

Running Head: BILINGUAL HAITIAN CHILDREN'S SKILLS IN
FRENCH

Sak Pase (What's Going On)? Reading and Spelling Skills of
Bilingual Haitian Children in French Canada

Lisa-Marie Sauvé, B.Sc.

Department of Educational and Counselling Psychology

McGill University, Montreal

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Abstract

Linguists and psychologists alike have long overlooked the study of creole languages. We know very little about language and reading acquisition in young creole speakers. The aim of the present study was to examine the development of reading-related skills in native speakers of Haitian Creole (HC), a French-based creole, educated in French. In order to isolate the effects of speaking two highly similar languages, we compared Haitian children in 1st and 2nd grade to Spanish-French bilingual children and French monolingual children from European descent. Children from our sample were from five different schools in Montreal and had similar socioeconomic status. Participants were tested individually over three sessions on French standardized and experimental tasks assessing metalinguistic awareness, reading, comprehension, vocabulary and mathematical skills. Bilingual children were also tested on reading and spelling tasks in HC and Spanish. Results showed that HC and Spanish bilinguals performed as well as French native speakers on metalinguistic and reading tasks. However, Spanish-speaking children received lower scores than children in the two other groups on a receptive vocabulary measure. In an experimental task comparing the spelling of words of varying phonological similarity in HC and French, Haitian children had more difficulty spelling words that are cognates in HC and French than homophones or noncognate translations. Findings from this study were interpreted in light of the Bilingual Interactive Activation model (Dijkstra & Van Heuven, 1998).

Résumé

L'étude des créoles fut longtemps ignorée par la majorité des linguistes et psychologues. Nous avons très peu d'information sur le développement du langage et de la lecture chez les jeunes enfants qui parlent ces langues. Le but de ce projet de recherche était d'étudier les habiletés métalinguistiques et la lecture chez des enfants haïtiens dont la première langue est le créole haïtien, mais qui sont éduqués en français. Afin d'isoler les répercussions de parler deux langues avec un vocabulaire si similaire, nous avons comparé des enfants haïtiens de première et deuxième année à des enfants Hispanophones qui parlent espagnol et des enfants unilingues français de descendance européenne. Les enfants furent testés individuellement à l'aide de tests standardisés et originaux mesurant les habiletés métalinguistiques, la lecture, la compréhension, le vocabulaire réceptif et les habiletés mathématiques. La lecture et l'orthographe des enfants bilingues furent aussi évaluées en créole haïtien et en espagnol. Les résultats suggèrent que les enfants bilingues maîtrisent aussi bien les tâches métalinguistiques et la lecture que les enfants unilingues. Cependant, les enfants d'origine latine ont reçu un résultat significativement inférieur à celui des deux autres groupes pour leur vocabulaire réceptif. Sur la dictée en français mesurant l'habileté des participants haïtiens d'écrire des mots qui sont plus ou moins similaires en français et créole, les enfants ont exprimé plus de difficulté à bien épeler des mots qui sont presque identiques phonologiquement, mais ne sont pas des homophones. Les données furent interprétées selon le modèle de « Bilingual Interactive Activation » de Dijkstra et Van Heuven (1998) et l'implication de ces résultats quant à l'éducation des enfants haïtiens au Québec fut discutée.

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Introduction

Over the past decades, researchers realized the complexity of bilingualism and of its effects on important abilities such as reading and writing. Surprisingly, a certain class of languages has seldom been studied in the field of second-language acquisition despite the wealth of the information it could provide on bilingualism in children and on language acquisition itself. Only in recent years has proper recognition been given to creoles as bona fide languages as opposed to “marginal” or “defective” languages. Hence, very little is known of creole speakers in general and even less so of creole speakers as second-language learners. Because a child's first language is known to have an influence on the acquisition of his or her second language (Geva & Genesee, 2006), it was deemed important to study the influence creoles can have on their speakers. The following study is an initial attempt to bridge such a considerable theoretical gap in the literature on children whose first language is a creole and to provide a better understanding of the factors that influence their reading and writing development in comparison to other bilingual children. The introduction of this thesis will consist in a description of the primary focus of this study, Haitian Creole (HC), and why its speakers may constitute a different “brand” of bilinguals. Subsequently, the effects of bilingualism on children's reading and writing skills will be reviewed. The last portion of the introduction will be devoted to hypotheses about the reading and writing development in French of Haitian children, in comparison to other bilingual children and French monolinguals.

More particularly, the aim of the present study was to investigate how the substantial lexical and phonological similarities between HC and French influence the development of reading and, more specifically, the spelling abilities of Haitian bilinguals in French.

Review of Literature

Definition of terms

In her book entitled "Multiple Voices", linguist Carol Myers-Scotton (2006) remarks that because of the various situational and environmental conditions in which bilingualism can occur, the definition of the term must reflect a wide range of proficiency levels. Her definition of the term *bilingualism* is the following: "The ability to use two or more languages sufficiently to carry on a limited casual conversation" (Myers-Scotton, 2006, p.44). In her opinion, an individual's demonstration of bilingualism is defined by their intrinsic language capabilities but also by their communication needs in multiple languages. For this reason, she posits that bilinguals can show either "active" or "passive" bilingualism. Her definition of a "passive bilingual" is "someone who can understand a certain second language (L2) but not speak it" (Myers-Scotton, 2006, p. 44). Conversely, the term "active bilingualism" refers to someone who is both able to understand and speak a given L2. For the purpose of the present study, the term bilingualism will refer to the concept elaborated by Myers-Scotton (2006) along with the terms active and passive bilingualism. As implied by Myers-Scotton, the operationalization of the abilities that constitute bilingualism is crucial because whenever bilinguals are compared across cultures, the expression of bilingualism can vary tremendously.

In Quebec, many allophone children experience the attrition of their first language (L1) to the extent that they no longer speak their parents' L1 after being, obligatorily, educated in French for a few years. How should these children be described? What should we call their parents' L1, to which they were maximally

exposed in early childhood and in which they, usually, pronounce their first words? Statistics Canada, for Census purposes, provides the following definition of the concept of "mother tongue": "the first language learned at home in childhood and still understood by the individual at the time of the census" (Statistics Canada, 2001). This definition of a child's L1 will also be employed throughout this discourse and the terms "mother tongue", "L1" and "first language" will be used interchangeably.

Description of Haitian Creole

Creoles are languages that emerge from *pidgins*, languages that are created when people from different backgrounds need to communicate in the context of trade or migration and where one group exerts political power over the other, as in the case of slavery. A *pidgin* has no native speakers and it is no one's first language, but a *contact language*. A *creole* is a pidgin that has become the first language of a new generation of speakers (Wardhaugh, 2006). As Holmes says, "a creole is a pidgin that has expanded its structure and vocabulary to express the range of meanings and serve the range of functions required of a first language." Now that creoles have been officially recognized as "full-fledged languages", native speakers who also speak the creole's associated language, for example speakers of Haitian Creole and French, should be considered nothing less than bilinguals. Even though, from a purely linguistic perspective, all bilingual speakers are equal in the sense that they speak two different languages, the higher regard given to certain languages over others creates a hierarchy of valorisation of certain bilingual speakers over others. For example, in Canada, since French and

English are the two official languages, bilingual speakers of the majority languages are perceived positively and usually, one language is not inherently considered to be of higher value than the other. Comparatively, in the United States, where English is the only official language, Spanish, even though it has approximately 60 millions speakers, is often considered to be of a lower status than English by mainstream culture. When a language has considerably fewer speakers than another in a country or is given lower status because of socio-political reasons, the term "language-minority" person is more appropriate than bilingual person. The subordinate status of HC and Spanish in Quebec demands that the bilingual children in this study be considered as language-minority children. As such, the results of studies on bilingual speakers of majority languages stipulated in the literature may not be replicated in the present case. Research from both bilingual and language-minority populations will be addressed in the literature review but special consideration will be given to the precarious situation of these languages in Quebec and its effects on their speakers compared to other bilinguals.

