic aphasia. Thus, it may be the case that agrammatism should not be defined by errors of omission in type A languages but rather substitution errors where a zero morpheme is selected instead of an overt inflectional morpheme.

2.1 Cross-linguistic Research

Menn and Obler (1990) is a sourcebook of various agrammatic aphasia studies on several different languages. Many researchers cite Menn and Obler (1990) as a foundational work in the cross-linguistic study of agrammatism. As stated in section1.0, the focus of this study is to determine how aphasia is manifested in Caribbean creole languages; this work will help to complete our knowledge of the patterns of language disorder seen across languages. Below I

provide a brief review of cross-linguistic aphasia studies, many of which are presented in Menn and Obler (1990). While more current work on agrammatic aphasia is available, the motivations of early cross-linguistic studies are more in line with a preliminary investigation of agrammatism in creole languages. The methodological design of the studies discussed below is nearly identical: participants were asked to tell a narrative about their illness, recount a common folktale and describe a complex picture. Speech data was then analyzed for error patterns and production parameters. Participants were also asked to complete oral reading and written comprehension tasks.

2.1.1 Agrammatism in French. French is an inflectional language where verbs and nouns must be inflected for grammatical information such as tense, aspect, person, number and gender (Hawkins & Towell, 1996). French has verbal auxiliaries, determiners and articles. There are two types of French pronouns - strong and weak pronouns. Strong pronouns are often stressed (i.e. subject pronouns), while weak pronouns are often unstressed, cliticized forms (i.e. direct or indirect object pronouns). Early studies revealed that agrammatic aphasia is often characterized by the omission of grammatical markers and functional words in French (Alajouanine & Lhermitte, 1963; Dubois et al., 1973). However, it has also been reported that agrammatic individuals can produce grammatical elements successfully in French (Tissot, Mounin & Lhermitte, 1973).

Nespoulous, Dordain, Perron, Jarema & Chazal (1990) examined agrammatic symptoms in two agrammatic aphasics. Both participants had

hypodensities in the posterior insular and temporal regions, and each participant was matched with a control. Study results revealed that clitic pronouns and have/be verb forms (including auxiliaries and main verbs) were most severely affected in both participants. Overall, these forms were subject to omission errors more frequently than substitution errors. One patient also frequently omitted prepositions and demonstrated difficulty with articles. Both patients underused adjectives, subordinate clauses, coordinating conjunctions and genitive markers, whereas lexical verbs, personal subject pronouns and determiners were produced frequently. The results of this study are in line with commonly held views about agrammatic aphasia. Agrammatic patients in this study produced slow, effortful speech along with highly reduced phrase length. Certain free-standing grammatical morphemes were also frequently omitted (e.g. verbal auxiliaries), while others free-standing grammatical morphemes were incorrectly substituted (e.g. clitics). Both patients produced most bound verbal inflections correctly.

Nespoulous et al. (1990) provided evidence that strong and weak pronouns are affected differently in agrammatic aphasia. Weak object pronouns tend to be omitted, while strong subject pronouns are less prone to error. These researchers refuted the earlier view that stress patterns can account for the preservation or loss of forms in agrammatic speech (i.e. unstressed words may be more prone to disruption in disordered speech than stressed words (cf. Kean, 1977)) While it is true that in French subject pronouns are stressed more often than object

pronouns, the authors pointed out that nearly all pronouns can be cliticized and unstressed. As such, Kean's (1977) phonological hypothesis cannot fully account for the linguistic patterns observed in French-speaking agrammatic patients.

Nespoulous et al. (1990) suggested that object pronouns are frequently omitted because they exert pressure on agrammatic processing resources, perhaps this may be a result of the preverbal position of object pronouns that violates the canonical SVO word order of French. An increased processing load can also be attributed to the fact that object pronouns occur most often in syntactically-complex clauses. Overall, researchers maintain that agrammatism is a syntactic deficit that interferes with the process of building syntactic constructions.

2.1.2 Agrammatism in Mandarin. As an analytic language, Mandarin lacks inflectional morphology. Words in this language generally have one simple form that is not overtly specified for grammatical information such as person, gender, tense and case. As Packard (1990) observed, Mandarin does not distinguish between finite and infinitive verb forms and does not employ grammatical agreement between various sentential elements. Mandarin does however utilize word order, preposition-like words and discourse information to express case relations (e.g., locative, dative). The majority of Mandarin words are either monosyllabic or bisyllabic; bisyllabic words tend to be nouns and verbs, which are considered compounds. Packard acknowledged the existence of both endocentric and exocentric compounds in Mandarin. Endocentric compounds

have an internal head that expresses the core meaning of the entire word, as in the example *bing-ren* 'patient', which is literally 'sick person' (Packard, 1990, p. 1192). The meaning of an exocentric compound however is not based on that of its internal components. The Mandarin word *kai-guan* 'valve' corresponds literally to 'open-close'; both lexical units of this word are only loosely related to the overall meaning of the compound (Packard, 1990, p. 1192). Packard explained that the process by which bisyllabic words are formed is considered the most complex morphological operation in Mandarin.

Packard (1990) stated that pronouns can occasionally be omitted in Mandarin when the referent of a pronoun is a third person non-human entity and has been explicitly stated in a given context. Although Mandarin does not have an inflectional system, the language does utilize bound morphemes called classifiers which must occur between determiners and nouns, and must agree with the semantic properties of the noun. Packard provides the following example (p. 1194):

(1) *wo* *de* *shu*
I ATR book
'my book(s)'

In (1), the noun *shu* is being modified by the possessive pronoun *wo*, as such the classifier *de*, which marks noun attribution (ATR), must be inserted between the determiner and noun. Mandarin also has sentence-final particles that mark specific grammatical information such as aspect and agreement.

Packard (1990) studied the effects of agrammatism in Mandarin in one aphasic patient. The participant was a fluent speaker of Mandarin and suffered from damage in the frontotemporal region. The study results revealed that the participant made only omission errors and no substitution errors. The most common error involved the attributive classifier *de*. Active verbs were also prone to error; many of these verbs were endocentric compounds, where the head of the compound was retained, and the secondary component, providing minor semantic or grammatical information, was omitted. Packard also observed that omitted elements where commonly unstressed and often occurred in word-final position. The results also reveal that the patient overused have/be lexical verbs, affirmation phrases, negation markers and aspectual particles. Packard (1990) speculated that classifiers such as *de* are frequently deleted in agrammatic speech because they provide semantic information that is already indicated by the elements modifying the noun. For example, in (1) it is naturally obvious that the possessive pronoun *wo* would modify the noun *shu*; therefore, the classifier *de* offers redundant information. As such, classifiers may be underemployed because they are not essential to the meaning of a given phrase of sentence.

As seen in other languages, Mandarin-speaking agrammatics underuse grammatical function words, however certain grammatical markers are well retained in disordered Mandarin speech (i.e. negation markers and aspectual particles). A unique observation in this study is that the semantic head of endocentric compounds is retained, but the component providing grammatical

information is omitted. This result is comparable to patterns seen in other languages.

2.1.3 Agrammatism in Hebrew. As discussed in section 2.0, Hebrew words are comprised of a tri-consonantal root and vocalic sequences, which provide inflectional or derivational information. Verbal roots are marked for information such as tense, transitivity, person and number; nominal roots are marked for gender, number and possession (Baharav, 1990). Hebrew has prepositions, copulas and pronouns similar to those found in English (Baharav, 1990). Hebrew prepositions can be bound to their nominal or pronominal complements, as exemplified in (1) and (2) below from Baharav (1990, p. 1128):

(1) *be* + *hem* → bahem
in they 'in them'

(2) *be* + *Tel Aviv* → betel'aviv
in Tel Aviv 'in Tel Aviv'

Hebrew personal pronouns are generally inflected for person, number and gender; the demonstrative pronoun *ze* may or may not agree with the noun it modifies for gender and number. The Hebrew copula 'h-y-y' may be omitted occasionally in present-tense constructions.

Baharav (1990) studied agrammatic symptoms in two Hebrew-speaking aphasics. Both participants were male and had hypodensities in the left fronto-temporal and parietal regions, but the first subject was more severely impaired than the second participant. Both participants were matched with control subjects. Study results revealed distinct error patterns for each participant. Both

subjects produced substitution and omission errors involving verbs, adjectives and pronouns, but the subject with greater impairments produced more omission errors than substitution errors, while the less-impaired subject produced an equal number of substitution and omission errors. Both patients incorrectly produced gender and finiteness markers and frequently omitted pronouns and copulas. In addition, the patient with more severe impairments also omitted definite articles, relative markers and prepositions.

Baharav (1990) concluded that the differential patterns in patients were likely due to their varied degrees of impairment. Patients used intransitive sentences frequently; Baharav attributed this pattern to the relatively low processing cost of these structures in relation to more complex structures. Interestingly, patients overused a subclass of grammatical morphemes with affirmation, negation and exclamatory functions. Since, it is not mandatory that these particles agree with other sentential elements, they do not exert a heavy processing load. The results of this study confirmed the common finding that agrammatic individuals are still able to utilize grammatical information, however this ability is largely dependent upon degree of impairment.

2.1.4 Agrammatism in Japanese. Sasanuma, Kamio and Kubota (1990) stated that Japanese verbs are not marked for person or number but can be inflected for present or past tense. Japanese also has verbal auxiliaries and copulas. Japanese makes use of free-standing particles to express case and

topic information; the language also utilizes sentence-final and clause-final particles which provide discourse information.

Sasanuma et al. (1990) examined agrammatism in two Japanese-speaking patients. Both participants had hypodensities in the left frontotemporal region; as well, both participants were matched with controls. Study results showed that patients often omitted main verbs, copulas and auxiliaries. The study subjects also frequently omitted case, topicalization and question particles, but frequently produced sentence-final and clause-final particles. Based on these results, the researchers concluded that there may be a hierarchy of susceptibility amongst Japanese structural particles, where case markers, topic markers and question markers are more prone to error than sentence-final and clause-final particles. As mentioned above, both sentence-final and clause-final particles have discourse-related roles. Sasanuma et al. posited that particles which provide more semantic information (i.e. sentence-final particles) may be less prone to error those which provide less semantic information (i.e. case and topic markers). This pattern is a common finding in cross-linguistic aphasia studies.

2.1.5 Agrammatism in Italian. As discussed in section 1.0, Italian is an inflectional language where verbs must be marked for person, number, tense and mood and nouns for gender and number. Uninflected verbal and nominal stems can stand independently. Italian adjectives and articles must agree with the nouns that they modify for gender and number. The language also utilizes auxiliary verbs, modals, adverbs, prepositions and personal pronouns. Also,

subject pronouns in Italian are generally omitted when the speaker wishes to draw attention to the subject of a sentence. Clitics are used for locatives and indirect objects. Clitics immediately precede finite verb forms, but immediately follow infinitive, imperative and participle verb forms. Clitics do not affect stress assignment in verbal constructions.

Miceli and Mazzucchi (1990) examined error patterns in Italian-speaking agrammatic aphasics. The researchers were interested in errors that involved free and bound grammatical markers along with difficulty in producing main verbs. The researchers also wanted to determine whether or not the common pattern of omissions of grammatical morphemes seen in English-speaking agrammatics is also present in Italian, a language with a more robust inflectional system. Two male Italian-speaking aphasics participated in this study. Each patient was matched with a control. Both patients had damage in the left frontal region. One participant frequently omitted and underused clitics, and had high omission rates for main verbs, prepositions and articles. In addition, this subject also made many substitution errors with verb inflections, but showed normal use of coordinating conjunctions, subject pronoun and auxiliaries. The same patient also showed restricted use of adjectives and subordinating conjunctions and relative pronouns. The second participant appeared to be less impaired than the first subject, and displayed a lower error rate. He had difficulty producing auxiliary verbs, but his production of verb inflections and prepositions was only slightly impaired. The second participant showed normal production of indefinite articles

but a reduced use of subordinating conjunctions and relative pronouns. Interestingly, no omission of bound grammatical morphemes was observed in either patient, as the absence of bound inflectional morphemes would result in non-words in Italian. Thus, all errors either consisted of substitutions of the wrong inflectional morpheme or omission of the entire target word. Again, it appears that that the omission of bound grammatical morphemes is not a universal pattern of agrammatism as formerly believed. The omission of bound inflectional markers is infrequent in languages, such as Italian, where the omission of grammatical morphemes would result in a non-word.

2.1.6 Agrammatism in Dutch. Dutch is an inflectional language. Dutch verbs are inflected for tense, person and number, and Dutch nouns are only inflected for number. This language has masculine, feminine and neuter gender; grammatical gender is an inherent property of Dutch nouns and articles. Dutch also has strong and weak personal pronouns. Weak personal pronouns are clitics and are not obligatory. Generally, there are no stringent criteria for determining the contexts for strong and weak personal pronouns in Dutch. However, when a personal pronoun is stressed, the strong variant is usually elicited. Dutch also has auxiliary verbs, copulas and demonstrative pronouns.

Kolk, Heling and Keyser (1990) studied error patterns of agrammatism in Dutch-speaking aphasics. Study subjects were two males diagnosed with non-fluent aphasia. Study results showed that patients often omitted articles and personal pronouns. More specifically, weak pronouns were omitted more

frequently than strong pronouns. Nouns and adjectives were well retained in both patients, but a high omission rate was observed for verbs. Patients had the greatest difficulty with auxiliary verbs and non-lexical verbs. The results of this study appeared to suggest that bound inflectional morphemes are not significantly disrupted in Dutch-speaking agrammatics; instead, entire target forms are omitted.

2.1.7 Agrammatism in German. German is an inflectional language. German verbs are marked for tense and must agree with subject nouns for person and number. Nouns and pronouns are marked for case, gender, number and person in German. Nouns in German must agree with articles, determiners and adjectives for grammatical gender, case and number. German occasionally allows disagreement between gender and case markings in article-noun pairs. Stark and Dressler (1990) studied agrammatism in German. One male and one female participated in this study; both subjects were fluent speakers of German and were diagnosed with agrammatic aphasia. The researchers found that the most impaired categories in both patients were articles, pronouns and have/be auxiliaries. The researchers were also surprised to find that bound grammatical forms such as verbal prefixes and plural markers had a low omission rate. Overall, study results suggested that bound morphemes are less prone to impairment in German-speaking agrammatic aphasics than free morphemes or whole target words.

2.1.8 Agrammatism in Turkish. Slobin (1991) described Turkish as an agglutinating language where words are derived by combining strings of morphemes. In Turkish, each morphological string can carry grammatical information such as tense, aspect, number, person, negation, voice, mood and case. The author stated that free-standing grammatical morphemes do not exist in Turkish; all derivational and inflectional morphemes are bound. Turkish also utilizes demonstratives, adjectives and postpositions. Unlike languages like such as English, grammatical morphemes are often stressed in Turkish. Slobin studied agrammatic aphasia in Turkish-speaking aphasics. Participants in this study are as follows: seven non-fluent aphasics, ten fluent aphasics and ten controls. Subjects were given a naming test, lexical comprehension test and picture description test. Only the results of the non-fluent aphasics will be discussed in this summary. The author found that noun and verb inflections were well retained in non-fluent aphasics. However, these patients showed restricted use of verb inflections. More specifically, non-fluent aphasics often limited themselves to expressions of tense, negation and mood. These findings provided further evidence that non-fluent aphasics can produce grammatical markers, and that the absence of inflectional morphology is not a universal symptom of agrammatism. Slobin maintained the widely supported view that agrammatism is manifested differently across languages. More specifically, these symptoms are dependent upon language-specific morphological properties.