Until recently, HC was considered a "degenerate" or poorly spoken form of French instead of a native language in its own right. Hence, if they spoke a second, more "legitimate" language, speakers of HC were considered monolingual speakers of that second language. Because of its history, HC has links with several different languages like French, Spanish and African languages but cannot be said to be, in any way, a simplified or diminished form of any one

of these languages. DeCamp (1977) says that HC constitutes a clear-cut example of a creole because:

Although its vocabulary is largely French, the phonology and syntax are so different that most varieties are mutually unintelligible with standard French. In some ways, its grammatical structure is more similar to creole Portuguese, creole Spanish, and even to creole English than to standard French, and most creolists object to calling it a dialect of French (pp.4-5).

The HC alphabet is similar to that of French or other Latin languages but has 28 letters. The following letters from the French alphabet do not exist in HC: *c, q, u* and *x*. In exchange, the following letters included in the HC alphabet are commonly used diphthongs or phonemes in French: *an, en, on, ou* and *ch*. The addition of these letters in conjunction with the absence of the silent letters found in French, i.e. *e* and *h*, simplifies the system of sounds and orthography of HC compared to its associated standard language. In fact, Wardhaugh (2006) says "the sounds of [HC] are likely to be fewer and less complicated in their possible arrangements than those of the corresponding standard languages." (p.68). HC's orthography is said to be shallow because "[its] phonemic and orthographic codes are isomorphic; the phonemes of the spoken word are represented by the graphemes in a direct and unequivocal manner" (Frost, Katz & Bentin, 1987, p.104). The spelling system and syntax of HC are also simpler than that of French because of the lack of inflection in nouns, pronouns, verbs and adjectives. In other words, nouns are not marked for number and gender, and verbs lack tense markers (Wardhaugh, 2006). HC's syntax is said to originate almost entirely from West African languages, more specifically Fongbe. On the other hand, most of

HC's vocabulary is derived from French (DeGraff, 2001), which has obvious implications regarding the lexicon of HC-French bilinguals. However, words in HC and French with similar phonological and morphological structures do not always have the same meaning. Semantic drifts have occurred for words with identical origins in HC and French. For example, the word *kabann* in HC means "bed" while in French, its phonological equivalent *cabane* means "shack". Some words in HC that are traced back to West African tongues have no link to French whatsoever so their meaning cannot in any way be deduced by knowing the French equivalent. For example, the HC word for grapefruit *chadèk* is the equivalent of *pamplemousse* in French. One goal of the present study was to examine the impact of such similarity or dissimilarity of words in HC and French on Haitian children's spelling of French words.

The Bilingual Activation Model and Reading in Haitian bilinguals

One of the theories that is most relevant to the study at hand is that of the Bilingual Interactive Activation Model (BIA) (Dijkstra, & Van Heuven, 1998). This theory stipulates that upon processing information in one of their languages, bilingual people automatically activate information in the non-target language. There is empirical evidence of the validity of the BIA. Studies of fluent bilinguals using the Stroop Paradigm (Stroop, 1935) have demonstrated that similar interference occurs when the name of a colour appears in the language used in the study or in the person's other language (Preston & Lambert, 1969; Mägiste, 1984, 1985). On word naming tasks, a facilitation effect was detected when a picture was presented to bilingual individuals along with the translation in the non-target

language. Costa, Miozzo and Caramazza (1999) found that when a picture of a table along with the word “*mesa*” in Spanish was presented to Catalan-Spanish bilinguals in a task in Catalan, people named the picture more quickly than in a control condition. Similarly, Colomé (2001) showed that when asked to decide if a phoneme was present in a Catalan word, represented by a picture, Catalan-Spanish bilinguals took significantly longer to reject the phoneme contained in the Spanish translation than the one absent in both languages. In another experiment, Costa, Caramazza and Sebastián-Gallés (2000) demonstrated that the naming of cognate translations, words whose translations have similar phonological and/or orthographic characteristics (for instance, “*cavall*” (Catalan) and “*caballo*” (Spanish), meaning “horse”) is faster than the naming of noncognate translations, words that only share their meaning (e.g. “*taula*” (Catalan) and “*mesa*” (Spanish), meaning “table”) (Colomé, 2001). These studies demonstrate that the sight of a picture or a word in a language activates its concept across a person's languages and that this activation spreads to the level of the phonological encoding of words. Hence, the retrieval of a name or the identification of phonemes is made easier when lexical and sublexical information is congruent and thus, positively activated across languages.

From the previously mentioned studies, one can predict that the higher the similarity between a child's two languages, the stronger the activation when naming a picture or reading a word in either language. For example, if a child whose first language is HC reads the word *pomme* in French, which is *pom* in HC (meaning *apple*), the fact that this word corresponds to the same concept in the two languages and that it is also composed of the same phonemes should lead to a

stronger activation of both lexical and sublexical information in HC and French, thus facilitating its reading. In comparison, if a child whose first language is Spanish reads the word *quatre* in French, meaning *four*, its cognate translation *cuatro* will be strongly activated but to a lesser degree than the translation in HC.

The Bilingual Activation Model and the Specific Effects of HC on French

Spelling

The primary goal of this study was to determine how the phonological and lexical similarities between HC and French impact Haitian children's spelling in French. Unfortunately, no model to date conceptualizes how speaking highly similar languages affects a child's orthographic abilities. In this sense, the BIA model is useful because it recognizes the reciprocal influence between a child's multiple languages. It is also fitting because it acknowledges that the interaction between languages can be found at the level of phonology, which is a concern of the present investigation.

In this section, the BIA model will be used to reflect on possible interference and facilitation effects in our primary group of interest, Haitian children. In order to explore the effects of different levels of phonological similarity between HC and French words, an experimental spelling task was designed in French to compare three categories of words: homophones, cognates and noncognates. Homophones are words that are pronounced in the same way but differ in spelling. Cognates, as mentioned previously, are words that share meaning and have common phonological or orthographic properties while noncognates are only related semantically.

Figure 1 provides examples of the homophones, cognates and noncognates in HC and French that were used in the experimental spelling task.

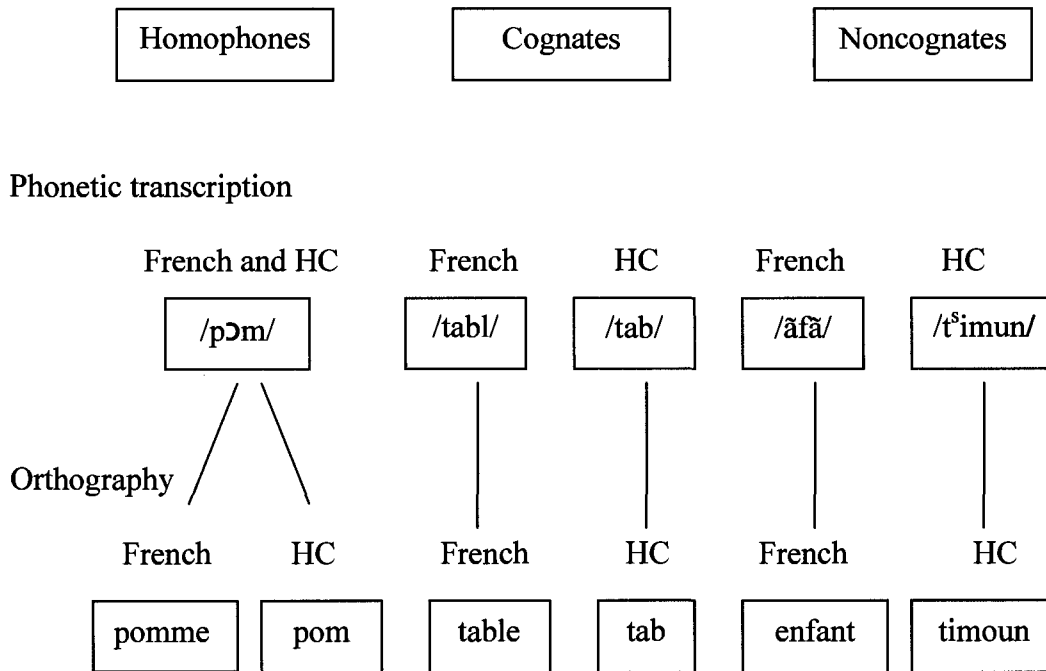


Figure 1. Examples of homophones, cognates and noncognates in French and HC used in the experimental spelling task.

According to the BIA model, homophones in two languages, such as the words *pomme* in French and the word *pom* in HC, would activate the concept and phonology of the words very strongly in both languages. This would result in a facilitation effect for the retrieval of the word's phonological information. As was mentioned before, because French is an opaque language, activating the different phonemes in *pomme* is not enough to make a child write the word correctly. Activation of phonological information in French and HC could, in turn, activate

the spelling of words in each language. If this is the case, the transparent spelling of the words in HC is likely to compete or interfere with the retrieval of the more opaque French spelling of the word, resulting in possible "HC intrusions" in Haitian children's spelling in French.

For cognates in HC and French, such as *tab* in HC and *table* in French, meaning *table*, the phonological information activated across languages is not as similar as in the case of homophones. In the present example, there is an omission of the final phoneme in HC compared to French, which could deplete phonological activation in Haitian children that would subsequently be reflected in their spelling. There is empirical evidence that the phonological input individuals receive upon hearing a certain word being pronounced differently across contexts, for example, in different dialects, transpires into their spelling. Treiman and Barry (2000) proved that how words are pronounced in British English compared to American English was portrayed in college students' spelling mistakes. Because the phoneme /r/ is less salient after a vowel in British English compared to American English, the number of misspellings of words like *horde* without the letter *r* was three times larger for British students compared to American students. Even more closely related to the study at hand are Treiman's (2004) findings that adults who spoke African American Vernacular English (AAVE) also had a tendency to spell words according to how they sounded in their spoken dialect and thus produce misspellings that reflected AAVE phonology. Because individuals base their spelling on words' phonological forms (Treiman, 2004), the slight differences between cognate words in HC and French could cause Haitian children to experience interference from their first language

causing them to forget phonemes or use incorrect phonemes in words in French. Reverting to the *tab/table* example, based on Treiman's results, it is possible that the /l/ phoneme in the word in French is not as salient for Haitian children as it is for native speakers. This would result in a deterioration of the phonological input used by Haitian children when spelling this word and, presumably, cause them to forget the phoneme /l/ at the end of the word more often than monolingual French children, especially at the initial stage of spelling development, where children rely more heavily on phonological information. Even for children who did detect the presence of the phoneme /l/ in the French word, because both written forms of the words would be activated in French and HC, interference would occur between the more transparent spelling of the word in HC and the more opaque spelling in French, making this word longer and more difficult to spell for Haitian children.

Finally, for words that are noncognates in French and HC such as the words *enfant* (French) and *timoun* (HC), meaning *child*, it is predicted that facilitation would only occur at the semantic level, activating the concept in both languages, possibly making the retrieval of the phonological and orthographical information of the word in French faster and easier. Unlike homophones and cognates, noncognates do not activate sublexical information in both languages. No deterioration of the phonological input, as was predicted for cognates, would occur either because the words are not close enough phonologically to be influenced by differences in pronunciation.

Bilingualism, Phonological Awareness and Syntactical Awareness

Haitian children may constitute a different "brand" of bilinguals because of the similarities between their languages. Even so, hypotheses about their linguistic development can be formulated from the larger bilingualism literature. In this section, the effects of bilingualism on pre-reading processes such as phonological and syntactical awareness will be reviewed. In doing so, speculations on the characteristics of bilingual children from Haitian and Hispanophone origin will be possible.

Phonological awareness (P.A.) refers to a person's ability to recognize that words in their language are made up of individual sounds and to manipulate these sounds during processes like reading. Certain psycholinguists claim that there are two kinds of P.A., *epilinguistic (implicit) P.A.* and *metalinguistic P.A.* (Gombert, 1994). Gombert stipulates that epilinguistic behaviour constitutes children's ability to process and control linguistic input. Such behaviour can be seen when children spontaneously correct their own sentences. Their epilinguistic abilities permit them to abstractly manipulate language but at a largely unconscious level. On the other hand, Gombert calls metalinguistic, children's abstract manipulations of language that are accessible to consciousness and understanding. Thus, a child's ability to segment a word in its individual phoneme is considered a metalinguistic task because explicit knowledge of what constitutes a phoneme in a language needs to be applied. Bialystok (1991) theorizes that in the process of mastering different languages, bilingual children may have many more opportunities to reflect consciously upon the ways in which languages differ. If being exposed to multiple languages only results in children having a

“better ear” for distinguishing various sounds and forms in languages but that they remain unable to clearly explain and consciously reflect on these differences, bilingual children would only demonstrate higher epilinguistic abilities. Conversely, if these distinctions were accessible to the child's consciousness then they would be considered metalinguistic.

Several researchers have reported that bilingual children have superior P.A. in both their first language (L1) and their second language (L2) (Bialystok, 1988; Bialystok & Majumder, 1998; Campbell & Sais, 1995; Cummins, 1978; Yelland, Pollard & Mercuri, 1993). These results are congruent with the BIA model, since, as discussed in the previous section, upon hearing words in one language, bilingual children automatically activate lexical and sublexical information in their other language. This dual activation presumably results in what Lambert and Tucker (1972) call “contrastive linguistics”, the action of comparing the similarities and differences between the two languages, which ultimately can result in higher P.A. . In the report of the National Literacy Panel on Language-Minority Children and Youth, Lesaux, Koda, Siegel, and Shanahan (2006) say that “although most studies indicate that second-language learners tend to perform as well or better than monolinguals on phonological tasks, two studies found differences in favour of monolinguals (Cisero & Royer, 1995; Jackson, Holm & Dodd, 1998).” (p.78). It is possible that differences in P.A. exist between bilingual children who speak two languages with equal status and language-minority children. The fact that the two groups of bilingual children in this study are from language-minority groups may stifle the positive effects bilingualism usually has on P.A. in young children. Since little research has been done on the

development of P.A. in creole-speaking children or even Spanish-speaking children in French, the present results may differ from those of past studies.

Also implicated in reading development is syntactical awareness, is the ability to comprehend the rules and structures of syntax in a given language. Bilingualism can sometimes lead to enhanced syntactical awareness because the process of learning multiple languages requires that one pay close attention to differences in grammatical structures (Démont, 2001). Bruck and Genesee (1995) posited that bilingual children might have a metalinguistic advantage when it comes to syntax because developing two languages draws children's attention to the structural aspect of languages and allows them to develop analytical skills with regards to the features of their two languages. As with phonology, it is possible for children to control the syntax of two languages naturally, without much conscious effort. This would be called episyntactic awareness. Comparatively, if a child performs conscious comparisons between two languages and purposefully reflects on these, they would be said to have metasyntactic awareness in these languages. In a study comparing children who attend a French-German bilingual school and children in a monolingual French program, Démont (2001) found evidence of a bilingual advantage at the level of epilinguistic, metalinguistic and word reading skills. However, these findings may not be replicated in the current study because the bilingual children in Démont's (2001) study were native speakers of the majority language of their country, French. The children in our sample are part of linguistic minority groups, which may, as stated previously, negatively influence their development as bilingual speakers. Another study comparing syntactical awareness in Spanish-English bilinguals in pre-

kindergarten, kindergarten and 1st grade in El Salvador to Spanish monolinguals in this country and monolingual English children in the United States, matched on proficiency in each language, revealed an advantage of Spanish bilinguals compared to their Spanish monolingual peers (Galambos & Goldin-Meadow, 1990). Even though bilingual children from El Salvador were *less* proficient than their American counterparts in English, they noted *as many* ungrammatical errors as the more proficient children from the United States. Thus, based on proficiency in English, the Spanish-English bilingual children were more efficient than monolingual children in either Spanish or English. Then again, one must remember that, as in Démont's (2001) study, the bilingual children from El Salvador, unlike the children in the present sample, were also part of the linguistic majority in their country. Despite differences in the ethnic background of their samples, most studies on the metalinguistic abilities conclude that what influences a bilingual child's metalinguistic awareness in their second language is their ability to reflect on linguistic structures in their first language (Geva & Genesee, 2006). Children who have the language of the majority as a first language have more opportunities to refine their metalinguistic skills in their first language, in an educational context and in society at large, and thus also have a greater chance of developing skills such as syntactical awareness in other languages. In comparison, children who are from linguistic minorities such as Haitian or Spanish-speaking children in Quebec, may not have the possibility of developing these higher-order skills in their first language. Because research on the syntactical awareness of language-minority children is so scarce, predictions

for the current study on this matter will be extrapolated from the literature on bilingual children from linguistic majorities.