2.1.9 Agrammatism in Korean. Korean is an agglutinating language and a syllable-timed language, where all morphemes are equally prominent. Also, each morpheme has a one-form-to-one-meaning relationship. Halliwell (2000) states that Korean verbs cannot stand alone, as they themselves are bound morphemes as demonstrated in (2) below. Honourific, aspect and tense morphemes must attach to verb stems, followed by a verb final marker (VFE), which must be attached to the end of every verb. Verbal morphemes attach to verb stems in a strict order. Halliwell provides the example presented below in (1) (Halliwell, 2000, p. 1188):

(1) *ha-si-ess-keyssa-ta*
do-HON-PAST-ASP-VFE
'He might have done it.'

(2) **ha*
do

Noun stems however can stand independently as free morphemes. Case markers and postposition markers can be attached to nominal stems in Korean; however, case morphemes can occasionally be omitted. Halliwell investigated the effects of agrammatism in Korean. The author completed an experimental study utilizing the methodological design outlined in Menn & Obler (1990). Two Korean speakers diagnosed with aphasia participated in this study. Each patient was matched with a control. Study results showed that aphasic patients frequently omitted case makers and underused postpositions. Halliwell provided evidence that neither subject produced morphological strings with honorific or aspectual markers. The author also found that participants consistently substituted past

tense markers for present tense markers. The verb final marker however was well retained in both subjects. Halliwell stated that this dissociation in regards to grammatical markers is surprising, and that current theoretical models cannot account for this pattern. The author also mentioned that more work must be done to ascertain the nature of agrammatism and its effects on grammatical morphology.

2.2 Cross-linguistic Patterns of Agrammatic Aphasia

The studies above reveal differential patterns of agrammatic impairment across languages. Menn and Obler (1990) provide a general summary of the cross-linguistic patterns of agrammatic aphasia. A summary of relevant points is provided below:

- Agrammatic aphasics often exhibit reduced phrase length and speech rate along with a preference for simplified syntactic structures.
- Free morphemes (e.g auxiliaries and articles) appear to be omitted frequently by agrammatic aphasics in languages such as English, German and Dutch. However, certain free grammatical morphemes are spared in agrammatic speech (e.g. sentence final particles in Japanese).
- Across languages, bound morphemes are affected differentially by agrammatic impairment. In languages where the omission of a bound morpheme would result in an illegal word (i.e. Italian), substitution errors are instead more common. On the other hand, omission errors involving

bound morphemes are more frequent than substitution errors in languages where these omissions would still result in a legal word. However, certain bound morphemes (i.e. sentence-final and verb-final markers) are well retained in languages such as Chinese and Korean.

- Agrammatic aphasics tend to omit verbs more frequently than nouns; authors also state that nouns are more likely to be disrupted in languages with a complex system of nominal inflections.

More recent cross-linguistic aphasia studies will be discussed later in this paper. While these studies have deepened our knowledge of the cross-linguistic patterns of agrammatic aphasia, there are still many disparities in this field of research. The neurological basis of agrammatic aphasia remains unclear, and we still lack a comprehensive and concrete understanding of how this disorder interacts with the unique morphosyntactic properties of the world's languages.

2.3 The Issue of Language Bias in Aphasia Research and Clinical Speech Therapy

While the existing body of cross-linguistic literature is slowly expanding, there is still a countless number of languages which have not yet been studied. Beveridge & Bak (2011) found that in the last decade, approximately 62% of all aphasia articles published in four major journals were based on English-speaking subjects; more generally, nearly 89% of all articles were based on speakers of Romance and Germanic languages. In regards to the current state of aphasia research, the authors said this, "It is far from being representative for the world's

languages, either in terms of linguistic typology or the number of speakers, limiting its worldwide applicability and undermining the universality of its claims" (p. 1465). It will be impossible to truly ascertain the linguistic nature of agrammatic aphasia, if the study of this disorder only extends to a limited number of languages. More research needs to be done in order to solidify our knowledge of the cross-linguistic impact of agrammatic disorder.

Beveridge & Bak (2011) also addressed the impact of language bias in the field of speech therapy, "The global use of English in the scientific literature allows us to communicate theories and exchange clinical experiences… yet our patients speak a wide range of vastly diverging languages and…our work has to take this into account" (p. 1465). Standard languages dominate in education across the world, and as such there is often no place for nonstandard, minority languages in the classroom. Clinicians have confirmed that this issue comes into play when assessing and treating language impairment in multilingual and multicultural populations. Several studies have reported that many therapists do not feel that they received adequate training in multilingual and multicultural issues during university and professional programs (Kritikos, 2003). As a result, some clinicians did not feel entirely confident in assessing and treating language disorders in linguistically diverse populations (Hammer, Detwiler, Detwiler, Blood & Qualls, 2004). Some therapists also mentioned that a lack of diagnostic resources for multilingual speakers also introduces difficulty into the language assessment of these populations (Williams & McLeod, 2012). It is likely that these

therapists are forced to rely on their own default assumptions when differentiating between language difference and language disorder. Therefore, the need to study languages that have been previously overlooked is of great importance to aphasia research and speech therapy. It is this work that will enable us to truthfully understand, identify and best treat language disorders. This study is a preliminary investigation into the impact of agrammatic aphasia on English-based Caribbean creole languages.

3.0 Creole Studies

Creole languages have naturally developed as a result of extended contact between at least two languages in a particular socio-historical context. The linguistic structure of creole languages has been well studied by linguists (Le Page & Decamp, 1960; Bailey, 1966; Bickerton, 1975; Rickford, 1987; Siegel, 1987; Holm, 2000). McWhorter (1998) identifies the absence of inflectional morphology as one of the defining features of creole languages. This distinct linguistic property is the focus of this study. Creoles convey the grammatical information expressed by inflectional morphology in other languages through the use of independent pre-verbal forms known as *tense, mood* and *aspect* (TMA) markers. For example, consider the Jamaican Creole English sentence provided in (1) below[2]:

[2] Example based on (Patrick, 2004, p. 411-412).

(1) *Mi*[3] *did walk.*
I PST walk
"I walked."

In (1), the tense marker *did* indicates that the event occurred in the past, whereas in English this information is expressed by the verbal morpheme *-ed*. A brief summary of relevant morphological features in Jamaican Creole English (JCE) and Guyanese Creole (GC) is provided below.

3.1 JCE

3.1.1 History. Patrick (2004) provided a description of the JCE morphological system. This account is summarized below**.** Patrick described JCE as the most widely spoken English-based Caribbean Creole and the most well studied Caribbean creole. The language developed in the 18th and 19th centuries during slavery due to contact between a number of West African languages (i.e. those of the Akan and Kwa families) and British English dialects.

3.1.2 The Creole Continuum. Linguists describe English spoken in Jamaica as creole continuum where Jamaican Standard English (JSE) lies at one end and Jamaican Creole English (JCE) lies at the other (Le Page & DeCamp, 1960; Cassidy, 1961; Rickford, 1987; Patrick 1999). The JSE end of the continuum is known as the acrolect, while the JCE end of the continuum is known

[3] Much controversy surrounds the use of standard orthography in English-based Caribbean creole languages. As such, throughout this paper I have represented all creole data in modified etymological orthography. In referring to creole languages, Siegel (2010) stated that this orthographic system utilizes the spelling of the lexifier language, which in this case is English, while emphasizing the unique phonological and morphological features of the creole language. For example, the English word 'me' is represented as *mi* to capture the creole pronunciation of this word.

as the basilect. The area between the two ends of the continuum is referred to as the mesolect. This space is made up of grammars that contain both basilectal and acrolectal features. Patrick (2004) stated, "…the most important variety in Jamaica is the intermediate one known as the mesolect; its broad limits include the speech uttered by most Jamaicans, in most situations" (p. 409). Linguists classify JSE a dialect of Standard English but JCE as a distinct linguistic entity, as the linguistic structure of JCE is significantly different from that of English.

JCE is widely spoken and easily accessible to all Jamaicans, whereas JSE is present in selective environments, such as in schools, media and government settings. JCE has long been viewed as inferior to JSE, however this attitude is changing amongst younger speakers due to the popularization of reggae music and Jamaican culture (Holm, 2000).

3.1.3 TMA system. The JCE TMA system is one of the unique properties that distinguish the creole from JSE and other English varieties. Bickerton (1975) offered the most influential account of the JCE TMA system. The author stated that the TMA system encompasses three general elements: anterior tense, irrealis mood and non-punctual aspect. Bickerton argued that JCE utilizes anterior tense rather than absolute tense, which is employed in Standard English varieties. Thus, when a past tense marker precedes a non-stative verb it will carry a "past-before-past" interpretation. Essentially, this means that the event being reported occurred before a specific point in the past. That specific point is

the time of reference rather than the time of speaking. Consider again the following example:

(1) *Mi did walk*.
I PST walk
"I walked."

In (1), the use of the past tense marker *did* signifies that the walking event occurred in the past as mentioned above. Also note that the past tense marker occurs with a non-stative verb *walk*. Therefore, according to Bickerton (1975), this sentence has an anterior tense reading where the walking event happened before at a *specific* point prior to the time of utterance. It is this specific point that is the time of reference for this sentence. Winford (2009) stated that TMA markers are base-generated heads and generally have the following canonical order:

$$AGR^{4} > NEG > TNS > MOD > ASP$$

The ordering of these functional heads is variable across English-based Caribbean creole languages, but Winford argued that all observed patterns are generally in line with universal sequences of functional heads (as seen in Cinque, 1999).

Bickerton also stated that a relationship exists between verb stativity and tense interpretation. According to Bickerton's theory, non-stative verbs in their bare form carry a past reference by default. Therefore, in the JCE sentence, *Mi*

[4] The presence of AGR as a functional in English-based creole language is debated and subject to question.

run weh[5]*.,* the non-stative bare form *run* suggests that this event happened in the past. Alternatively, stative verbs in their bare form have a non-past reference by default. For example, in the JCE sentence, *Mi kno seh shi like mi*[6]*.,* the bare form of the stative verbs *know* and *like* suggest that these events are present tense (Patrick, 2004). Several theorists have argued that Bickerton's claims are idealistic and oversimplified and do not accurately reflect the linguistic behaviour of JCE speakers (Singler, 1990; Patrick, 2004). Patrick (2004) explained that anterior tense is inherently variable, as preverbal tense markers are not always used and bare verb forms are very common. Winford (2009) also mentioned that contextual factors can impact the meaning of bare verb forms in English-based Caribbean creoles. This flexible pattern can lead to many different interpretations. The most common preverbal TMA markers and examples of their functions and use are found in Table 1.0 below.

[5] Example based on (Patrick, 2004, p. 413).
[6] Example based on (Patrick, 2004, p. 413).

Table 1.0 Tense, Mood and Agreement Markers in JCE[7]

TMA Markers	Function	Example
did/(b)en	-anterior past tense	*Mi did walk.* I walked.
neva (did)	-negative past tense	*Mi never did walk.* Or *Mi neva walk*. I never walked.
a (guh)	-indicates progressive/habitual aspect	*Mi ah walk.* I am walking. Or I walk (regularly).
don	-indicates completive aspect	*Mi don see im!* I already saw him.

3.1.4 Verbal Inflection. Patrick (2004) discussed the variable use of the English past tense marker in the JCE-JSE continuum. Upper-mesolectal speakers inflect verb forms more regularly than lower-mesolectal speakers. Bare, uninflected verbs forms and pre-verbal markers are common amongst speakers as mentioned above. Patrick also mentions that strong verbs are also used amongst basilectal and mesolectal speakers. Examples of strong JCE verbs are *bruk* (broke) and *marid* (married) (Patrick, 2004, p. 415). The infinitive forms of these JCE verbs correspond to their Standard English past tense counterparts. Patrick (2004) cautioned, "Yet while inflection may resemble English, when it

[7] Examples based on (Patrick, 2004, p. 411-414).

occurs it is governed by classic creole constraints. Only at the upper reaches of the continuum do English grammatical principles apply…" (p. 415).

3.1.5 The Verbal System. Patrick (2004) also described the verbal system in JCE. The creole language has SOV word order and is a head-initial language. Person and number are not marked on finite verbs in JCE. Also, JCE does not have the robust verbal auxiliary system that is found in Standard English varieties; instead TMA makers carry out basic auxiliary functions. JCE does have a set of modal auxiliaries that closely resembles those found in Standard English; these modals can form complex structures in JCE. JCE does not utilize copular verbs, however other verb forms may carry copular functions in certain circumstances. JCE permits serial verb constructions where two or more verbs are grouped together without a conjunction, infinitive marker or a pause as illustrated in (1) below[8]:

(1) *Guh fi di broom kom gi mi.*
Go for the broom come give me
'Go and get the broom and then give it to me."

Several complex verbal constructions are not possible in JCE such as auxiliary inversion and ellipses.

3.1.6 The Nominal System. Nouns in JCE are similar to those in Standard English varieties, however JCE does employ a unique set of articles. The basilectal indefinite article is *wan,* which is derived from the English word *one*; acrolectal speakers often use the more standard marker *ah*. The JCE definite

[8] Example based on (Patrick, 2004, p. 424).

article is *di*, which is derived from *the* in English. While determiners in JCE complete some of the same functions as their Standard English counterparts, they have several distinct properties that will be discussed later on in this paper. Bare noun forms are also permitted in JCE and may carry either a definite or an indefinite reading. JCE does utilize the English plural –s marker, but the suffix –dem can also be attached to nouns to indicate plurality as evidenced in (1) below[9]:

(1) *Mi kyaan fin di pickney-dem!*
I can.NEG find the kid.PL
'I can't find the kids'

The status of –dem as a true marker of plurality or simply an indicator of inclusiveness is still highly debated amongst theorists.

3.1.7 The Pronominal System. The JCE pronominal system systematically distinguishes person, number and natural gender. Pronouns in JCE are not usually specified for case with the exception of 3rd person singular pronouns. As such, there are generally no subclasses of pronouns in JCE; one pronominal form is simply used in multiple contexts (i.e. for nominative, accusative and possessive case etc.). Personal pronouns in JCE are presented below in Table 2.0.

[9] Example based on (Patrick, 2004, p. 434-435).

Table 2.0 Personal Pronouns in JCE[10]

Person	**Singular**	**Plural**
1st	*mi, ai (pronounced 'I')*	*wi (pronounced 'we')*
2nd	*yu*	*unu (pronounced 'uh-nah' OR 'oo-noo')*
3rd	*im, ii (pronounced "ee")* ***(Male)*** *shi, ar* ***(Female)***	*dem*

The Standard English possessive clitic does not occur in JCE. Instead, JCE personal pronouns often occur independently in possessive constructions as seen below in (1)[11].