Word and Pseudoword Reading Skills of Language-Minority Children in Their Second Language

Studies on word reading skills of language-minority students in their second language have found that these children are usually as proficient as native speakers despite the fact that the former usually do more poorly on syntactical awareness and vocabulary (Lesaux et al., 2006).

Researchers have also demonstrated that having a first language with a transparent orthography, which has more regular and consistent sound-letter correspondences, and acquiring some reading skills in that language can facilitate the development of decoding skills in a second language (Lesaux et al., 2006). The *Orthographic Depth Hypothesis* claims that the depth of a language contributes to reading difficulty (Frost, Katz & Bentin, 1987). According to this hypothesis, lexical word recognition in a transparent or shallow orthography is mediated primarily by phonemic cues generated pre-lexically by grapheme-to-phoneme translation. In contrast, in a deep orthography, where the phoneme to grapheme relationship is more opaque, lexical access for word recognition relies strongly on orthographic cues, whereas phonology is derived from the internal lexicon. The repercussions of such a phenomenon are that children who learn to read in a shallow orthography first, as could be the case for Haitian and Spanish children in our sample, use grapho-phonemic information when reading words in isolation more often than native speakers of French, who learn to read in an

opaque language. As discussed by Frost et al. (1987), the latter group would be more likely to process the word as a whole and thus, revert to the bank of written words they've already memorized in word reading tasks. Empirical evidence has been found in favour of the Orthographic Depth Hypothesis. Biliterate children with low reading scores have received higher scores on reading measures than their monolingual counterparts when they had learned to read in their transparent first language (Abu-Rabia & Siegel, 2002; Da Fontoura & Siegel, 1995). Since the two bilingual groups in this study have a transparent first language, despite possibly having a smaller vocabulary than native speakers in French, they should have equivalent decoding skills in word reading and pseudoword reading tasks. Furthermore, the greater the exposure to the transparent language in the bilingual groups, the more sophisticated their decoding skills should be in French. In addition to their transparent first language, according to the BIA model, Haitian and Hispanophone bilingual children in this study should also experience a certain degree of facilitation at the decoding level because of the greater activation of phonological forms. On the other hand, it is unclear whether this facilitation effect will completely compensate for lower vocabulary skills language-minority children often show in their second language.

Reading Comprehension of Language-Minority Children in Their Second Language

In the Report of the National Literacy Panel, Lesaux et al. (2006) state that in their meta-analysis of reading comprehension in children's second language, all studies indicated that language-minority children were lower than monolingual

peers. They say that these results could be due to several factors. Lower levels of reading readiness, word-level skills, first-language literacy as well as under-developed background and cultural knowledge could explain these results. On the other hand, all the studies examined by Lesaux et al. compared language-minority children that spoke languages that were considerably different phonologically and lexically. Bilingual children exposed to HC and Spanish may be different because they have a first language that shares many features with French, with regards to their history and linguistic phylogeny. Due to the characteristics of their native language, the bilingual children in this study should have word-level skills equivalent to that of native speakers, and may not exhibit more difficulty in reading comprehension than native speakers, contrary to what was found in other studies. Haitian children should also be advantaged when it comes to extracting meaning from text compared to Spanish bilinguals because of the common vocabulary between HC and French. Hence, if a smaller vocabulary in French does significantly hinder children's comprehension, the Hispanophone group should be lower than the HC and French groups.

Spelling Skills of Language-Minority Children in Their Second Language

Another aim of the present thesis was to examine the spelling abilities of bilingual children holistically through the use of standardized and well-known spelling measures. Due to the transparency of their first language, Haitian and Hispanophone children in this study may have more refined phonological skills and thus, more skilled at segmenting words and identifying grapho-phonemic correspondences. However, as was mentioned previously, it is possible that the

activation of two differently transparent orthographies may cause interference. Dressler and Kamil (2006) support this hypothesis by saying that negative transfer is predicted when students are acquiring a second language with orthographic features that are more complex than corresponding features in the first languages. Even so, most studies reported by Lesaux et al. (2006) found that second-language learners of English had spelling skills equivalent to those of native speakers. In a study that compared Arabic-English bilinguals with English monolinguals, Abu-Rabia and Siegel (2002) found that bilingual children who were considered "low readers" based on their performance on Arabic and English tests outperformed monolinguals matched on tests scores on measures of English pseudo-word reading, word spelling, and some of the phonological tests. These findings are consistent with those of Da Fontoura and Siegel (1995) who found that reading-disabled Portuguese-English bilinguals outperformed English monolingual reading-disabled children on English spelling and pseudo-word reading tasks. For children who experience difficulty in reading and spelling (low readers), the presence of a transparent first language presumably increases phonological awareness and serves as a kind of remediation strategy for spelling. For normal readers, the advantage of having a first language with a shallow orthography does not seem as marked, perhaps because these children do not rely as much on phonological skills in spelling.

Because children with suspected learning disabilities were excluded from the present sample, there should not be a marked advantage for Haitian or

Hispanophone children over monolingual French speakers in French spelling. It is hypothesized that the three groups of children will be roughly equal on measures of French spelling.

Sociological and Practical Considerations of Bilingual Children's Performance

Because of the social and cultural nature of the bilingual groups included in this study, it is crucial to consider other factors that may influence the performance of the children in this sample. Cummins's (1979) *Linguistic Interdependence Hypothesis* (LIH) provides a useful frame to include sociological and educational variables in studies of bilingual children's development. This hypothesis stipulates "the level of L2 competence which a bilingual child attains is partially a function of the type of the level of competence the child has developed in their L1 at the time when intensive exposure to L2 begins" (Cummins, 1979, p.233). This hypothesis is especially relevant to the formulation of predictions and the analysis of data in this study because the two groups of bilingual children are predicted to have different proficiencies in their native language. Generally, Haitian children in this sample should be less proficient in their native HC because many Haitian parents believe that if their children develop their skills too much in their first language, it will negatively affect their acquisition of French. Thus, most Haitian parents in this study should report speaking to each other in HC but communicating to their children in French and demanding that their children answer back to them in French, their second language, rather than in HC. On the other hand, parents of Hispanophone children

usually report more communication in Spanish in the home, both between parents and with their children.

In his seminal article, Cummins (1979) first proposes, through the *Threshold Hypothesis* (Cummins, 1976, 1978; Toukomaa & Skutnabb-Kangas, 1977), that in order to reap the most benefits from acquiring a second language, children need to have developed certain core skills in their first language (L1). In other words, the *Threshold Hypothesis* posits “there may be threshold levels of linguistic competence which bilingual children must attain both in order to avoid cognitive deficits and to allow the potentially beneficial aspects of becoming bilingual to influence their cognitive growth” (Cummins, 1976, 1978). While the BIA model will be used to explain more basic cognitive processes involved in bilingual children's reading and spelling, Cummins's LIH and Threshold Hypothesis will be called upon in the Discussion to discuss the sociological and practical explanations of the results of this study.

Research Questions and Hypotheses

In summary, the goal of this research project was to examine the development of reading and spelling skills of Haitian children exposed to HC at home but schooled in French, their second language. More specifically, the aim of this study was to document the specific effects of the considerable overlap in vocabulary and phonology between a French-based creole and the French language itself on bilingual children's development. In order to disentangle the effects of this overlap for Haitian bilinguals from the effects other first languages (L1) can have on their speakers, the latter were compared Spanish-French bilingual children. To further isolate the effects of bilingualism on creole speakers, both bilingual groups of children were also compared to monolingual native speakers of French that attended the same schools and were of equivalent socioeconomic status (SES).

This methodology was used to answer the following research questions:

1. Does the phonological similarity between their two languages cause Haitian bilingual children to have superior P.A. skills in French compared to Spanish speakers and monolingual French speakers?
2. Do the differences in syntax between Haitian children's L1 and L2 cause them to have lower syntactical awareness in French than Spanish speakers and monolingual French speakers?
3. How do the different levels of phonological similarity between the HC and French lexicons influence Haitian children's spelling of words in French?

4. Are reading skills of Haitian and Spanish bilinguals equal to those of monolingual French speakers?

With regards to the first research question, Haitian children's P.A. skills are expected to be superior to those of Spanish speakers and monolingual French children. To be able to detect and correct slight variations in pronunciation between HC and French, which are highly similar, Haitian children should have to develop strong epilinguistic and metalinguistic abilities. To detect such small differences in their two languages, a higher level of consciousness and attention would be required from Haitian children whenever they are speaking in their first or second language. As was discussed earlier, metalinguistic abilities are the ones that require conscious manipulation of the subunits of language. Thus, the demands for heightened awareness made on Haitian children would be more visible on metalinguistic tasks than on epilinguistic tasks. Because differences in phonology and pronunciation are more marked between Spanish and French, Hispanophone children should need to mobilize fewer attentional and metalinguistic resources when talking in their two languages than their creole-speaking peers. In other words, the differences in the vocabulary and pronunciation of words in Spanish and French should be salient enough for Spanish-speaking children to cognitively separate their two languages without having to constantly engage in self-monitoring. The exposure of Spanish children to two languages could cause them to acquire higher levels of implicit control and detection of phonological forms during processes such as code switching but without having to be as attentive to details as Haitian children. Thus, they could demonstrate an advantage in epilinguistic awareness compared to monolinguals

but not necessarily in metalinguistic awareness as Haitian children. Finally, monolingual French children would exhibit lower epilinguistic and metalinguistic P.A. than the bilingual children because they are only exposed to the phonology of one language and the detection as well as articulation of phonemes in their languages comes naturally, i.e. does not require conscious control.

Because of L1 influences on the development of skills related to syntax, differences in epilinguistic and metalinguistic syntactical awareness could be observed among the groups in this study, as was predicted for P.A.. With regards to syntactical skills in French, Spanish children should have an advantage over the two other groups because they speak two syntactically similar languages that can easily be compared. Thus, as could be the case for Haitian children with regards to phonology, it can be predicted that Spanish children would develop superior episyntactic but also metasyntactic awareness in French. Haitian children's mastery of the syntax of two languages could lead to the development of higher episyntactic awareness, which would enable them to form correct sentences in two languages. However, the West African roots of HC's syntax presumably makes its reconciliation with French syntax more difficult and thus makes the reflection on syntax more complex for Haitian children. Thus, it is hypothesized that Haitian children would demonstrate lower metasyntactic awareness than their Spanish-speaking peers. French-speaking children have an inherent knowledge of the vocabulary and syntax of their native language so they should be less inclined to purposefully reflect on these aspects of their language. Consequently, French children should demonstrate lower episyntactic and metasyntactic awareness than Spanish and HC speakers. In sum, when it comes to syntactical awareness, it is

predicted that the patterns predicted for P.A. will be somewhat reversed: Hispanophone children's skills should be superior to those of Haitian children who, in turn, should perform better than monolingual children.

Since the present study is the first to analyze the effects of similarities between a child's two languages on their spelling, predictions of children's performance on the experimental French spelling task are speculative. In general, it is hypothesized that Haitian children will perform differently depending on the level of overlap between the two languages' phonology in different words. As was stipulated in the literature review, the spelling performance of Haitian children will be contingent on the activation of phonological and orthographic forms activated in their two languages when reading various words in French. Hence, Haitian children's spelling abilities in French will vary for the various categories of words: homophones, cognates and noncognates. Conversely, the spelling performance of Spanish-speaking children and French monolinguals should remain constant for these three categories of words. Because no similar categories of words exist on the standardized measure of spelling in French, the three groups of children are expected to perform at similar levels.

Based on previous studies on language minority children's reading skills, bilingual children in this study should at least be as competent as their monolingual peers. Because of the linguistic and social status of the bilingual children in this study, no marked advantage of bilingual children over monolingual children is predicted on reading measures despite there being differences in their favour in P.A. As stipulated by Cummins (1979) in his Linguistic Interdependence Hypothesis, the minority status of the two bilingual

groups of children in this study could slightly reduce the normally positive influence bilingualism can have on cognitive and linguistic development.

Method

Design and Participants

This study took place in two Francophone school boards of the city of Montreal in the province of Quebec, Canada. Schools with higher proportions of Haitian and Spanish-speaking students had been selected by the school boards to facilitate recruitment. Consent forms were given to all children in first and second grade that fulfilled the following criteria: having Haitian Creole or Spanish as a first language or speaking French exclusively and being of European ancestry. Participants could not have received any diagnosis for a learning disability or neurological condition. Before sending consent forms to parents, teachers asked their pupils if they belonged to the ethnic groups in the study and in the case of the bilingual groups, if they spoke Haitian Creole or Spanish at home. The final sample of 73 children included three groups of children from 6 to 9 years of age for whom we had received written parental consent. The participation rate based on the number of parental consent forms received out of those that were sent was higher than 75%. Only one child for whom consent was received was excluded from the study because he was of Sri Lankan origin and thus, was not part of our groups of interest. The mean age of the participants in our sample was 7 years and 9 months (Range: 6 years 9 months to 9 years and 6 months). The first group was composed of 16 girls and 6 boys of Haitian origin who were bilingual in Haitian Creole and French. Most children in the Haitian group were second or third-generation immigrants whose parents or grandparents had moved from Haiti between 1980 and 1995. Two children, a boy and a girl said they had first moved to the United States from Haiti before living in Canada. Another young girl said

was born in Haiti and moved to Montreal a few years prior. The second group consisted of 15 girls and 13 boys who were bilingual in Spanish and French while the third group was made up of 14 girls and 9 boys who were monolingual French speakers. Children in the Spanish-speaking group were mostly second-generation immigrants from Latin American countries such as: Mexico, Columbia, Peru, Argentina and Venezuela. Only a few children stated they were born abroad and move to Canada subsequently. All of the participants were educated in French but had two sessions of English instruction corresponding to approximately 2 hours a week.

Background information was collected through a parent questionnaire in French. The return rate of parent questionnaires was of 45.4 % for the Haitian group, 52.2% for the French group and 50 % for the Spanish-speaking group. In the Haitian group, 70% of the parents who responded said that, in the home, the adults spoke HC between themselves and 30% said they spoke HC with their children. In contrast, in the Spanish group, 92 % of parents who filled out the questionnaire said they communicated in Spanish between themselves and all parents reported that they speak in Spanish with their children at home. Furthermore, 46% of Spanish-speaking respondents said they spoke *exclusively* in Spanish with their children in comparison to 10% of Haitian respondents who reported speaking *only* in HC with their children. Parents admitted using both languages to various degrees at home, depending on the topic of conversation and sometimes, code-switching within conversations between HC and French. This fact reflects the greater acculturation of Haitian families to French culture and the French language. In the French group, only 8 % of the parents who responded

said that they spoke another language in addition to French in the home among themselves and with their children. Hence, 92 % of the French respondents said the only language used in the home between parents and with their children was French.

Maternal education was also included on the questionnaire as a proxy measure of socio-economic status and also because it has been found to be a significant predictor of students' academic success (Bradley & Bryant, 1985). Parents were asked to provide the education level of the child's mother according to a 7-point ordinal scale: (1) Elementary school only; (2) Did not receive a high school diploma; (3) Received a high school diploma; (4) Technical training; (5) College / CEGEP; (6) University Bachelor's Degree; (7) Graduate Degree. Maternal education level was normally distributed in the sample ($\chi^2(6, N=30) = 1.37, p > .05$), with the following distribution: 3% completed elementary school, 3% attended high school, 21.2% earned high school diplomas (DES), 21.2% had technical training (DEP), 21.2% earned College or CEGEP degrees, 24.2% had some undergraduate education or a completed Bachelor's degree and 6.1% held Graduate degrees. These data were then compared to the most recent census data provided by Statistics Canada (2001). The data collected in this study was not significantly different from that of the expected distribution of education levels within the Quebec population ($\chi^2(6, N = 33) = 6.578, p > .05$). One student for whom parental consent was received was excluded after the first session because his native language was Sri Lankan and not Spanish. No other child was excluded because of language background or special education status.