(1) *Mi nuh tek weh shi tings-dem!*
I NEG take away her thing.PL
'I did not take away her things."

Possessive constructions can also be formed by inserting the particle *fi* before personal pronouns (i.e. Ah fi ar book.). In addition, JCE allows possessor nouns to stand independently (i.e. Yes, Gary school dat). JCE utilizes interrogative and demonstrative pronouns that closely resemble those found in Standard English varieties.

3.2 GC

GC shares the same history with JCE, along with many morphosyntactic properties. GC also developed in the late 19th century during slavery. Holbrook

[10] Examples drawn from (Patrick, 2004, p. 428).
[11] Example based on (Patrick, 2004, p. 429).

and Holbrook (2011) presented the main linguistic features of GC. The authors described GC as a product of intense language contact between West African languages and Dutch and British dialects. After the abolition of slavery, a large numbers of indentured workers migrated to Guyana from India. As such, East Indian languages also had a significant impact on the creole language. GC forms a creole continuum with Guyanese Standard English (GSE) where GC lies at the basilectal end and GSE lies at the acrolectal end. GC also displays the tense-stativity relationship and use of strong verb forms described above (Bickerton, 1975; Gibson, 1992). Areas that differ significantly from JCE are discussed below.

3.2.1 TMA System. GC utilizes a TMA system similar to that of JCE (Holm, 1988). GC however employs a unique set of TMA markers that is presented below.

Table 3.0 Tense, Mood and Agreement Markers in GC[12]

TMA Markers	Function	Example
bin/did	-indicates anterior past tense	*I bin real tiyaad*. I was very tired.
bina	-indicates progressive anterior tense	*I bina school*. I was going to school.
na	-indicates negation	*Shi na du it!* She didn't do it.
Go/guh/gine	-indicates future tense	*Yuh guh mek I craazee!* You will make me crazy!

[12] Examples based on (Holbrook & Holbrook, 2011, p. 14).

a/doz	-indicates habitual aspect	*I doz wuk up in di paati.* I often dance at parties.
don	-indicates completive aspect	*I don gi shi di ting!* I already gave her the thing.

3.2.2 The Pronominal System. The pronominal system in GC is presented in the table below.

Table 4.0 Personal Pronouns in GC[13]

Person	**Singular**	**Plural**
1st	*mi, I, Ah*	*awi, alwi, alahwi*
2nd	*yu*	*ayuh, alyuh, alayuh*
3rd	*im, ii* ***(Male)*** *shii* ***(Female)***	*de, dem, aladem*

4.0 Purpose of this Investigation

A preliminary but extensive search of the relevant literature has not revealed any studies focusing on the production of aphasia in English-based Caribbean creole languages. The study of language impairment and creole language is important for understanding creoles themselves, as it will reveal areas susceptible to breakdown in creole languages. This study will also enable us to better understand patterns of language breakdown that are observed cross-linguistically. I will examine the output of non-fluent aphasia in Jamaican Creole

[13] Examples based on (Holbrook & Holbrook, 2011, p. 14).

English (JCE) and Guyanese Creole (GC), two of the oldest, most widely spoken and well-studied English-based Caribbean creole languages (Holm, 2000).

My research questions are:

- How is non-fluent aphasia manifested in English-based Caribbean creole languages?
- Do aphasic error patterns in English-based Caribbean creole speech resemble those seen in the current aphasia literature?
- How are TMA markers and other grammatical categories unique to English-based Caribbean creole languages disrupted in non-fluent aphasia?

In clinical settings, it has also been acknowledged that there is a significant need for this research in order to support and direct the assessment and treatment of individuals who speak non-standard varieties of English. As such, this study seeks to examine JCE and GC speakers with aphasia in a clinical setting in order to obtain and examine speech samples from these varieties. Study results will be used to create a helpful information sheet for clinicians on the linguistic features of aphasic speech in JCE and GC. This resource can then be used to facilitate the assessment of non-fluent aphasia in these speech communities. To my knowledge, there is no applied or clinical research on these topics.

5.0 Methods

5.1 Participant

The participant in this study was an eighty-three-year-old female patient at the Brampton Civic Hospital, and is referred to as *"Mrs. G"* in this paper. Mrs. G was originally admitted after experiencing dizziness, difficulty walking and maintaining an upright posture. She also had trouble with articulation. After testing, it was determined that the patient suffered from a lesion in the left corpus callosum which had caused a stroke. Test results also revealed a history of chronic small vessel ischemia and possible microbleeds. Mrs. G was born in Guyana and is a native speaker of Guyanese Creole. Mrs. G appears to speak a lower mesolectal variety of Guyanese Creole. Mrs. G never received any formal education and was unable to read or write prior to brain injury. The subject was left-handed and suffered from diabetes mellitus type 2, dyslipidemia, coronary problems and mild confusion before her stroke. Family members reported that Mrs. G had no major visual problems but had some difficulty hearing. Mrs. G's communicative abilities were assessed using subtests of the Burns Brief Inventory of Communication and Cognition (Burns-L), the Western Aphasia Battery (WAB) and the Boston Diagnostic Aphasia Examination (BDAE). Mrs. G was judged as having moderate receptive and expressive language deficits and mild motor planning difficulties. While Mrs. G was not considered to have agrammatism, her speech output did contain certain disordered elements that coincide with symptoms of agrammatism. More specifically, the patient displayed

periods of telegraphic speech and reduced articulatory precision and intelligibility. It was also noted that Mrs. G's comprehension decreased with the increase of sentence length and complexity. At times, the patient was also described as distractible, agitated and confused. The speech therapist did acknowledge that dialectal differences between herself and the participant might have been a factor in her assessment of Mrs. G's language abilities. A further discussion of Mrs. G's initial language assessment will be discussed below, following the results of this study.

5.2 Procedure and Materials

Data for this study was collected through participant observation during a speech and language assessment with speech language pathologist, Mrs. Devon Curran. The observation session was one hour long and took place at the Brampton Civic Hospital in Brampton, Ontario, Canada. The session was video recorded in order to ensure that both verbal and non-verbal communication was captured. Researcher observations were recorded by hand. The structure of the assessment was entirely determined by the speech therapist. The student researcher was in no way involved in planning or conducting the assessment session. During the session, Mrs. Curran engaged Mrs. G in casual conversation and administered subtests of BDAE. The therapist elicited speech from the participant by asking her to share about her life in Guyana and her family. The participant was then tested in the general areas of verbal expression and auditory comprehension. Mrs. G was asked to complete the following tasks: picture

description, word level auditory comprehension, automatic speech, repetition and picture naming. She was also asked to respond to one, two and three-step commands along with yes-no questions and auditory comprehension questions. In the picture description task, the participant was presented with the famous cookie theft picture from the BDAE and asked to tell a story about what was happening in the picture. In the word level auditory comprehension task, the participant was presented with several picture boards that denote concrete objects and was asked to point to a particular object. The participant was also asked to participate in automatic naming tasks such as counting from one to twenty and listing the days of the week. In the repetition task, the participant was instructed to repeat words and sentences of increasing length and complexity. In the picture-naming task, the participant was presented with individual pictures of different objects and asked to name these objects. In the multi-step commands task, participant was orally instructed to complete a series of actions (e.g. point to the ceiling and then to the floor). The participant was also asked to orally respond to a series of auditory comprehension questions (e.g. Will a cork sink in water?). After the observation session, demographic information about Mrs. G was collected from the speech therapist's clinical notes (e.g. age, birthplace, area of brain injury etc.). Oral consent to participate in the study was obtained from participant. Written consent was also obtained from the participant's family member. All video recorded data was transcribed and coded for analysis.

This study utilizes a qualitative design and as such will not measure any specific variables. Instead, what will be explored is how language-related deficits impact a creole language and how this knowledge can support the assessment and treatment of creole-speaking individuals. As there is currently no research on this topic, it is hoped that this work can identify linguistic patterns that will provide the basis for future experimental research in the area of aphasic creole speech.

6.0 Study Results

6.1 "Deficit vs. Difference"

As stated in section 1.0, agrammatism is a major symptom of non-fluent aphasia. In Standard English varieties, agrammatism is characterized by the omission of grammatical markers. This study aims to explore how agrammatic symptoms may be manifested in English-based Caribbean creole languages. These creole languages inherit a large portion of their linguistic makeup from English, their parent language. However, unlike Standard English varieties, English-based creoles are inherently variable and allow the omission of nearly all grammatical markers (Bickerton, 1975; Rickford, 1987; Patrick, 2004). Creoles also utilize independent TMA markers to express grammatical information. These markers are also subject to variability in creole languages. These fundamental properties of English-based Caribbean creole languages create ambiguity in the clinical diagnosis and assessment of language impairment in creole speakers. Ambiguity arises from the unknown status of an omission as a valid creole feature or a sign of disordered language.

Seymour, Bland-Stewart and Green (1998) classified ambiguous features as *contrastive* features, while features that are identical or nearly identical across given varieties are labeled to as *noncontrastive* features. The researchers provided examples of contrastive and noncontrastive features using the following African American Vernacular English (AAVE) and Standard English sentences (Seymour et al., 1998, p.96-97):

(1) John is a boy.

(2) He __ a boy.

(3) The boy and the girl are here.

In (1) the main verb is a copula; this sentence is acceptable in both AAVE and Standard English. In (2), the copula is absent. This omission is acceptable in AAVE but is not permitted in Standard English varieties. The omission of the copula has also been associated with impairment in Standard English varieties (Menn & Obler, 1999). Therefore, (2) provides evidence that the omission of a copula is a contrastive feature in AAVE and Standard English. Seymour et al. (1998) explained that conjunctions and demonstratives are used in the same ways in AAVE and Standard English, and as such are considered to be noncontrastive features. Sentence (3) is acceptable in AAVE and Standard English, and therefore, *the* along with *and* in (3) are noncontrastive features. Seymour et al. (1998) introduced two methods for handling contrastive features in the assessment of language disorders. The first method involves essentially ignoring contrastive elements and basing diagnoses on noncontrastive features.

The authors stated that language impairment should be manifested in contrastive features and noncontrastive features, and therefore, it should be possible to detect language impairment by examining a patient's inventory of noncontrastive features. The second method requires investigators to determine the contexts where a contrastive feature is more likely to occur and the contexts where it is less likely to occur. Then, omission of a contrastive feature in an environment where it is more likely to occur may indicate a deficit. Seymour et al. (1998) extended the example above in order to demonstrate the environments of copula in AAVE (Seymour et al., 1998, p. 96-97).

(4) He__ a boy.

(5) Yes, he is.

(6) *Yes, he __.

Seymour et al. (1998) asserted that in AAVE a copula in a pronominal phrase is more likely to be produced in sentence-final position than in sentence-medial position. Therefore, while the omitted copula in (4) is acceptable in AAVE, the same omission in (6) is atypical and may be suggestive of a language deficit. Seymour et al. (1998) warned, "…Without a complete description of the rule constraints governing variable usage of (contrastive) features, it remains difficult to discern whether the absence of morphemes and morphemic inflections is due to dialect or disorder" (p. 97). Thus, the authors suggested that the first method, examination of noncontrastive features, is preferred in identifying impairment. This study attempts to utilize the contrastive-noncontrastive schema introduced in

Seymour et al. (1998) to categorize the GC features observed in Mrs. G's speech. This paper does not attempt to classify AAVE as a creole language, as creolist views of AAVE have largely been abandoned. This variety is now simply regarded as a dialect of American English (Winford, 1997; Bailey, 2001). However, the methodology proposed by Seymour et al. (1998) still proves useful for differentiating between normal and disordered creole features. As Seymour et al. (1998) was based on AAVE, aspects of the contrastive-noncontrastive distinction have been adapted to best account for GC structure. For instance, a decision was made that GC personal pronouns would be classified as both contrastive and noncontrastive features. As illustrated above, GC personal pronouns do not directly correspond to Standard English pronominal forms. For example, both the GC first person singular subject and object pronoun (i.e. "Mi") corresponds to Standard English first person singular object pronoun (i.e. "me"). As such, the GC first person singular pronoun may be incorrectly interpreted as substitution error in the language assessment of creole speakers. In these situations, GC first person singular subject pronouns are contrastive features. Because the GC first person singular object pronoun and the Standard English first person singular object pronoun are used in the same way across varieties, aside from phonological differences, they are considered to be non-contrastive features.

Table 5.0 presents the contrastive features produced by Mrs. G. The omission of Standard English features and the production of unique GC features

are both considered contrastive elements, as both of these feature types may be interpreted as signs of disordered language in Standard English.

Table 5.0 Contrastive Features Observed in A Guyanese Creole Speaker with Expressive Language Deficits

Creole Feature/Standard English Feature	**Total Number of Expected Locations**	**Number of Successful Productions**	**Number of Unsuccessful Productions**	**Examples from Transcript**
Personal Pronouns	-	35	-	*"**Mi** geh nine son."* *"Shi shake **he** han."*
Past Tense Marker *(did)*	-	1	-	*"Mi **did** have a stroke on mi head."*
Negation Markers *(nah, cyan)*	-	8	-	*"Mi **nah** know."* *"Mi **cyan** remember now."*
Plural Marker *(dem)*	-	9	-	*"Di boys **dem**."* *"**Dem** walk up."*
Locative Marker *(deh deh)*	-	1	-	*"Somebody **deh deh** hold blind."*
Present Progressive Maker *(guh, ah guh)*	-	5	-	*"Dem **guh** school."* *"Dem **ah guh** school."*
Plural *–s*	17	9	8	*"Mi geh nine **son**."* *"Oh. Eight **leg**."*
3rd Person Singular *–s*	7	-	7	*"He **pick** up di paper…"* *"Father **come** home."*
Past Tense Marker *(–ed*)	6	-	6	*"Dem **walk** up."* *"Dey fadda **work**."*
Present	9	2	7	*"Oh. Trouble*

Progressive Marker (–*ing*)				***hear** me."* *"Is she **shake** he hand?"*
Copulas	12	2	10	*"Dis _ ah pencil."* *"Mi _ in di hospital."*
Verbal Auxiliaries	4	1	3	"*She _ cooking."* *"She _ look something."*

As Table 5.0 reveals, Mrs. G omitted both unique creole features and Standard English features. Both omission types are allowed in normal creole speech, and therefore, Mrs. G's omission patterns are not necessarily indicative of impairment, but may also reflect normal GC language use. In Table 5.0, the total number of expected locations for each feature is presented along with the total number of times each feature was produced successfully and the total number of times each feature was omitted or substituted incorrectly. For each creole feature, the number successful of productions is simply the total number of times that feature occurs. It is not possible to determine the total number of expected locations for each creole feature or the total number of omitted creole features due to the inherent variability of creole languages. For example, the creole past tense marker *did* was used in the sentence *"Mi did have a stroke on mi head."*. The use of this TMA marker is optional, as GC permits the omission of this feature. For instance, the sentence, "*Mi had a stroke on mi head."*, would also be acceptable.

For an omitted Standard English feature, the total number of locations in which it would be expected in Standard English vernacular is indicated. The chart also shows the total number of times that a Standard English feature was produced successfully and the total number of times a Standard English feature was produced unsuccessfully. For example, the copula was expected in a total of 12 locations. It was successfully produced 2 times and omitted 10 times. Study results show that GC personal pronouns were produced more frequently than any other contrastive feature. Both the creole plural marker and the Standard English plural marker were also produced frequently. Two morphemes that are often conflated, the Standard English third person singular morpheme and past tense morpheme, appear to be omitted more often than any other contrastive features.

Table 6.0 presents the noncontrastive features observed in Mrs. G's speech. These markers are used in similar ways in English-based creoles and Standard English varieties. While the phonological properties and morphological representation of these features may differ in across varieties, their morphosyntactic and semantic properties are similar across varieties, and as such are considered noncontrastive features.

Table 6.0 Noncontrastive Features Observed in A Guyanese Creole Speaker with Expressive Language Deficits

Feature or Process	Total Number of Expected Locations	Number of Successful Productions	Number of Unsuccessful Productions	Examples from Transcript
Personal Pronouns	-	18	-	*"Trouble hear **me**."* *"**She** cooking?"*
Possessive Pronouns	-	6	-	*"Is she shake **he** hand?"* *"Mi cyan talk too good because **mi** speech all…."*
Definite Articles	-	24	-	*"And **di** boy get good job."* *"**Di** tulip."*
Indefinite Articles	-	4	-	*"**Ah** stone in wata."* *"Da hammer pound **ah** nail."*
Demonstrative Pronouns	-	15	-	*"**Dis** ah shirt."* *"Wah **dah** mean?"*

Table 6.0 reveals that Mrs. G correctly produced several noncontrastive Standard English features. As discussed in Seymour et al. (1998), it is not possible to ascertain the total number of expected locations for certain noncontrastive features because of the inherent variability of these features. For instance, the third-person singular female subject pronoun *Shi* occurs in the creole sentence *"Shi cooking?*[14]*"*. This pronoun could be replaced by a name as in the sentence *"Dawn cooking?"*. As such, the use of the pronoun is optional. Results show that personal pronouns are the most commonly produced

[14] Example based on (Seymour et al., 1998, p. 100)

noncontrastive feature, while indefinite articles appear to be the least common noncontrastive element.

6.2 Creole Features vs. Standard English Agrammatic Features

Section 6.1 mentions that there is an overlap between normal creole features and agrammatic Standard English features. These overlapping features have the potential to create uncertainty in the assessment of language impairment in creole speakers.

Table 7.0 below compares the creole features produced by Mrs. G and agrammatic Standard English features identified in Menn and Obler (1999).

Table 7.0 Overlapping Creole and Standard English Features Observed in A Guyanese Creole Speaker with Expressive Language Deficits

Features	Agrammatic Standard English	Observed Creole Features
Omission of plural markers	x	x
Omission of copular verbs	x	x
Omission of bound verbal morphemes (*tense, person, number, aspect*)	x	x
Omission of verbal auxiliaries	x	x

Table 7.0 reveals that Mrs. G's speech data contains several omissions of Standard English features, however the nature of these omissions is ambiguous. As Seymour et al. (1998) suggested, a valuable method for disambiguating grammatical omissions is to determine the contexts where omissions are most

likely and least likely to occur in creole languages. Grammatical omissions in contexts where features are most likely to occur may be suggestive of impairment.

6.3 Clinician Observations

A summary of the clinician observations of Mrs. G's speech performance during therapy sessions at the Brampton Civic Hospital from September 2013 to December 2013 is provided below. This information was taken from the clinical observation notes of two speech-language pathologists. Mrs. G reported having slurred speech upon being admitted to Brampton Civic Hospital on September 5, 2013. Mrs. G's articulatory abilities had not been fully restored when a follow-up exam had been completed on September 7th. After an initial assessment of Mrs. G's communicative abilities on September 9th, it was determined that Mrs. G had moderate receptive and expressive language deficits, along with mild oral planning deficits (private medical record, September 9, 2013). This diagnosis was supported by the following observed behaviours: reduced comprehension with increases in sentence length and complexity, occasional production of telegraphic speech, hesitations, reduced eye contact, reduced ability to continuously monitor the comprehension of interlocutors, reduced articulatory precision and difficulty producing certain articulations (private medical record, September 9, 2013). It was recommended that Mrs. G be seen regularly to work on the following communication areas: automatic speech (i.e. counting), word-finding abilities, generative naming, auditory comprehension, ability to respond to

personal yes-no questions and non-personal yes-no questions, ability to follow verbal commands, and ability to form verbal constructions in phrases and sentences (private medical record, September 9, 2013). During therapy sessions, Mrs. G completed several of the following tasks: picture description, picture naming, sentence completion, responding to personal and non-personal yes-no questions, rapid naming and counting, and categorization and sequencing tasks. After subsequent therapy sessions, improvement was seen in Mrs. G's ability to respond to personal yes- no questions, follow verbal commands and complete automatic speech tasks (private medical record, October 10, 2013). Mrs. G showed moderate performance on generative naming tasks and non-personal yes-no questions. At times, Mrs. G exhibited task confusion and often required rephrasing or modeling of target responses. The most interesting clinical observation, for the purposes of this study, comes from comments regarding Mrs. G's phrase dialectal language use. It was mentioned that, " (Mrs. G's) sentences (are) generally syntactically simple…but (are) generally grammatically intact… Occasional missing copula (e.g. "He missing the cup.") and substitution of objective personal pronouns for nominative pronouns (e.g. "It no belong to he.") both of which may be related to dialectal differences vs. syntactic deficit (private medical record, November, 13, 2013)." In the patient's final assessment session, a speech-language therapist wrote that, " (Mrs. G's) grammatical structure (is) felt to be consistent with a non-standard English variety (e.g "Because me had a stroke on me head.") (private medical record, December 6, 2013)." A speech-

language therapist also stated that, "Her content seems reasonable, however it is, at times, difficult to understand secondary to her dialect and the presence of reduced intelligibility (in keeping with discourse level dysarthria). (private medical record, December 6, 2013)." This speech-language therapist also discussed Mrs. G's performance on the Boston Naming Test, "Patient had possible difficulty on 4 of 8 items… (Performance) likely a reflection of linguistic/cultural difference… Not convinced of any true paraphasic responses however task was not completed with ease. (private medical record, December 6, 2013)." These observations will be discussed in the sections to follow.

7.0 Discussion

The aim of this study was to determine how disordered language is manifested in English-based Caribbean creoles. More specifically, I hoped to determine what grammatical features are disturbed in creole languages as a result of language impairment. I was also interested in whether or not creole error patterns would resemble those observed in Standard English. It is also hoped that the results of this study can be used to inform the clinical assessment and treatment of creole-speaking individuals with language impairments. Speech data in this study was obtained from a female Guyanese Creole speaker with expressive and receptive language deficits. The data was then analyzed in terms of noncontrastive and contrastive features. Seymour et al. (1998) explained that language impairment should be reflected across both of these feature types. As this study involved only one participant, I do not suggest that my findings are

conclusive or certainly representative of disordered creole language. My conclusions are specific to my participant, and I acknowledge that my results may have been different if I had a larger group of subjects. Certainly, more work needs to be done in order to better understand the influence of aphasic impairment on English-based Caribbean creoles.

7.1 Contrastive and Noncontrastive Features

Overall, the results revealed that personal pronouns were produced more often than any other feature. As discussed in section 6.1, personal pronouns in English-based Caribbean creoles differ from those seen in Standard English varieties; there is generally no subcategorization amongst pronouns in creole languages. For example, the pronoun *mi* acts as both the first person singular subject and object form in GC, whereas in Standard English, there is an independent subject and object for the first person singular pronoun. Mrs. G supplied the GC first person singular subject marker more frequently than any other personal pronoun. This result is in line with prior observations of GC. Gibson (1992) found that female Guyanese Creole speakers utilize the basilectal first person singular pronoun more frequently than other pronominal forms.

Mrs. G also attempted both the creole and Standard English plural markers frequently. Both types of plural markers were supplied an equal number of times; however, it appears the Standard English plural *–s* was expected to occur in more contexts than the creole plural marker *dem*. This result is consistent with patterns normally observed in English-based creole languages. Patrick (2004)

stated, "*Dem* is only allowed to occur in definite NPs. In StE, of course, this requirement does not apply to –*s* at all… (In) JCE, these environments also favor –*s*" (p. 436). Study results also show that articles were produced frequently; however, as will be discussed later on in this paper, articles appear to be more susceptible to error than other frequently produced grammatical morphemes.

Standard English past tense features were omitted frequently in Mrs. G's speech; most of the verbs produced were bare and uninflected forms. These results are also consistent with patterns observed in normal creole speech. When describing patterns observed in urban JCE, Patrick (1999) mentioned that the past tense creole marker *did* only occurred in ten percent of required contexts, and the Standard English past morpheme –*ed* was even less frequent. Gibson (1992) reported a similar pattern in Guyanese Creole. On the other hand, it is also possible that Mrs. G's frequent omission of tense markers was the result of a language deficit; this possibility is discussed in more depth below.

Overall, for both contrastive and noncontrastive features, results show that Mrs. G produced more features shared between GC and Standard English features than features unique to GC and other English-based creoles. Therefore, certain unique creole markers, which are highly variable in normal creole speech (i.e. TMA markers), were not frequently produced in impaired creole speech. The results may also suggest that grammatical features form a hierarchy in disordered creole language. Features that are produced frequently in Mrs. G's speech, such as plural markers, personal and demonstrative pronouns, and

articles, may indicate features that are less susceptible to impairment in creole languages. However, features that are regularly omitted, such as tense, person and number markers, aspectual makers and copulas, appear to be more prone to disruption. Factors possibly responsible for this apparent hierarchy are discussed in the next section.

The results of this study suggest that it may be best practice for clinicians to rely on the examination of noncontrastive features in the assessment of creole speakers. This is because the environments in which contrastive creole features are most and least likely to occur have not yet been identified. On the other hand, clinicians may find that a useful diagnostic feature is the production of personal pronouns. As mentioned, Mrs. G produced personal pronouns more frequently that any other grammatical marker, which may indicate that pronouns are more resistant to loss in disordered creole speech than other grammatical morphemes. As discussed throughout this paper, in GC and other English-based Caribbean creoles, personal pronouns are not specified for case. Therefore, unlike in Standard English, a small set of personal pronouns is used across several different contexts in creole languages. Crago, Paradis & Menn (2011) state, "The larger the paradigm of choices for a given form, the more likely it is that substitution errors will be made" (p. 283). Therefore, because there are fewer pronominal forms to choose from in creole languages than in Standard English, there are likely to be fewer errors. The authors also state that high-frequency forms are more likely to be produced correctly in agrammatic aphasics than low-

frequency forms. As previously discussed, personal pronouns occur frequently in normal and disordered creole speech. Therefore, a creole speaker with symptoms of language impairment who frequently omits personal pronouns may suffer from a severe language deficit. Clinicians must remember however that pronouns are not specified for case in English-based creole languages, and should note that one pronominal form can be used in multiple contexts- this pattern of use is not to be misdiagnosed as disordered language in creole speakers. In regards to the phonological production of pronominal forms, variation from Standard English should also be expected amongst creole speakers and not regarded impairment.

7.2 Disordered GC vs. Agrammatic Standard English

7.2.1 Similarities. Section 6.2 illustrates similarities between speech patterns observed in this study and those of English-speaking agrammatics as seen in Menn and Obler (1999). This comparison shows that the following patterns were observed in both groups: omission of plural markers, omission of copulas, omission of verbal auxiliaries, omission of past tense markers, and omission of person and number makers. As discussed throughout this paper, the omission of grammatical markers is an intrinsic property of creole languages. In Standard English, however, the same omissions are indicative of language-related deficits. Therefore, it is unclear whether or not grammatical omissions observed in creole languages are truly representative of language impairment.

The omission patterns observed in this study, with reference to the results of previous studies, are discussed in more detail below.

***7.2.1.1 Omissions*.** Goodglass and Hunt (1958) examined the differential impairment of the plural marker, possessive marker and third person singular marker in twenty-four English-speaking aphasics. The researchers stated that these grammatical items have nearly identical phonological forms, and as such differential impairment would likely be related to the unique functional properties of each morpheme. The results of this study showed that the English plural morpheme *–s* is less prone to error than the possessive and third person singular *–s* in aphasic production. Jakobson and Halle (1956) stated that morphemes with syntactic functions appear to be more susceptible to impairment than those with semantic functions. The results presented in Goodglass and Hunt (1958) support with this claim, as possessive and agreement morphemes have syntactic functions, while the plural marker has a semantic role. My observations are also consistent with this pattern, as Mrs. G frequently produced plural markers and often omitted agreement markers.

Mrs. G also frequently omitted tense markers. Friedmann & Grodzinsky (1997) introduced the tree-pruning hypothesis (TPH), which states that **T**ense is an independent functional head as illustrated in (1).

(1) CP > **T**P> NegP > AgrP> VP

Functional heads can be differentially impaired by agrammatic aphasia. The researchers also stated that syntactic representations are "pruned" upwards

of an impaired node. Therefore, if the Tense node is affected, only projections that are higher in the syntactic tree will as a result be affected. The Agreement node, for instance, is lower than Tense and would remain intact. The results of the present study appear to be inconsistent with this hierarchal model. Mrs. G often omitted the Standard English past tense morpheme and the past tense TMA marker, which may have indicated a sign of impairment at the Tense node. However, Mrs. G was able to produce creole negation markers. As previously mentioned, Mrs. G appears to be a lower-mesolectal creole speaker. Patrick (1999) explained that in English-based Caribbean creoles languages, negation precedes tense at the basilectal level as illustrated in (2)[15]. At the mesolect level, negation and tense are fused into one entity as illustrated in (3)[16].

(2) Mi neva ben walk

I NEG PST walk

'I didn't walk.'

(3) Mi neva walk.

I NEG.PST walk.

'I didn't walk.'

Therefore, if the TPH model was true, it is then expected that impairment at the Tense node would have also impacted Mrs. G's ability to produce negation markers at the basilectal level, where negation is projected higher than tense, and mesolectal level, where negation and tense are projected together.

[15] Example based on (Patrick, 1999, p. 200)
[16] Example based on (Patrick, 1999, p. 200)

Wenzlaff and Clahsen (2004), on the other hand, did not assume the presence of a hierarchy between functional heads. These researchers instead suggested that tense, as well as any other functional head, can be underspecified in agrammatic syntactic structures. Underspecification then leads to the frequent omission of this functional marker. It is clear that functional categories can be affected independently according to this view. The results of the present study can be compatible with this view. Where, the frequent omissions of tense markers in Mrs. G's speech may be related to the underlying underspecification of this functional category. Therefore, in sentences like (3), it is possible that only negation projects and not tense.