Measures

Phonological awareness. Two tasks were used to assess different types of P.A. To test *epilinguistic* P.A., a coda-matching task was employed (Savage, Blair & Rvachew, 2006) that contained 6 practice items and 20 test items. In this activity, a small booklet was presented to the child containing pairs of black and white pictures depicting words. In the practice phase, the examiner would tell the child that they were going to play a sound detective game in which they have to decide if words in French “have the same sound at the end”. The child was asked to say “same” if the sounds at the end were identical and to say “different” if they were not. After pointing to each picture on a page and saying the corresponding word, i.e. “toque” and “bac”, the examiner would turn to the child and say: “They sound the same at the end don’t they, “toque” and “bac”, do you hear the “k” sound at the end? The answer is “same ””. For the remaining practice items, the child would be asked more directly about the similarities of the codas until it was established that the child understood the task. In the test items, only general positive feedback was given. Split-half reliability for this measure was calculated and adjusted with the Spearman-Brown. This test has high internal consistency because the reliability coefficient is 0.82.

The second P.A. task focused on *metalinguistic awareness*. It was an elision task made up of 2 practice items and 24 test items and was a variation of the one used by Démont (2001). In the first practice item, the examiner asked the child to say the word “chapeau” without the sound “peau” at the end. If the child answered incorrectly or did not respond, the examiner would say: “Chapeau, without the “peau” is “cha” (cat)”. The second item consisted of removing the

sound "p" in "pot". Again, the child was given the right answer if they had answered incorrectly. The test items were divided in the three following categories: suppression of initial phonemes, median phonemes or final phonemes. Item order was counterbalanced using a Latin square design. After 4 consecutive wrong answers in a single category, the examiner would stop administering items in this category and go on to the following category. The split-half reliability coefficient (Spearman-Brown formula) of this measure is 0.85, which is considered high.

French Spelling in relation to Haitian Creole. The spelling task in French contained three lists of 10 words of the following categories: French/HC Homophones, French/HC Cognates, and French/HC Noncognates. Words in the three categories were compared on how many times they occurred per million words in books and how many phonemes they contained. One-way ANOVAs performed with frequency of occurrence in books as the dependent variable ($F(2, 29) = 0.17, p > .05$) and number of phonemes in single words ($F(2, 29) = 1.24, p > .05$) did not reveal any significant differences between words categories. During administration, the examiner would say a word from one of three lists, use it in a sentence and then repeat the word for the child to write on a numbered piece of paper, going in sequence from 1 to 10 and stopping between each individual word. The order of the spelling lists presented to the child was counterbalanced using a Latin square design. The reliability of this experimental measure is excellent since the reliability coefficient obtained through the split-half method was 0.94.

Academic achievement. Five subtests of the Canadian French version of the Weschler Individual Achievement Test, 2nd edition (2005), were administered to all children. This test is a standardized measure of academic achievement in four domains: reading, writing, oral language and mathematics. We used all the subtests included in the reading section of the WIAT-II_{CND-F}: Word Reading, Pseudoword Reading and Reading Comprehension.

Word Reading. The Word Reading (Lecture de mots) subtest evaluates pre-reading skills like letter naming, letter knowledge and phonological awareness as well as decoding skills.

Pseudoword Reading. This subtest (Décodage de pseudo-mots) assesses a child's ability to phonologically decode print in French.

Reading Comprehension. In this subtest (Compréhension de lecture), the child had to read a word on his or her own and point to a corresponding picture or was asked to answer a series of questions after reading a passage.

Spelling. In order to measure children general spelling's ability in French, one task from the writing section of the test was administered, the Spelling subtest (Orthographe). In this activity, the child had to write single words in French dictated to them in the context of a sentence.

Receptive vocabulary. Participants were tested on the French version of the Peabody Picture Vocabulary Test called the Échelle de Vocabulaire en Image de Peabody (ÉVIP, 1993). Like its English homolog, this test involves asking participants to choose one picture among four choices that best represents a given word. The evaluator discontinues administration when the child obtains 6

incorrect answers out of 8 consecutive items. Various word categories such as nouns, verbs and adjectives are included in this test.

Syntactical awareness. Two syntactical awareness tasks created by Démont (2001) were modified to reflect the contrasts between languages in this study and administered to all groups. The first activity, Sentence Identification, consisted of reading grammatically correct and incorrect sentences in French to the children and asking them whether the sentence was well constructed or not. This task was comprised of two practice items and thirty-two test items. Of the test items, eight were correct and twenty-four were incorrect. The ungrammatical sentences were divided in three categories each containing eight sentences: incorrect conjugation or use of pronoun, incorrect word order, sentence using common forms of Haitian Creole syntax. During the practice section, the child was given two grammatically incorrect sentences and asked whether they were correctly constructed. The evaluator gave feedback to the child about his or her answer and explained to the child why the sentences were incorrect. If the participant demonstrated their understanding of the task, the evaluator proceeded to the test items, for which only general positive feedback was given. Because children's scores on this measure were at ceiling and, thus, were not used in the analyses, reliability was not calculated for this measure.

The second task to assess syntactical skills, Sentence Correction, consisted of repeating all the incorrect sentences in the Sentence Identification task and asking the child to correct them. Again, children's understanding of the instructions was verified with two practice items in which the evaluator demonstrated how to modify two incorrect sentences by altering the initial

statement as little as possible, i.e. only adding or modifying words when necessary. After the practice section, the evaluator read the twenty-four ungrammatical sentences from the previous task to the child and gave general positive feedback for each item. The reliability coefficient obtained with the Spearman-Brown measure was 0.70 so the split-half reliability is moderate.

Haitian Creole and Spanish tests. Experimental tasks were devised to assess word reading, pseudoword reading, spelling and oral skills in the native language of children from Haitian and Spanish-speaking backgrounds. The principal investigator and a research assistant, who are foreign language speakers of Spanish, administered these tasks to Spanish-speaking children and a research assistant who was a native speaker of Haitian Creole administered the tasks in that language. The word reading and pseudoword reading tasks were reflective of the equivalent tasks on the French version of the WIAT-II. For these two tasks, a Haitian Creole and Spanish version were created with thirty real or invented words of increasing difficulty written on laminated cards in Arial font size 20. Children were asked to read words as fast and accurately as they could from left to right without skipping any until the examiner told them to stop. The examiner would discontinue administering the task after 7 consecutive wrong answers. The spelling tasks in Haitian Creole and Spanish were closely translated versions of the experimental French spelling task with the three word categories. To assess children's oral skills in their native tongue, the examiners conducted an informal 5-minute interview with children asking them their first and last name, the name of the other members in their family as well as other personal information like their favorite movie, sport and subject in school. The interviewer qualitatively

evaluated children's ability to answer questions in their native language, the fluency with which the child answered and their understanding of the questions.

The split-half reliability coefficients of the Word Reading, Pseudoword Reading and Spelling in Spanish were respectively 0.95, 0.87 and 0.94 (adjusted with the Spearman-Brown formula). Hence, these measures have high internal consistency. The split-half reliability coefficients for the HC tasks were lower than those of the Spanish tasks. The coefficients for Word Reading, Pseudoword Reading and Spelling in HC were respectively 0.63, 0.44 and 0.71. Hence, the internal consistency of the HC tasks is moderate.

Mathematical skills. The mathematical skills of all children in the sample were tested in order to control for their general level of scholastic ability and problem-solving ability. This measure allowed us to determine whether children's performance on the various pre-reading, reading and spelling tasks were in fact due to their skills in these specific areas and not to their broader level of attainment.

Arithmetic. The last subtest of the WIAT-II_{CND-F} included in this study was the Numerical Operations from the mathematics section. In this task, children were asked to solve written mathematical problems using addition, subtraction, multiplication or division.

Informal assessment of receptive and expressive oral skills of bilingual children. In order to certify that the children of Haitian and Latin American origin in our study had a sufficient level of proficiency in their native language, semi-standardized interviews were conducted. The research assistant who administered the reading, pseudoword reading and spelling task in HC also performed the

interviews in HC. In order to assess children's oral comprehension skills in their first language, the interview was composed of open questions in such a way that a child who did not truly understand what they were asked could not simply answer "yes" or "no" and simulate understanding. The following is an example of a question used in the interview for Haitian children: "Bonjou, koman wou ye jodi-a? Mwen byen. Koman wou rele?", which means: "Hello, how are you today? I am well. What's your name?". Information asked during the interview ranged from the given name of the child's mother and father, if they had any brothers and sisters and what their names were to what was their favorite subject in school. Children were asked to respond and talk only in HC during the interview but were not reprimanded if they chose to respond in French. The interviewer made qualitative observations on children's fluency, whether they responded in HC or French and whether the answer they gave to questions demonstrated proper understanding. If a child claimed that they did not understand what being said to them in the first few minutes of the interview, the interviewer would discontinue. Interviews lasted approximately 5 minutes.