Bastiaanse et al. (2011) offered that the omission of tense markers in agrammatism might be due to impaired time reference. The researchers set out to determine whether or not aphasic difficulties with time reference can be observed across languages that employ different grammatical markers to express tense information. As such, the researchers examined the time reference abilities in Chinese, Turkish and English-speaking aphasics. The authors found that the comprehension and production of past tense markers is more impaired than present tense markers in Turkish, Chinese and English-speaking aphasics. Bastiaanse et al. (2011) argued that past-time reference that is represented by verbal inflection requires more cognitive resources than present-time reference, as speakers are required to link past-tense events to discourse information that is outside the given sentential domain. For example, if a listener heard the

sentence, "Richard walked outside.[17]", he must know that the walking event occurred prior to the time at which the sentence was spoken. Thus, the sentence is linked to an earlier point in the spoken discourse. The authors stated that it is this ability to link events to discourse outside the sentential domain that is impaired in agrammatics. This impairment is also the cause of frequent omissions of tense markers in individuals with aphasia.

It will not be possible to determine whether or not the omission of tense markers and other grammatical morphemes is caused by underspecification of functional heads or by impaired discourse linking in creole speakers until researchers have determined the contexts where these makers are most and least likely to occur. As thoroughly discussed throughout this paper, the omission of grammatical markers in contexts where they are likely to occur may indicate signs of impairment in creole speakers.

7.2.2 Differences. The results of this study suggest that demonstrative pronouns, personal pronouns and articles are well retained in a GC speaker with agrammatic symptoms. This finding seems to be inconsistent with studies on agrammatism in Standard English varieties and other languages. Menn and Obler (1999) reported that demonstrative pronouns were rarely produced in the agrammatic speech of an English-speaking patient. Previous studies have also reported that agrammatics experience difficulty with personal pronouns and reflexive pronouns in both on-line and off-line tasks (Grodzinsky et al.,1993; Love

[17] Example based on (Bastiaanse, 2011, p. 657)

et al., 1998; Edwards & Varlokosta, 2003; 2007). Researchers suggested that these errors are due to a global deficit affecting relational dependencies. Grodzinsky et al. (1993) described that English-speaking agrammatics have problems understanding that reflexive pronouns are linked to antecedents within the sentential domain, and that, at times, personal pronouns are linked to referents outside of the sentential context. For example, in the sentence, "Amy corrected herself[18].", listeners must know that the reflexive pronoun *herself* is connected to the antecedent *Amy*. In the sentence, "Victor entertained him[19].", the listener must know that the personal pronoun *him* is not connected to *Victor*, but another individual outside of the sentential context. Agrammatics have difficulty understanding these binding relationships.

Menn & Obler (1999) also found that articles were frequently omitted in the speech of English-speaking agrammatics. Goodenough (1977) posited that aphasics have difficulty with articles as a result of impaired metalinguistic awareness. For instance, hearers of the sentence, "Anna saw a dog.[20]", must know that the speaker's use of the indefinite article means that he is not referring a specific dog. Instead, the speaker is referring to any one dog in a set of all possible dogs. On the other hand, in the sentence, "Lily fed the dog.[21]", use of the definite article implies that a specific dog was being fed. Goodenough (1977)

[18] Example based on (Edwards & Varlokosta, 2007, p. 425-427).
[19] Example based on (Edwards & Varlokosta, 2007, p. 425-427).
[20] Example based on (Goodenough,1977, p. 12-13).
[21] Example based on (Goodenough,1977, p. 12-13).

mentioned that aphasics may have difficulty perceiving these notions because articles do not have a high degree of inherent semantic saliency.

Overall English-speaking aphasics appear have difficulty tapping into to discourse level information outside a given sentential domain. It remains unclear whether or not Mrs. G also experienced this difficulty. Mrs. G did not suffer from full-fledged aphasia, and as such her linguistic impairments may not have been severe enough to significantly impact her discourse linking abilities. Also, the clinical assessment utilized an "interview-style" format, as described in section 5.2, where Mrs. G only produced a small number of complete phrases and sentences. As such, the overall reduced complexity of Mrs. G's speech may have masked an existing deficit in her discourse linking ability. Other explanations for the patterns observed in Mrs. G's speech point to the morphological differences between English-based Caribbean creole languages and Standard English varieties.

Determiners in English-based Caribbean creoles differ in several ways from their Standard English counterparts. Pochard and Devonish (1986) stated that the determiners *a, da* and *de*, which are historically derived from the English *a, that* and *the*, complete several functions in Jamaican Creole English (e.g. aspectual, locative and demonstrative markers). In each of these roles, these JCE determiners carry deictic information, which enables a speaker to express contextual relations with people, places and time. On the other hand, in Standard English, some of these roles are <u>not</u> associated with deixis (e.g. aspectual

marker). As such, the creole markers appear to carry deictic information in more contexts than their English counterparts do.

Huddleston & Pullum (2002) mentioned that in Standard English bare NPs, where the associated determiner has been omitted, are subject to certain restrictions. Plural count nouns and mass nouns which stand alone can only give a generalized indefinite reading, and free-standing single count nouns can usually only give definite readings. However, in JCE, bare nouns are subject to few restrictions and can easily deliver mass interpretations and both singular and plural count readings and can also deliver both indefinite and definite readings (Stewart, 2007).

Stewart (2007) described that some JCE determiners differ from Standard English determiners in terms of syntactic structure as a result of a unique semantic relationship between definiteness and number in JCE. Stewart stated that the English noun phrase is often thought to be headed by a functional element rather than a lexical entity; therefore, a nominal construction can be referred as a DP, which is headed by D. Determiners such as articles, demonstratives and numerals reside in D. Number in Standard English is expressed independently through the use of a nominal suffix. Stewart argued that in JCE numerals and indefinite articles do not occur in D but rather reside in Num. Stewart explained that, unlike in English, number is not expressed by an over morpheme in the creole. Stewart (2007) mentioned,"...The notion of semantic number is built in stages inside DP, through the combined semantic

effect of two independent functional heads, CIP which prepares the noun for counting (or not) by partitioning the members of the set into individuals and a second, Num P, dominating it, which is optionally responsible for the assignment of quantity" (p. 391). Stewart then proposed the following structure for nominal constructions in JCE:

$$[_{DP}\ D[_{NumP}\ Num[_{C1P} C1[_{NP} N]]]$$

Stewart's analysis regards the indefinite marker as a representation of the numeral one, which resides in Num. When C1P does not project, a singleton set reading is delivered, but when C1P does project, an individuated reading is supplied. Stewart provided (1) below as an example.

(1) Evri bwai mek wan tiebl.

Every boy make IND table

Stewart (2007) asserted that two meanings are possible in (1). The first meaning is 'Every boy (independently) made a (different) table.'. In this interpretation, C1P projects, which indicates that several individual tables were being referred to. However, in the second meaning is 'All the boys (together) made one table.', C1P does not project, and as such, a singleton reading is returned. Therefore, there are several differences between Standard English determiners and JCE determiners. Overall, JCE determiners appear to carry a great deal of semantic information which may make them more resistant to loss than Standard English determiners. Also, as mentioned above, JCE pronouns

appear to be high-frequency items in English-based creole languages and as such may also be resilient to impairment.

A unique observation in the data was that at times, Mrs. G utilized the indefinite marker in contexts where use of the definite article would have been more appropriate. For example, Mrs. G said, "Dis ah candle.," in response to the therapist request to, "Show me the (drawing of) candle". It was expected that Mrs. G would use the definite marker *di* when referring to the candle, as both she and the therapist were aware of the object of reference. Mrs. G's response could simply be interpreted as GC question which corresponds to the Standard English question, " Is this a candle?". This use is obviously acceptable, however, Mrs. G repeats this pattern consistently which appears to be unusual. A possible explanation for this behaviour is that it represents a coping strategy. By repeating a request in the form of a question, Mrs. G may have gained extra processing time, which may have reduced the cognitive demands of the assessment task. It is also possible that this pattern may indicate a deficit or impairment. Omission of a definite article is acceptable in creoles given the inherent variability of these languages. However, the substitution of an indefinite article for a definite article appears to be strange. Therefore, although articles appear to be frequently produced in disordered GC, articles may also be more prone to impairment than other well-retained GC markers.

It is also possible that Mrs. G's limited literacy skills were the cause of her unexpected use of articles. Castro-Caldas et al. (1995) mention that illiterate

aphasics may have difficulty perceiving line drawings and instead suggest that pictures of real objects be used in assessment. If Mrs. G's inexperience with aspects of literacy inhibited her ability to perceive of a line drawing depicting a candle as a real candle, it may then be understandable that she did not use the definite article to refer to this image. It is possible that Mrs. G had difficulty attributing specificity and definiteness to a two-dimensional image that differs in many ways from its real world referent, and without many educational opportunities, it becomes unclear where she would have learned to connect these distinct entities.

Overall, the results of this study appear to suggest that there may be a hierarchy of grammatical markers in disordered creole speech, where personal pronouns, demonstrative pronouns and articles are more resistant to loss than tense markers, person and number markers and auxiliaries and copulas. In English-based Caribbean creoles, determiners appear to carry a high degree of semantic information, which may make them resistant to language impairment. In these languages, articles may be omitted in required contexts due to the inherent variability of creoles. However, the substitution of the indefinite article for the definite article appears to be atypical usage and may be indicative of impairment in creole speakers. Overall, grammatical morphemes that have semantic functions, as opposed to syntactic functions, appear to be preserved in impaired creole speech. An experimental study of grammatical omissions in creole languages must be completed in order to confirm their status as markers

of language variation or language impairment. In regards to clinical practice, the production of personal pronouns may be a helpful diagnostic tool for clinicians, where infrequent use of personal pronouns may indicate a language deficit in creole-speakers.

7.3 Clinical Applications

7.3.1 The Issue of Ambiguity in Clinical Language Assessment. As mentioned, contrastive features can cause ambiguity in the clinical assessment of creole speakers with language disorders. Both speech pathologists involved in this study have confronted this issue as previously discussed. In assessing Mrs. G's speech, both clinicians analyzed grammatical omissions (i.e. *He _ missing the cup.*) and unusual linguistic items (i.e. *dem*) as possible legitimate features in her "Guyanese dialect of English". This clinical insight is naturally expected, as the Brampton Civic Hospital is located in a city with a large Caribbean immigrant population. According to the Statistics Canada Nation Household Survey (2011), approximately 263,985 immigrants reside in Brampton, Ontario. Approximately 33,425 (13%) of these individuals migrated from Jamaica and Guyana alone. In the greater Toronto area, the total number of immigrants increases to approximately 2,537,410, of which nearly 167,530 (7%) originated from Jamaica and Guyana. It is likely that many of these immigrants are creole speakers, as Patrick (2004) stated, "(Jamaican Creole) is natively available to nearly all Jamaicans, but Standard Jamaican English…, the acrolect, is not…" (p.408). The same is likely true of Guyanese Creole. Thus, it is not surprising that both of the

clinicians who participated in this study are familiar with some general aspects of Caribbean vernacular. Both therapists have stated that they frequently meet with patients who speak Caribbean varieties of English. Ironically, clinicians who are not familiar with Caribbean vernacular may not experience difficulty in the clinical assessment of creole speakers, as it is plausible that less-experienced clinicians may simply misdiagnose ambiguous creole features as agrammatic Standard English features. As a result, clinical misjudgments can potentially lead clinicians to waste time creating treatment plans and implementing therapy that is not needed. Another possible detriment is unjustly subjecting creole speakers to remediation of their normal language use. As one can expect, this would be an uncomfortable, frustrating and unbeneficial experience for creole speakers. Thus, in order to ensure the efficacy and value of speech and language therapy, I recommend that an objective method for diagnosing language impairment in English-based Caribbean creole speakers is established.

7.3.2 Handling Ambiguity in Clinical Assessment. Two valuable methods for diagnosing language impairment in creole speakers can be adopted from Seymour et al. (1998). The first method relies on examining error patterns in noncontrastive features. These items are nearly identical in form and function across varieties as previously mentioned. The second method requires clinicians to analyze the disordered production of contrastive, ambiguous features. As discussed in sections 6.1 and 7.1, the contexts for acceptable omissions in normal creole use must first be determined before it is possible to identify atypical

omissions that are the result of impairment. Method two necessitates a great deal of linguistic work that extends well beyond the motivations of clinical practice. Therefore, method one may be the most suitable diagnostic measure for assessing the language abilities of creole speakers.

Laing and Kamhi (2003) suggested alternate methods for assessing language deficits in culturally and linguistically diverse populations. The authors discouraged therapists from solely relying on standardized tests in the clinical assessments of multicultural and multilingual speakers. Standardized tests are often biased towards Western culture and Standard English varieties. As such individuals who do not belong to these cultural or linguistic groups may perform poorly on standardized assessments. Laing and Kamhi (2003) stated that two useful methods for diagnosing language impairment in multicultural and multilingual speakers are processing-dependent measures and dynamic assessment measures. The researchers explained that processing-dependent tests rely on memory and processing resources rather than language experience and performance. As such, this type of analysis is ideal for assessing culturally and linguistically diverse populations. The authors mentioned that some examples of processing-dependent tests are rapid tone discrimination tasks and nonword repetition tasks. Dynamic assessments compare a speaker's initial performance on a language task with their performance on the same tasks after intervention. The researchers stated that this assessment method identifies the current status of a speaker's language ability but also seeks to improve language

performance through the use of teaching techniques. The most common dynamic assessment is the test-teach-retest approach. Poor performance on both processing-dependent tasks and dynamic assessments may be indicative of a language deficit, and as such these tests may be valuable diagnostic tools.

While appropriate diagnostic measures are vital tools for effectively assessing language ability in linguistically diverse populations, it is ultimately the responsibility of the therapist to analyze patient performance, identify the presence of language impairment and determine the course of treatment. The American Speech-Language-Hearing Association (2004) described the mandatory skill set and foundational knowledge needed by clinicians in the language assessment of multidialectal and multilingual populations. A summary of the recommendations most relevant to this study is presented below:

- Clinicians must minimize the influence of their own biases and beliefs when assessing individuals from different cultural and linguistic backgrounds.
- Clinicians must respect the ethnic backgrounds, cultural values, and lifestyle of their patients and must acknowledge the impact of these factors in language assessment.
- Clinicians must acknowledge their own limitations in regards to their ability to provide services to individuals from multicultural and multilingual backgrounds. Clinicians are encouraged to consult with family members,

colleagues and available resources to obtain the knowledge needed to best assist their patients.

- Clinicians must be aware of certain linguistic phenomena that may impact language performance in multicultural and multilingual speakers such as language transfer, language attrition, second-language acquisition, code switching, code mixing, and language variation in accents and dialects.
- Clinicians must be able to differentiate between normal and disordered language. Speech therapists should base diagnoses on the norms of the language or dialect spoken by their patients.
- Clinicians are encouraged to use standardized tests along with alternative methods in language assessment, however therapists must be mindful of the inherent cultural and linguistic biases of these tools.

Clinicians, themselves, play a key role in ensuring quality and accuracy in the language assessment of multicultural and multilingual individuals. It is important that therapists eliminate any personal biases and familiarize themselves with the linguistic background their patients.

7.3.3 Clinical Language Assessment Tasks and Tests. As mentioned in the last section, standardized tests are often biased to the lifestyle and culture of the Western world. It is well known that this bias is embedded in the structure of clinical assessment tasks and can cause culturally and linguistically diverse individuals to perform poorly on these measures (Anderson, 2002; Ardila, 1995; Stockman, 2000; Ulatowska & Olness, 2003; Laing & Kamhi, 2003). There has

been a great call for the creation and implementation of culturally sensitive diagnostic tests and assessment measures in the field of speech and language therapy (Ardila, 1995; Laing & Kamhi, 2003; Carter et al., 2005). Also, clinicians and researchers have voiced the need for languages norms in the assessment of individuals from diverse cultural and linguistic backgrounds (Harris, 2004; Carter et al., 2005). Unfortunately, as will be further discussed in section 8.0, it appears that these needs remain largely unfulfilled. As such, the effects of cultural and linguistic bias in standardized testing can continue to have an impact on the assessment of diverse populations. The results of this study suggest that cultural bias may have impacted Mrs. G's performance on assessment tasks.

As mentioned in section 5.1, Mrs. G was a native speaker of a lower mesolectal variety of GC. Though GC and Standard English varieties share many lexical items, it appears that Mrs. G was unfamiliar with some Standard English words prior to assessment (i.e. cork, pretzel and octopus). These words are relatively infrequent in Standard English and are not usually relevant in the daily life of the average individual in North America. As such, it is understandable that Mrs. G had difficulty with these objects. However, Mrs. G's unfamiliarity with Standard English words inevitably reduced her overall scores on the word level auditory comprehension task and the naming task and may have possibly inflated her perceived level of impairment. Task comprehension, and possibly task performance, amongst linguistically and culturally diverse populations is likely to

be increased if these individuals are familiar target items are used in language assessment tasks (Carter et. al, 2005).

Section 5.1 also mentions that Mrs. G had never received formal education and was unable to read or write. It appears that the patient's lack of literacy skills also influenced on her performance on language tasks. During the observation session, Mrs. G was asked to tell a story about the cookie theft drawing. This image depicts two children stealing cookies from a cookie jar in the cupboard when their mother's back is turned while she washes dishes. In regards to the subject's performance on this task, the therapist stated, " (Patient) was able to identify the major themes in the picture, however she did not appear to integrate them into a cohesive narrative…(private medical record, December 6, 2013)". It seems counterintuitive to ask an illiterate individual to create a traditional story. As Mrs. G was not able to read, it may have been the case that she was also unfamiliar with the structure of a traditional story- introduction, body and conclusion. Mrs. G may also not have been familiar with the practice of story telling. Therefore, while she was able to point out specific events in the picture, her inexperience with narration may have impacted her ability to form a story. As such, it understandable that Mrs. G had difficulty with this task, which ultimately reduced her overall performance. It is important that clinical assessment tools be developed and implemented in the assessment of individuals with limited literacy skills. I also recommend that normative data be gathered for this population.

In a notable study, Lecours et. al (1987) compared the performance of 100 illiterate and literate neurotypical adults on repetition, pointing and naming tasks. These measures are subtests of widely used aphasia batteries such as the BDAE and the WAB. The structure of each task type was similar to those discussed in section 5.2. The study results revealed that the illiterate subgroup made significantly more errors on all task types in comparison to the literate group. The authors mention that the illiterate subgroup frequently omitted closed-class items during sentence-level repetition tasks. This pattern is also observed in Mrs. G's speech (i.e. *Dis ah card*.). These omissions are due to the variable structure of GC, but it is interesting that this pattern is also found in healthy illiterate individuals. Researchers also mentioned that in the world-level pointing task, many of the illiterates had difficulty discriminating between drawings of objects with similar iconographic characteristics. For example, some illiterates pointed to *a rake* when *a comb* was required and to *a pencil* when *a sword* was required. Mrs. G exhibited similar behaviour during a word level auditory comprehension task. Mrs. G pointed to *a gorilla* when *a bear* was required and *a butterfly* when *an ant* was required. It is also plausible that Mrs. G's performance was a direct result of cultural differences and unfamiliarity with target items. Based on the results of their study, Lecours et. al (1987) emphasized the importance of utilizing clinical norms that take educational background into account when assessing language skills in illiterate individuals. Clinicians may feel these norms are especially valuable when using tests that include line drawings.

As mentioned in above, it is has become largely the responsibility of the clinician to differentiate between language difference and language disorder in culturally and linguistically diverse populations. The clinicians in this study do their best to fulfill this duty by acknowledging that seemingly atypical productions in Mrs. G's speech may be attributed to her Guyanese dialect rather than language impairment. However, the clinicians also stated that they do not have sufficient resources to determine the status of these ambiguous features. Once the environments for ambiguous features in normal GC have been identified, diagnostic tools can be created for the assessment of GC speakers with language impairments.

Carter et. al (2005) provided suggestions regarding the creation of culturally diverse assessment materials. A summary of points relevant to this study is provided below:

- Native speakers of the assessment language should be involved in the process of creating materials.
- Objects, pictures and other items used in the assessment should be relevant to the cultural norms and practices associated with the assessment language.
- Developed written and visual materials should be used in a pilot study with a well-matched sample of the target population.
- Native speakers of the assessment language should be recruited and trained to administer assessment materials.

- Normative data should be obtained from pilot data. If pilot data does not correspond to a normal distribution, it should be examined for outliers and the pilot study should be repeated.

8.0 Challenges and Future Directions

8.1 Challenges in this Study

The main challenge in conducting this research project was recruiting participants. Difficulty in this area was somewhat expected as the criteria for eligibility was stringent. It was required that participants suffered from brain damage to the frontotemporal region, which led to the development of agrammatic language production. Participants were also required to be native speakers of an English-based Caribbean creole language, ideally JCE or GC. As mentioned in section 7.3.1, there is a relatively large Caribbean immigrant community in the municipality of Brampton, and as such the clinical team projected a steady influx of patients who speak English-based Caribbean creoles during the course of this study. Throughout the course of this project, therapists did see several patients who migrated to Canada from the Caribbean. However, clinicians reported that the majority of these patients did not appear to speak creole varieties. There are many possible explanations for this observation. These Caribbean patients may have originally been speakers of acrolectal creole varieties. As mentioned in section 3.1.2, acrolectal creole varieties are often considered to be dialects of Standard English. As such, these speakers may not have been appropriate for this study because their speech would not be reflective

of true disordered creole language. Also, it is possible that these patients were native speakers of mesolectal or basilectal creole varieties upon migrating to Canada, but have now lost this language due to extensive influence from Standard Canadian English. Precher (2007) found that immigrants who speak multiple language varieties often experience the loss of their first language after living in a second language environment for an extended period of time. These speakers were also not ideal candidates for this study. Finally, patients who were fluent speakers of a mesolectal or basilectal creole varieties may not have been reluctant to speak their creole variety in a clinical setting. Beckford Wassink (1999) states, "(By Jamaicans) some situations (informal and in-group) and some interlocutors were frequently judged to be ones for which Creole usage would be welcomed; others (formal and out-group) were frequently judged as unsuitable for Creole use" (p. 81). For these reasons, creole speakers may have intentionally chosen to avoid using creole language during conversations with the therapists.

8.2 Future Directions

The present study provides valuable insights into disordered creole language and how it can be managed in clinical language assessment. The current project has also identified the need for an experimental study of creole language in both impaired and unimpaired speakers. In order to disambiguate the variable patterns of grammatical omissions in English-based Caribbean creole languages, authentic data must be obtained from a large sample of unimpaired and impaired native creole speakers. Collecting authentic data in Guyana and

other Caribbean countries will help to eliminate the influence of foreign language varieties (i.e. Standard Canadian English). Once authentic data has been obtained from unimpaired speakers, researchers will be able to determine the environments where omissions are most and least likely to occur. Once this data is quantified, it can be compared against disordered creole language data. The presence of grammatical omissions that are unlikely to occur may indicate creole features that are disrupted as a result of language impairment. It would also be interesting to compare the error patterns of disordered creole to those of other languages. As mentioned in section 2.0, aphasia often manifests as the omission of inflectional markers in languages that permit bare, uninflected forms to stand independently (Grodzinsky, 1984). On the other hand, in languages where uninflected forms are prohibited, aphasia is characterized by the incorrect substitution of inflectional markers. A study of aphasic impairment in creoles, where the use of inflectional markers is highly variable, will allow researchers to ascertain cross-linguistic patterns of language impairment. As discussed throughout this paper, normative creole data also has great clinical value. This information is important for ensuring accuracy and efficiency in the language assessment of creole speaking individuals with language disorders.

8.3 Clinical Challenges and Recommendations in the Assessment of Linguistically and Culturally Diverse Populations

Harris (2004) investigated the beliefs and attitudes of speech-language pathologists (SLPs) towards the language assessment of bilingual, bidialectal

and bicultural children in educational settings. The clinical voice is the focus of this study and offers valuable insight into general areas that need to be significantly strengthened in order to improve in the quality of language assessment in creole speakers with language disorders. Over 300 therapists were asked to respond to several questions in a written survey. The two following questions are most relevant to the present study and are presented below:

1) What are barriers in the language assessment of this population?

Harris (2004) found that clinicians believed that the following issues represent some of the challenges in the clinical assessment of bilingual, bidialectal and bicultural speakers:

- Limited knowledge of client's cultural and linguistic backgrounds
- Inability to distinguish language variation from language disorder
- Lack of availability of interpreters who speak the client's language or dialect
- Lack of bilingual and bidialectal speech-language therapists available for consultation
- Lack of standardized diagnostic materials for languages other than English
- Limited coursework and training on speech and language issues in multilingual and multicultural contexts

2) What supports are needed to aid the language assessment of this population?

The author also showed that SLPs felt that the following supports are necessary to strengthen the clinical assessment of bilingual, bidialectal and bicultural populations:

- Standardized tests and diagnostic tools for multilingual and multicultural contexts
- Multilingual speech-language pathologists
- Additional training for SLP students in linguistically and culturally diverse settings
- Additional resources for clinicians (i.e. establishment of a national network allowing therapists to easily consult with one another in regards to multilingual and multicultural issues)
- Additional research on multicultural speech and language matters
- Requirement for SLPs to be certified in a language in addition to English

Harris (2004) revealed several areas that should be strengthened within the clinical field of speech and language therapy. I agree that it is important that these needs be met in order to support clinicians in assessing language abilities in speakers of creoles and other minority languages.

9.0 Conclusion

The impact of aphasia on English-based Caribbean creole languages has not yet been studied. As a consequence, this gap has created ambiguity in the clinical assessment of creole speakers with language disorders. Unlike Standard

English varieties, the use of inflectional morphemes and other grammatical markers is variable in creole languages. Therefore, it is unclear whether or not the omission of grammatical markers in disordered creole language is a valid property of the creole or a sign of language impairment. The main purpose of this preliminary investigation was to explore how aphasic impairment is manifested in English-based Caribbean creole languages. The results of this study appear to suggest that grammatical markers form a hierarchy in disordered creole speech. Plural markers, articles and personal and demonstrative pronouns appear to be well retained in disordered creole language, while tense and aspect markers, person and number markers, and copulas and auxiliaries may be prone to error. More generally, the results appear to suggest that grammatical markers that have a high degree of semantic content are more resistant to loss than those which do not carry a high degree of semantic information. Further experimental work must be done in order to confirm the validity of error patterns identified in this study. Until it is possible to differentiate between valid creole omissions and those that are caused by impairment, I recommend that clinicians focus on atypical productions of non-ambiguous features when diagnosing language disorders in creole speakers. Clinicians, who are familiar with Caribbean vernacular, may also find that the production of personal pronouns is useful diagnostic tool. It is important for clinicians to be aware of the impact of non-linguistic factors on the language performance of creole speakers during assessment. Such variables include literacy and the language attitudes of speakers of minority languages.

In order to wholly understand how agrammatic aphasia can affect grammatical systems, cross-linguistic patterns of impairment must be identified. Much work has been done on the disordered output of inflection languages such as English, Italian, French, Dutch and German. The linguistic impact of impairment in minority languages is much less understood. The study of disordered creole language is necessary in solidifying our knowledge of the interaction between language impairment and linguistic structure.

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Appendix A: Transcript

(1) SLP: Ok
(2) Mrs. G: {00:03} daughta now {00:06}[22] di hospital?
(3) SLP: I think she's coming later
(4) Mrs. G: Ok
(5) SLP: Yea. We're gonna go through some activities that look at your communication. So your ability to talk and your ability to listen.
(6) Mrs. G: Yea.
(7) SLP: sound good?
(8) Mrs. G: *nods head*[23]
(9) SLP: How are you doing today?
(10) Mrs. G: Mi in di hospital {00:38}.
(11) SLP: You're in the hospital and…?
(12) Mrs. G: now
(13) SLP: When are you going to be leaving the hospital?
(14) Mrs. G: Mi nah know. Because mi did have a stroke on mi head. {1:09} fall down.
(15) SLP: Yea, and that's a scary experience isn't it?
(16) Mrs. G: Yes and…carry mi to di hospital.
(17) SLP: Yea, ok. Can you tell me your address?
(18) Mrs. G: Mi nah know nutin 'bout dat.
(19) SLP: Ok. When you were younger, what kind of work did you do?
(20) Mrs. G: Mi..get…two bruddah and mi look afta babies…and mi look afta dem.
(21) SLP: I bet that was a tough job? Was it hard looking after kids?
(22) Mrs. G: Mi get t-t-ten kids. Nine boys and one daughta.
(23) SLP: Tell me that again?
(24) Mrs. G: Mi geh nine son
(25) SLP: I'm missing it. Tell me one more time.
(26) Mrs. G: Mi seh mi geh nine s-sons…. And one daughta
(27) SLP: Oh ok, one daughter and….
(28) Mrs. G: Yea
(29) Student Researcher: And nine sons
(30) SLP: And nine sons
(31) Mrs. G: nine sons
(32) SLP: What a big beautiful family!
(33) Mrs. G: Yea
(34) SLP: Yea
(35) Mrs. G: And di boy get good job. Di boys dem.

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[22] Ineligible speech is denoted by the corresponding time in the video recording and placed in curly brackets.
[23] Actions are written out and placed in asterisks.