For Spanish-speaking children, the principal investigator and one of the research assistants who are foreign language speakers of Spanish conducted the interviews. The questions used in this interview were the same as those used in the HC interview. Children were also asked to only answer in Spanish if they could. The same criteria used to evaluate the proficiency of Haitian children in their first language were used for Hispanophone children: fluency of speech, language in which they responded to questions (Spanish or French) and their level of understanding of Spanish. Again, if a child appeared unwilling or

uncomfortable to speak in their native language, the interviewer would ask the child if they wanted to discontinue the conversation.

Procedure

The tasks were divided in three sessions lasting approximately 30 minutes to an hour and 15 minutes. Research assistants tested children individually. The first session consisted of the coda-matching task, the elision task and the French spelling task respectively with all groups performing tasks in this order. The second session was comprised of the following four tasks from the WIAT-II_{CND-F}: Word Reading, Pseudoword Reading, Reading Comprehension and Spelling. In this session, children from the Haitian and Spanish-speaking groups were also asked to complete the word reading, pseudoword reading and spelling tasks in their native language. The third session included the ÉVIP, the two syntax tasks, identification and correction, as well as the Numerical Operations task of the WIAT-II_{CND-F}.

Results

The aim of the present study was to examine the particularities of reading and spelling skills in French of bilingual children whose first language was Haitian Creole. In order to situate these learners accurately within the linguistic landscape, they were compared to other bilingual children who were native speakers of Spanish and to monolingual French children from European ancestry. Hence most analyses were aimed at comparing the performance of these three groups.

Analyses were performed to detect the presence of outliers on individual measures. Using the "Boxplot" function in SPSS, we created graphs in which grey boxes with whiskers were used to represent the distribution of scores and a dark line indicated the median. The top and bottom whiskers are respectively placed at the largest value and lowest value that is not an outlier or an extreme score. The top of the box indicates the 75 percentile while the bottom of the box locates the 25th percentile. Outliers and extreme scores were identified with different symbols on the graphs: empty circles symbolized outliers that were more than 1.5 box-lengths below or above the box while stars indicated extremes values that were more than 3.0 box-lengths below or above the box (Kinnear & Gray, 2000). After outliers and extreme scores were identified for all measures used for this study, participants' protocols were examined for scoring or data entry errors. Because no scoring or data entry errors could explain the scores of children who were outliers or had extreme scores, these data were considered to result from "natural causes", i.e. children's lower performance on these measures was due to intrinsic differences in ability or perhaps to undetected learning difficulties (Kinnear &

Gray, 2000). Initial analyses that retained outliers and extreme scores were compared to analyses that excluded them. Removing outliers and extreme scores did not affect tests' significance but have some effects on F values. We removed all outliers and extreme values because doing so yielded results that were more representative of the majority of the sample.

Main effect of Group

Standardized measures. One-way ANOVAs on the standardized measures of reading, spelling, mathematical skills and receptive vocabulary only yielded one significant main effect of group membership. Group means, kurtosis and skewness on the standardized measures are summarized in Table 1 in the Appendix. Spanish children were found to have a significantly lower receptive vocabulary on the EVIP than French children ($F(2, 66) = 5.20, p < .01$). The effect size of group membership measured with partial eta-squared for the EVIP is .14. Welkowitz, Ewen and Cohen (1988) state that partial eta-squared is considered small at .01, medium at .06 and large at .14. Hence, it can be said that the effect size of group for the EVIP is large, which means that this factor explains a sizeable portion of the level of association of the sample. However, Spanish children's vocabulary did not differ from that of Haitian children nor did Haitian children differ from French native speakers on this measure (Figure 2 in Appendix). Since groups differed on the vocabulary measure, we performed univariate ANCOVAs for the 4 WIAT-II subtests related to reading or spelling using children's score on the EVIP as a covariate. Yet again, no main effect of group was found on any of the WIAT-II subtests (Table 2 in Appendix).

Experimental Tasks

Measures of P.A. Univariate ANCOVAs were performed for the Coda and Elision tasks using the EVIP score as a covariate. Group means on all experimental tasks, including the Coda and Elision tasks are contained in Table 3 in the Appendix along with the skewness and kurtosis of these measures. Except for the Haitian Word Reading and Pseudoword Reading tasks, whose distribution has a high kurtosis, all other experimental measures are normally distributed. Table 4 is a summary table of ANCOVA statistics for all experimental measures. No main effect of Group was observed for Coda or Elision.

Syntactical awareness. A one-way ANCOVA with performance on the EVIP entered as a covariate did not reveal any significant differences between groups.

First language reading and spelling measures. The performance of the two sets of bilinguals was compared on experimental word reading, pseudoword reading and spelling tasks in their first language, HC and Spanish. A one-way MANOVA was performed to compare Haitian and Spanish-speaking children's scores on the three previous measures. On the word reading task in their first language, Haitian children scored significantly better than their Hispanophone peers ($F(1, 47) = 10.54, p < .01$). Because the distribution of the Haitian group had a high kurtosis, a Mann-Whitney test was performed, which is robust to violations of normality. The Haitian group's performance on the word reading measure in HC was also found to differ significantly from the Hispanophone group's performance on this nonparametric test ($U = 136.50, p < .01$). The same pattern was observed for children's first language pseudoword reading task.

Haitian children obtained a significantly higher mean on this measure than Hispanophone children ($F(1, 47) = 31.81, p < .01$). Again, the Mann-Whitney test was used in order to account for the high kurtosis in the Haitian group's distribution and the groups were still found to be significantly different on this measure ($U = 54.50, p < .01$). Surprisingly, on the spelling task in HC and Spanish, the opposite pattern was obtained. Hispanophone children were able to spell more words correctly in their mother tongue than their Haitian peers in HC ($F = (1, 47), p < .01$).

Semi-standardized interviews in children's mother tongue. Based on the semi-standardized interviews of children's oral skills in their first language, a few children were reclassified into another group because they did not demonstrate sufficient expressive or receptive skills to be considered bilingual. During interviews in HC, two children from mixed ethnic backgrounds were switched from the Haitian group to the monolingual French group. One of these children was a boy who had a Haitian mother and a French father and the other was a girl who had a French Canadian mother and a Haitian father. One girl in the Haitian group refused to do any task in HC, including the interview, because she claimed she did not speak creole. In spite of this, a decision was made to analyze her data as part of the Haitian bilingual group because both her parents were of Haitian origin, spoke HC at home and reported she could understand HC but could not speak it. Only one girl who was originally placed in the Hispanophone group was placed in the Francophone group after the oral interview because she did not possess any skills in Spanish. She was also from a mixed ethnic background, her father being of Latin American origin and her mother, French Canadian. All other

children, both in the Haitian and Hispanophone groups were considered bilingual to various degrees.

The bilingual children's informal assessment in their mother tongue revealed that, as previously thought, more Hispanophone children were active bilinguals than Haitian children. In fact, only one girl in the Hispanophone group demonstrated difficulties understanding certain questions in Spanish and was significantly less fluent in her mother tongue than a native speaker. All other Hispanophone children proved to have skills close to or equal to those of native speakers of Spanish. All children in this group replied exclusively in Spanish during the interview. On the other hand, in the Haitian group, a higher number of children were found to be passive bilinguals. Out of all the children interviewed in HC, 12 children out of 22 answered exclusively in HC, 8 answered questions in French while understanding HC perfectly and 1 child answered half the questions in French and half in HC.