(36) SLP: Ok
(37) Mrs. G: Because dem gu-guh ah school…. because mi nah-nah, mi nah guh ah school…but mi still look afta dem and dey fadda work (and tell me lemme look afta da babies?)
(38) SLP: Yes
(39) Mrs. G: And (dem?)[24] guh-guh ah school….
(40) SLP: That's an important job you did.
(41) Mrs. G: And dem guh finish school…four ah dem… when dey guh school, dem walk up (3:14) and mi look afta dem
(42) SLP: Great. Where were you living when you looked after them?
(43) Mrs. G: Mi mi {3:24} big house {3:26}
(44) SLP: What country were you in?
(45) Mrs. G: Guyana.
(46) SLP: Do you miss Guyana?
(47) Mrs. G: Yea
(48) SLP: Yea. I hear it's a really nice place… I'm going to show you a picture and I want you to try and tell me a story about it… Have you seen this picture before?
(49) Mrs. G: Mi cyan remember.
(50) SLP: Ok. So here's the picture. I want you to tell me who do you see? What are they doing? Tell me a story.
(51) Mrs. G: Is-s she shake (h)e hand? D-dis here {4:20} somebody deh deh hold blind.
(52) SLP: I'm having some trouble hearing you.
(53) Mrs. G: Oh. T-trouble hear me.
(54) SLP: Trouble hearing you. Yea. I want you to focus on using your clear speech ok, so I can understand you better.
(55) Mrs. G: Mi mi (cyan?) talk too good because mi speech all {4:52} on mi head. *participant gestures that head not good*
(56) SLP: I know, but it's gotten much better hasn't it?
(57) Mrs. G: Because mi old now. 87 years mi get.
(58) SLP: Yea. Ok. What's happening in this picture?
(59) Mrs. G: She climb up and {5:20} he han. She climb up and look something. {5:30}
(60) SLP: *points to another part of the picture* What's happening here?
(61) Mrs. G: Dey cook?
(62) SLP: Hmm?
(63) Mrs. G: She cooking?
(64) SLP: No, I think mum's washing dishes.
(65) Mrs. G: Yes. Washing dishes.

[24] Approximations of slurred articulations have been indicated by a question mark and parenthetical brackets.

(66) SLP: *points to a person in the picture* I think she's probably daydreaming, and look at this. What's happening here? The sink is…?
(67) Mrs. G: Yea. Sink full?
(68) SLP: Yea it's too full.
(69) Mrs. G: {6:18} dishes.
(70) SLP: Yea. Ok, good work. Now we're gonna move to some activities that look at your listening. Ok? Show me your shoulder.
(71) Mrs. G: *points to shoulder* Dis. Shoulder.
(72) SLP: Show me your cheek.
(73) Mrs. G: *points to lips* Cheek. M-mouth.
(74) SLP: Not your mouth. Cheek.
(75) Mrs. G: *points to cheek* Dis.
(76) SLP: There you go. *gets picture book* Show me the candle.
(77) Mrs. G: *points to candle* Dis ah candle.
(78) SLP: Good. I want you to choose. You chose right. Show me the bear.
(79) Mrs. G: Um bear? Cow?
(80) SLP: Ok, listen. I only want you to show me one. Show me the bear.
(81) Mrs. G: Bear? Dis? Mi nah know which one have di bear.
(82) SLP: Hmm?
(83) Mrs. G: Mi nah know which one have di bear. Di bear?
(84) SLP: It's tricky because they are all big animals.
(85) Mrs. G: Yea.
(86) SLP: This one's the bear.
(87) Mrs. G: Yes. Dah's a bear.
(88) SLP: This one that you pointed to the second time is a gorilla.
(89) Mrs. G: Gorilla. And dis one a cow?
(90) SLP: Yea, and a tiger.
(91) Mrs. G: A tiger.
(92) SLP: Yea, so this time only point to one ok? Show me the peanut.
(93) Mrs. G: Di peanut. *points to peanut*
(94) SLP: Good job.
(95) Mrs. G: {8:48} something
(96) SLP: Which one is the peanut?
(97) Mrs. G: Peanut. *points to peanut* Dis.
(98) SLP: There you go. Yea that one is a pretzel. Do you know what a pretzel is?
(99) Mrs. G: No, mi cyan remember now.
(100) SLP: That's ok, it's another snack. Show me the shirt.
(101) Mrs. G: Di shirt? Shirt. Dis ah shirt.
(102) SLP: Good. Show me the bus.
(103) Mrs. G: *points to bus* 'is ah bus.
(104) SLP: Good job. Show me the saw.
(105) Mrs. G: *points to saw.*
(106) SLP: Alright! We're on a roll! Show me the ant.

(107) Mrs. G: All dese have uh- ant {10:19} bush… Fly?
(108) SLP: Which one is an ant?
(109) Mrs. G: Mi know (the?) ant. (Butterfly?)
(110) SLP: Yea, that one is a fly. This one here is the ant. Yea, ok. Show me the tulip.
(111) Mrs. G: *points to tulip* Di tulip.
(112) SLP: Nice, you know your flowers! Show me blue.
(113) Mrs. G: *points to blue* Deh blue.
(114) SLP: Show me brown.
(115) Mrs. G: *points to brown* brown
(116) SLP: Show me T. The letter T.
(117) Mrs. G: *points to letter T* T? T.
(118) SLP: Great. Show me N.
(119) Mrs. G: N. *points to N* Dis? N?
(120) SLP: Good. Show me the number 4.
(121) Mrs. G: *points to the number 4*
(122) SLP: Well done. Show me the number 13.
(123) Mrs. G: 13?
(124) Mrs. G: {12:52}
(125) SLP: This one here is 13. Ok. We are going to do some more listening activities, alright? I'm going to ask you to do something, and I want you to do it for me, alright? Point to the ceiling, then to the floor.
(126) Mrs. G: Ceiling. *points to the ceiling and then to the floor* Floor.
(127) SLP: Perfect. I'm going to ask you to do some thing with these objects. Put the pencil on top of the card and then put it back.
(128) Mrs. G: Put di pencil. D-d card. Dis ah pencil, dis ah card.
SLP: Do you feel like you want to hear it again?
(129) Mrs. G: Uh yea.
(130) SLP: If you ever feel like you want to hear something again, you ask alright?
(131) Mrs. G: Alright
(132) SLP: Let's put it back and we'll start from the beginning. Listening?
(133) Mrs. G: Yes.
(134) SLP: Put the pencil on top of the card, then put it back.
(135) Mrs. G: *puts pencil on top of card, and then puts it back*
(136) SLP: Perfect
(137) Mrs. G: (Nice watch?)
(138) SLP: Hmm
(139) Mrs. G: (Nice watch?)
(140) SLP: Yea, that's my watch. Ok I'm going to ask you to do something. This one is long. Ok? So you gotta listen carefully.
(141) Mrs. G: Mi (aint hear too good.)
(142) SLP: Hmm?
(143) Mrs. G: Ok. Talk.

(144) SLP: Tap each shoulder twice with two fingers keeping your eyes shut.
(145) Mrs. G: *taps each shoulder consecutively with two fingers* shoulder?
(146) SLP: That was really close.
(147) Mrs. G: (eyes shut when mi close?)
(148) SLP: Ok. Now I'm going to ask you some questions alright, and I want you to tell me yes or no. Alright? Will a cork sink in water?
(149) Mrs. G: Si-sink in wata? {16:11} drop it?
(150) SLP: Hmm?
(151) Mrs. G: Wha-wha? Talk again?
(152) SLP: Will a cork sink in water?
(153) Mrs. G: Cork {16:28} water. (He ah duck?)
(154) SLP: Do you know what a cork is?
(155) Mrs. G: No.
(156) SLP: *draws picture*…Looks like that and it goes in the top of bottle…to keep the bottle sealed.
(157) Mrs. G: Oh.
(158) SLP: A cork.
(159) Mrs. G: {17:01}
(160) SLP: Hmm? Can you picture a cork now?
(161) Mrs. G: Core?
(162) SLP: A cork?
(163) Mrs. G: A cawk.
(164) SLP: A cork.
(165) Mrs. G: {17:20}
(166) SLP: Yea in the top of a bottle.
(167) Mrs. G: {17:31}
(168) SLP: That's ok. It's not a very common word.
(169) Mrs. G: {17:44}
(170) SLP: Hmm?
(171) Mrs. G: {17:47}
(172) SLP: You're sleepy? Ok. Can we keep going for a little bit longer?
(173) Mrs. G: {17:55}
(174) SLP: Ok. Can you use a hammer to pound nails?
(175) Mrs. G: Yes. Da hammer pound ah nail.
(176) SLP: Yea.
(177) Mrs. G: Nail di wall.
(178) SLP: K. Next question. Will a stone sink in water?
(179) Mrs. G: Ah s-stone… in wat(a?)… ih you drop it? {18:16} water... ih drop?
(180) Student Researcher: I think she said if you drop it in water.
(181) SLP: Oh ok
(182) Student Researcher: I think she's tryna….
(183) SLP: Oh ok. Yea. Yea if you drop it. Will a stone sink in water?
(184) Mrs. G: Is-Yes.
(185) SLP: Good. Is a hammer good for cutting wood?

(186) Mrs. G: Hammer? (p-pound. It aint?) Cut wood.
(187) SLP: Is a hammer good for cutting wood?
(188) Mrs. G: No.
(189) SLP: Good. Ok. I'm going to skip some more of these listening exercises, so we move more onto your talking ok. Cause you look like you're getting sleepy ok?
(190) Mrs. G: {19:20} sleepy
(191) SLP: Yea, can you hang in there for a little bit longer?
(192) Mrs. G: Yea.
(193) SLP: Ok. Tell me the days of the week.
(194) Mrs. G: Sunday, Monday, Tuesday, Wednesday… Sunday is a week day.
(195) SLP: Ok, lets start again. So I want you to tell me all seven.
(196) Mrs. G: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
(197) SLP: Ok. Yea, and what day is today?
(198) Mrs. G: Mi (was sleep?). Mi cyan remember.
(199) SLP: No problem, it's Friday.
(200) Mrs. G: Oh yes, Friday.
(201) SLP: Yea, and can you count to 21?
(202) Mrs. G: Sunday, Monday, Tuesday, Wednesday {00:38} Friday, Saturday
(203) SLP: Those are the days of the week. I want to move to counting numbers. Can you try some numbers for me?
(204) Mrs. G: No.
(205) SLP: One, two…
(206) Mrs. G: *joins counting with SLP at "two"* Three, four, five, six, seven, eight, nine, ten, eleven, twelve. (That a?) numba?
(207) SLP: Yep. Keep going.
(208) Mrs. G: One, two, three, four, five, six, seven, eight, nine, ten.
(209) SLP: Alright. I'm going to say a word and I want you to say it after me, ok? Brown.
(210) Mrs. G: brown?
(211) SLP: chair.
(212) Mrs. G: Brow-brown chair?
(213) SLP: Just the one word. So just chair. Ok.
(214) Mrs. G: *nods* yea.
(215) SLP: I'll say another word. You say it back to me. What?
(216) Mrs. G: What.
(217) SLP: Emphasize.
(218) Mrs. G: Eh-Exercise? *falls asleep*
(219) SLP: Stay with me.
(220) Mrs. G: *wakes up* (miss?) wah yuh want?
(221) SLP: Can you give me another ten minutes?
(222) Mrs. G: *rubs head* Alright.
(223) SLP: I'll say a word, you say it after me. Emphasize.

(224) Mrs. G: uh- ah-
(225) SLP: Emphasize.
(226) Mrs. G: {6:15} Exercise?
(227) SLP: *laughs* It sounds a bit like exercise doesn't it. And the last one is a really tricky one- I'm not even sure why they include it- Is Methodist Episcopal.
(228) Mrs. G: Methodist Epis-epis-copul. Wah dah mean?
(229) SLP: I don't know.
(230) Mrs. G: Mi don't know.
(231) SLP: *laughs* Ok I'm going to say a sentence, you say it back to me.
(232) Mrs. G: Alright.
(233) SLP: Father comes home.
(234) Mrs. G: Father come home.
(235) SLP: Good. Next sentence. He picks up the paper from the coffee table.
(236) Mrs. G: He pick up di paper {3:40} table. (from?) di coffee table.
(237) SLP: Ok lets do that one one more time. He picks up the paper form the coffee table.
(238) Mrs. G: He p-… di paper from the coffee table. *falls asleep*
(239) SLP: *rubs patients hand* Try again. He picks up the paper from the coffee table.
(240) Mrs. G: He pick di paper up {4:10} coffee table.
(241) SLP: Good. We're almost done. We'll just work for another few minutes. You are going to deserve your lunch today.
(242) Mrs. G: Yea.
(243) SLP: Yea. I'll ask you a question. You answer it for me. What do we use to tell the time?
(244) Mrs. G: –brain
(245) SLP: Hmm?
(246) Mrs. G: *points to head* Your brain to tell the time.
(247) SLP: *chuckles* Yea, we do use the brain. Can you think of a tool that we use to tell the time?
(248) Mrs. G: No. {04:57}
(249) SLP: What do we use to tell what time it is?
(250) Mrs. G: *points to head* B-br. brain.
(251) SLP: Yea, and with our brain. We look at a…?
(252) Mrs. G: Look at da {5:12} brain {5:14} brain (lock now?)
(253) SLP: But the brain doesn't tell us the time. What tells us the time?
(254) Mrs. G: No. (how?)
(255) SLP: I was thinking more a… *picks up watch and shows it to patient*
(256) Mrs. G: Oh. Di clock?
(257) SLP: *nods head* Yea, a clock. What's this one called?
(258) Mrs. G: (is?) watch.
(259) SLP: Yea. What do you do with a razor?
(260) Mrs. G: {5:45} *falls asleep*

(261) SLP: *rubs patient's hand* What do you do with a razor?
(262) Mrs. G: Yuh shave.
(263) SLP: What do you do with soap?
(264) Mrs. G: wash (one?)
(265) SLP: What do you do with a pencil?
(266) Mrs. G: Yuh write.
(267) SLP: And what do we cut paper with?
(268) Mrs. G: Wha yuh cut… scissors?
(269) SLP: Pardon me?
(270) Mrs. G: Cut di paper with scissors.
(271) SLP: Yea, scissors. Ok we're just going to do a few more things. We're not going to do all of these pictures. I'm just going to pick a few. How does that sound? I'll just pick a few.
(272) Mrs. G: D-D-take a few?
(273) SLP: I'll pick a few. We won't do all of them. What's this?
(274) Mrs. G: Bed.
(275) Mrs. G: Tree. *falling asleep*
(276) Mrs. G: Comb.
(277) SLP: Good.
(278) Mrs. G: *falls asleep*
(279) SLP: What's this?
(280) Mrs. G: *sleeping*
(281) SLP: A beautiful bouquet of…
(282) Mrs. G: *wakes up* bouquet?
(283) SLP: of?
(284) Mrs. G: flowa.
(285) SLP: Hmm?
(286) Mrs. G: bouquet.
(287) SLP: of?
(288) Mrs. G: *falls asleep*
(289) SLP: *rubs patient's hand* a beautiful bouquet of?…flo-?
(290) Mrs. G: flower
(291) SLP: Good. Let's do three more.
(292) Mrs. G: *sleeps*
(293) SLP: Maybe not? Ok. Shall we- Shall we wrap up there? I'll let you rest? Yea. Ok.
(294) Mrs. G: Wha? *Looks at picture*
(295) SLP: It's not a plane. It's like a plane, but there's something special about it. It's got a propeller on the top. It's called a heli…? *rubs patient's arm* It's called a hel…?
(296) Mrs. G: It's called a hel?
(297) SLP: I'm starting it for you. Can you finish it? A heli…?
(298) Mrs. G: heli?
(299) SLP: helicopter.

(300) Mrs. G: helicopter.
(301) SLP: Do you know what a helicopter is? Have Y-
(302) Mrs. G: yes. It fly.
(303) SLP: Have you ever in one?
(304) Mrs. G: No.
(305) SLP: Me neither. No.
(306) Mrs. G: {00:49} come into the country.
(307) SLP: Hmm?
(308) Mrs. G: Mi come with a plane in this country.
(309) SLP: On a plane. Yea, That's more typical. *puts another picture in front of patient*
(310) Mrs. G: (broom where yuh?) sweep? You can clean up.
(311) SLP: Yea. What's it called. *rubs patient's hand* What's it called?
(312) Mrs. G: Clean up.
(313) SLP: Yea that's what you use it for, but what's it called?
(314) Mrs. G: Broom.
(315) SLP: Good. *puts another picture in front of patient*
(316) Mrs. G: *falls asleep*
(317) SLP: What's that called?
(318) Mrs. G: *falls asleep again* Is a tr-tree?
(319) SLP: Did you say a tree?
(320) Mrs. G: (di root?) {2:07}
(321) SLP: I-- You know—some people say that. So I understand how these can look like roots, but not quite. It lives in the sea.
(322) Mrs. G: Oh.
(323) SLP: What is it called? It lives in the sea. It has eight legs.
(324) Mrs. G: Oh. Eight leg. It (come?) in the sea.
(325) SLP: Hmm?
(326) Mrs. G: It gine in a sea?
(327) SLP: It lives in the sea. In the water.
(328) Mrs. G: In water.
(329) SLP: What's it called?
(330) Mrs. G: {2:44}
(331) SLP: An oct…?
(332) Mrs. G: Huh?
(333) SLP: An octa…?
(334) Mrs. G: Octa?
(335) SLP: Finish it for me. (no response from patient) An octopus.
(336) Mrs. G: Oh.
(337) SLP: Do you know octopus?
(338) Mrs. G: {3:14} *falls asleep*
(339) SLP: No. Ok let's-let's leave it there.

Appendix B: Consent Form for Aphasic Patients

Consent/Assent Form for Aphasic Patients to Participate in a Study

Your substitute decision maker/speech pathologist has allowed me to talk to you about a project that I am working on with a couple of other people. The project is on aphasia and creole languages. I am going to spend a few minutes telling you about our project, and then I am going to ask you if you are interested in taking part in the project.

1. **Who are we?**

My name is Ruth McDonald, and I am a Master's student at McMaster University. I work in the Department of Linguistics and Languages.

2. **Why are we meeting with you?**

APHASIA

We want to tell you about a study that involves individuals who have aphasia like yourself. We want to see if you would like to be in this study too.

3. **Why are we doing this study?**

APHASIA

+


CREOLE

We want to find out how aphasia can affect some Caribbean creole languages. I also want to know how this information can be used to improve the tools that are used to treat creole-speakers with aphasia.

4. **What will happen to you if you are in the study?**

If you decide to take part in this study there are some different things we will ask you to do…

1) YOU  YOUR SPEECH THERAPIST +  ME

I will ask for your permission to come to some of your speech therapy sessions. During these sessions your speech therapist may ask you questions about your speech. You may also be asked to complete short activities.

2)  OR 

I will ask for your permission to video-record or audio-record these therapy sessions. This will make sure that I do not miss anything you say. I will review these videos after the sessions are over.

3) ME YOUR SPEECH THERAPIST + QUESTIONS ABOUT YOU

I will ask you for your permission to get some of your personal information from your speech therapist like your age and the location of your brain damage.

4) INFORMATION IN THIS PROJECT +  TOOL FOR SPEECH THERAPIST

I will ask you for your permission to use the information I collect during this study to create a tool that can help speech therapists assess and treat creole-speakers with aphasia.

While doing these things all you have to do is JUST TRY YOUR BEST.

5. **Compensation**

You will receive a $25.00 Tim Horton's gift card for your participation in this study

6. **Are there good things and bad things about the study?**

You will not feel any pain…

You might feel nervous or scared…

Try to RELAX…

7. **Will you have to answer all questions and do everything you are asked to do?**

You don't have to answer questions that you do not want to. You do not have to do things that you do not want to.

You can say …

NEXT QUESTION

8. **Who will know that you are in the study?**

No one besides you, the speech therapist and me will know that you are in the study.

Your answers are confidential. Only the medical team and research team will see your answers or any other information about you.

9. **How long will we keep your information?**

AFTER 3 YEARS  + YOUR INFORMATION

We will keep your information for three years. After that, we will safely destroy your information.

10. **Do you have to be in the study?**

No, you can say…

You do not have to be in the study. No one will get angry or upset with you if you don't want to do this. Remember, if you decide to be in the study but later you change your mind, then you can say stop at any time.

DO YOU HAVE TO BE IN THIS STUDY?

YES NO

DO YOU HAVE ANY QUESTIONS?

YES NO

You can ask questions at any time. You can ask now or you can ask later. You can talk to your speech therapist or me at any time during the study. You can reach us at the telephone numbers to below.

Ruth McDonald	Department of Linguistics and Languages	647-883-7884
Devon Curran	William Osler Health System	905-494-2120 ext. 56835

IF YOU WANT TO BE IN THE STUDY, SIGN YOUR NAME ON THE LINE BELOW:

Patient's name, printed: _____

Date: _____

Signature of the Graduate Student: _____

Date: _____

Appendix C: Consent Form and Letter of Information for Aphasic Patients and Substitute Decision Makers

DATE: _____

LETTER OF INFORMATION / CONSENT FOR PARTICIPANTS AND SUBSTITUTE DECISION MAKERS
A study of the aphasic features of Caribbean English-based creole languages

Investigators:

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William Osler Health System
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(905) 494-2120 ext. 56835
E-mail: Devon.Curran@williamoslerhs.ca

Purpose of the Study:

The purpose of this study is to determine how aphasia is manifested in creole languages. Aphasia refers to a condition that makes it difficult to speak or to understand language. Typically, aphasia follows a stroke or another event that has harmed the brain. You are invited to take part in this study from October 2013 - December 2013. I am interested in how this information can be used to improve current materials used in the clinical assessment of creole speakers who have aphasia. This research study is a requirement for my Master's degree at McMaster University.

Procedures involved in the Research:

This is an observational study. With your permission, you will be video-recorded or audio-recorded during your regular speech and language assessment sessions or treatment sessions with your speech language therapist. You can ask to have the audio or video recorder turned off at any time during the session even if you give permission to be recorded at first. If you would like, we will then continue the session using the method of observation that makes you most comfortable. If you permit, I will also be present during these sessions where I will be taking handwritten notes. These notes will

capture information about your speech and articulation patterns. You will be observed for two, three or four sessions. This will be determined by your clinical treatment plan. Each session will last one hour. All observation sessions will take place in the speech language therapist's office. You will be asked questions about your speech. You may be asked questions like, "Did you have any difficulty with your speech before your stroke?" or "Are you having difficulty expressing yourself?" You might also be asked to read or write short paragraphs. With your permission, I will also ask your speech pathologist for some of your personal information such as your age, gender, location of brain damage, where you were born and raised, when you immigrated to Canada and what languages you speak. This information is important for identifying patterns of language use amongst creole speakers with aphasia.

Potential Harms, Risks or Discomforts:

The risks involved in participating in this study are minimal. You not may feel comfortable with being video-recorded while speaking. You may find it stressful to articulate words and sentences. Also, you may worry about how I will react in response to your speech. You do not need to answer questions that you do not want to answer or that make you feel uncomfortable. If you are uncomfortable with being video-recorded, with your permission I will audio-record the sessions instead. You can withdraw (stop taking part) at any time. I describe below the steps I am taking to protect your privacy.

Potential Benefits:

The research will not benefit you directly. I hope to learn more about how aphasia can affect creole languages. I would also like to know if these patterns are similar to those seen in other languages. I hope that what is learned as a result of this study will help us to better understand the unique ways in which aphasia can influence different languages. This work could help develop more effective clinical tools for assessing and treating aphasia in creole speakers.

Payment or Reimbursement:

You will receive a $25.00 Tim Horton's gift card for your participation in this study. You will receive this gift card from the principal investigator at the end of the last observation session.

Confidentiality:

All information collected during this study, including your personal health information, will be kept confidential and will not be shared with anyone outside the study unless required by law. I will not use your name or any information that would allow you to be identified. Only me, your medical team and the research team (the speech language pathologist, the faculty supervisor and a research assistant) will know whether you participated unless you choose to tell them.

The information you provide will be kept in a locked desk/cabinet where only I will have access to it. Information kept on a computer will be stored on a safe network and protected by a password. Once the study is complete, an archive of the data, without identifying information, will be maintained for three years. After this period, all data will be safely destroyed.

Participation and Withdrawal:

Your participation in this study is voluntary. It is your choice to be part of the study or not. If you decide to be part of the study, you can stop or withdraw from the observation sessions for whatever reason, even after signing the consent form or partway through the study or up until approximately December 2013. If you decide to withdraw, there will be no consequences to you. In cases of withdrawal, you will be asked how you would like the research team to deal with any data collected up until that point. All data will be destroyed upon your request. If you do not want to answer some of the questions you do not have to, but you can still be in the study. Your decision to be part of the study or not will not affect your access to speech and language therapy services at Brampton Civic Hospital.

Information about the Study Results:

I expect to have this study completed by approximately September 2014. If you would like a brief summary of the results, please let me know if you would like it sent to you through mail or email.

Questions about the Study:

If you have questions or need more information about the study itself, please contact Ruth McDonald at mcdonr3@mcmaster.ca or 647-883-7884.

This study has been reviewed by the William Osler Health System's Research Ethics Board (WOHS REB). The WOHS REB is responsible for ensuring that participants are informed of the risks associated with the research, and that participants are free to decide if participation is right for them. If you have any questions about your rights as a research participant, please call the Chair of the WOHS REB, Dr. Ron Heslegrave, at 905.494.2120 x 50448.

CONSENT

1. I agree that the sessions can be video/audio recorded. Yes No

2. I agree to allow the student researcher to be in the room during assessment and therapy sessions for observation purposes. Yes No

3. I agree to allow the student researcher to obtain personal background information from my speech language pathologist, Devon Curran. Yes No

4. I agree to allow my data to be used in the development of clinical tools for assessing and treating creole-speaking aphasics. Yes No

5. I would like to receive a summary of the study's results. Yes No

Please send them to this email address _____
OR to this mailing address: _____
_____
_____

Signature: _____

Name of Participant (Printed): _____

Legally Authorized Representative (please print) (if applicable)	Signature of Legally Authorized Representative (if applicable)	Date
Name of Witness to or Person Obtaining Consent (please print)	Signature of Witness to or Person Obtaining Consent	Date

Appendix D: Information Sheet for Speech-Language Therapists

Handling English-based Caribbean Creoles in Speech and Language Therapy: A Resource

General Info about Caribbean English-based Creoles

- These languages have naturally developed as a result of extended contact between English and West African languages.
- These languages generally take their vocabulary from English and their structural/grammatical system from West African languages.
- These languages typically have variable use of inflectional morphology.
- Sometimes, creole speakers are thought of as bilinguals who speak English and a creole language. However, a more accurate view is that in several Caribbean countries (namely Jamaica and Guyana), creole languages form a continuum with Standard English. This continuum contains numerous levels of dialectal speech. Most speakers will lie in the middle of the creole and standard "ends" of the continuum. These speakers are usually able to "move" up and down the continuum depending on whom they are speaking to, and thus being able to produce "more creole-like" speech or "more English-like" speech if they should so choose.
- Creoles are inherently variable! There are many acceptable ways to say the same thing.
- Jamaican Creole (JCE) and Guyanese Creole (GC) are the most widely spoken English based creoles

Properties of JCE and GC

Verbs

- English uses inflectional suffixes to express grammatical information such as tense and aspect, but JCE and GC use **preverbal forms** to express this information. These forms are called **tense, mood and agreement (TMA) markers**. See examples below.

Examples:

1) Eng: I walked yesterday.
   JCE: Mi ***did*** walk yesterday. OR Mi ***ben*** walk yesterday.

2) Eng: I often dance at parties.
   GC: I **doz** wuk up in di paati.

- JCE and GC also allow **bare verb forms** without preverbal markers. See examples below.

Examples:

3) Eng: I walked yesterday.
4) JCE: Mi **walk** yesterday.

5) Eng: Father comes home.
6) GC: Father **come** home.

- **Creole speakers may display mixed use of preverbal markers, bare verb forms and English inflectional suffixes**

Nouns

- The nominal system in JCE and GC is similar to that of Standard English; however creole articles in are slightly different. See examples below.

Examples:

7) Eng: Could I have a mango?
8) GC: Yuh cud gimme ***wan*** mango?

9) Eng: I can't find the kids!
10) JCE: Mi kyaan fin **di** pickney-dem!

- JC does not utilize the plural –s marker seen in English, instead the **suffix –dem is attached to nouns to indicate plurality** (seen in the example directly above)
- Alternately, creoles allow **bare noun forms** without the plural dem marker. See example below.

Example:

11) Eng: I am sending down three **barrels** to Jamaica.
12) JC: Mi ah sen down tri **barrel** tu Jamaica.

Pronouns

- JC personal pronouns are as follows:

Person	**Singular**	**Plural**
1	*mi, ai (pronounced 'I')*	*wi (pronounced 'we')*
2	*yu*	*unu (pronounced 'uh-nah' OR 'oo-noo')*
3	*im, ii (pronounced "ee")* ***(Male)*** *shii, ar* ***(Female)***	*dem*

- GC personal pronouns are as follows:

Person	Singular	Plural
1	*mi, I*	*awi, alwi, alahwi*
2	*yu*	*ayuh, alyuh, alayuh*
3	*im, ii* ***(Male)*** *shii* ***(Female)***	*de, dem, aladem*

Aphasic impairment in Creole languages

- Agrammatic aphasia in Standard English varieties is characterized by the omission of grammatical markers and inflectional suffixes.
- Because of the variable use of inflectional morphology in creole languages, the omission of inflectional items is ambiguous. It is difficult to determine whether or not an omission is a valid creole feature or a sign of disordered language.
- For example, in the creole sentence, *Mi walk yesterday*., it is difficult to determine whether or not the omission of the past tense Standard suffix *-ed* is a sign of normal or disordered language.
- There are two ways of handling this ambiguity in clinical assessment. The first method involves basing clinical diagnoses solely on non-ambiguous features and ignoring ambiguous features. In the second method, clinicians are required to examine the contexts in which ambiguous features are produced. More specifically, omissions in contexts where the grammatical features are likely to be produced may possibly indicate language impairment. The second method requires detailed knowledge of normal patterns of use in creole languages, and therefore, the first method may be preferred in clinical settings.
- The results of a preliminary study appear to suggest that grammatical features in creole languages form a hierarchy of susceptibility to impairment where plural markers, personal and demonstrative pronouns and articles appear to be well-retained in disordered creole language, while tense markers, third person, progressive markers, auxiliaries & copulas appear to be prone to error in disordered creole language.
- Therefore, the omission of plural markers, personal and demonstrative pronouns and articles may be indicative of language impairment in creole languages.