Effects of Cross-Linguistic Word Similarity on Spelling

Haitian children's ability to spell words correctly in French was compared across three categories of words (Homophones, Cognates and Noncognates). Group means, skewness and kurtosis for the different word categories are reported in Table 5 of the Appendix. First, a univariate ANCOVA was carried out with EVIP scores as a covariate to verify if there was a difference between group means on children's total score on this task. The performance of the groups was not significantly different on the total score of the task out of 30. One-way ANCOVAs were then carried out on each category of words separately

(Homophones, Cognates and Noncognates) to see if the three groups differed on their ability to spell these lists of words correctly. Results of these analyses are documented in Table 6 of the Appendix. Again, children's EVIP scores were used as a covariate. Only the ANCOVA performed on the Cognate words displayed a significant group effect ($F(2, 63) = 4.41, p < .05$). The effect size calculated with the partial eta-squared, which corresponds to the proportion of the variance that is explained by group membership, is considered large ($partial \eta^2 = .13$). This means that group membership, and more specifically having HC as a first language accounts for 13% of the association in the sample. This can be interpreted as meaning that this finding is sizeable enough to be considered more closely. For Cognate words, multiple comparisons adjusted with the Bonferroni correction revealed that the Haitian group had significantly lower scores in this category than native speakers of French. Spanish children's scores on this column did not differ significantly from that of French children but were also not significantly higher than those of Haitian children. Despite, the interesting nature of this finding, a closer look at Table 5 reveals that the distribution of scores for the Cognate category had an unusually high kurtosis and was also negatively skewed. Figure 3 gives a visual overlook of the data for the different word categories. Because Spanish children's mean was very close to that of Haitian children, two Mann-Whitney tests were performed to try to reduce the negative influence of the skewness and kurtosis in the distribution. Results showed that with this nonparametric test, Haitian children still had significantly lower scores than French speakers ($U = 105.50, p < .01$) but so did Spanish speakers ($U = 125.50, p < .01$).

A fine-grain analysis investigated why HC and Spanish bilinguals had the same pattern of scores on the Cognates category. Because this task was aimed at revealing differences in Haitian children's spelling of French words, Haitian children's scores were expected to differ both from French and Spanish children's score. Thus, the fact that Spanish children's scores were not significantly higher than that of Haitian children on the Cognate category came as a surprise. A possible explanation for these data is that Spanish children's also experienced interference because the HC/French Cognate category also contained more Spanish and French cognates. Hence, level of phonological similarity in Spanish and French of the words contained in the Cognates lists was examined. It was determined that 6 of the 10 words in this list were phonologically similar in Spanish and French, with Spanish words sharing 50 to 67% of phonemes with their French equivalent. The four remaining words in the list were classified as noncognates in Spanish and French because they only shared meaning. Because the number of stimuli was too small to conduct parametric or non-parametric statistical analyses, only percentage of correctly spelled words in the Spanish cognates and noncognates were calculated. Hispanophone children spelled 91.0 % of the Spanish/French cognates correctly while Haitian and French children respectively spelled 93.8% and 96.7% of these words correctly. By opposition, Hispanophone children spelled 88.5 % of the noncognate words correctly compared to 85.5% for the Haitian group and 95.0% for the French group. Because the number of words we were analyzing was so small, it was difficult to judge whether Spanish children experienced more difficulty spelling Spanish/French cognates versus noncognates. Furthermore, the three groups were

near ceiling performance on the similar and dissimilar words, which further complicated the analysis.

Error analysis. A global error analysis was performed on children's mistakes on the words of the Cognate category to verify if consistent patterns emerged. Because this list was only made up of ten items and children's performance were at ceiling, no formal statistical analyses, parametric or nonparametric could be carried out. Nonetheless, eight different classes of mistakes were devised and the error data was eyeballed. The frequencies of the different classes of mistakes have been summarized in Figure 4. The categories of errors were the following: (1) Accurate phonological spelling; (2) Correct HC spellings (intrusions); (3) Small orthographic mistakes (i.e. accents) ; (4) Order reversal of phonemes; (5) Omission of phonemes; (6) Phoneme replacement or addition; (7) Overgeneralization of orthographic rules (silent letters). The first category corresponds to legal phonological spellings in French, e.g. *fêr* instead of *faire*, meaning *to do*. The second category corresponds to writing a French word using HC orthography, e.g. *tab* instead of *table*. The third category represents low impact orthographic mistakes, e.g. forgetting an accent or using the wrong graphemic representation of a phoneme. Category 4 corresponds to words in which all phonemes were represented but their order was reversed, e.g. *ilvre* instead of *livre*, meaning *book*. Category 5 is comprised of omission of phonemes, e.g. *quare* instead of *quatre*, meaning *four*. The sixth category included instances where one phoneme was replaced by another, e.g. *taple* instead of *table*. Finally, the last category was comprised of examples of overgeneralizations of French

orthographic rules, like that of adding a silent "e" for the feminine form or "s" for the plural form, e.g. *familles* instead of *famille*.

As observed in Figure 4, HC spellings of French words was a very rare occurrence in Haitian children and, of course, was inexistent in the other groups. The most common category of mistakes in all three groups was writing words phonetically in French when a more opaque spelling should be used. Groups differed somewhat on the amount of phonemes they omitted in words. French children had the highest percentage of errors in this category followed by Haitian children. In comparison, Spanish children rarely forgot to represent a phoneme in a word. Instead, they made more mistakes than the other groups by using the wrong grapheme to represent a phoneme, especially in the case of vowels. Other error categories were roughly equal across groups.

Discussion

The present study was designed to examine the development of reading related skills of HC speakers in French. Since this is the first study to compare L1 and L2 skills in children who speak a French-based creole and French, the information gathered in the course of this research provides a valuable basis on which to build future research. In this section, research findings will be discussed in relation to the research questions mentioned in the introduction. Then, the effects of HC on French spelling will be interpreted with BIA model while Cummins's (1979) LIH will be used to understand data from experimental and standard measures. Finally, methodological weaknesses of this study will be discussed and suggestions will be made for future research.

Research Question 1: Phonological Awareness in French of HC speakers

No study to date has documented the level of P.A. of creole-speaking children in languages associated to this creole. Because of the primordial role P.A. is known to play in monolingual and bilingual children's reading and spelling development, it would seem important to address the paucity of research on this subject. Much can be learned by examining Haitian children's P.A. skills in French because it would provide us with clues of how children's phonological skills are influenced by their lexicon. The overlap between phonology and semantics in HC and French represents the perfect opportunity to tease apart bilingual children's reported increase in P.A. from the dramatic expansion of their lexicon when learning two different languages. Indeed, Haitian children's higher P.A. could not be explained by their having a larger vocabulary when their

languages are combined because the lexicon of French and HC almost overlap completely. Thus, superior P.A. skills in Haitian children would likely be the result of facilitation at the sublexical level, as was mentioned in the introduction.

The results of this study are not in line with the hypotheses that were elaborated with regards to the P.A. tasks. Bilingual children in this sample did not exhibit P.A. skills superior to those of monolingual children. Their skills were equivalent to those of native speakers on both the epilinguistic Coda-matching task and on the metalinguistic Elision task. Furthermore, Haitian children did not exhibit any particular advantage compared to Spanish bilinguals as was envisioned. On the other hand, we did replicate the findings reported by Lesaux et al. (2006) in the report of the National Literacy Panel. These findings could be due to a lack of sensitivity in the P.A. measures used or be explained in light of the Linguistic Interdependence Hypothesis. It is possible the bilingual children in this study did not develop superior P.A. skills because they had not attained the minimal threshold of proficiency in their first language to benefit fully from their bilingual experience.

Research question 2: Effects of HC Syntax on French Syntactical Awareness

In the literature review, it was suggested that Haitian children might be disadvantaged in comparison to their Spanish-speaking peers when learning French syntax because of its dissimilarity with the West-African syntax of HC. Episyntactic and metasyntactic awareness were evaluated respectfully through an Sentence Identification and a Sentence Correction task. Even though the level of

possible interference of HC syntax was designed to be maximal during these tasks, there was no significant difference between Haitian children's syntactical awareness compared to Spanish speakers or native speakers of French. The lack of differences between groups could be due in part to the overly easy nature of the tasks. Ceiling effects were observed on the Sentence Identification task for all three groups. More research is needed before any conclusions can be drawn about Haitian children's syntactical awareness in French. Nonetheless, the present study suggests that at least in terms of the ability to correct poorly constructed sentences in French, Haitian children have skills that are equivalent to same-age Spanish bilinguals and French native speakers.

Research Question 3: Spelling and Phonological Similarity Between HC and French

Our experimental spelling task has provided some preliminary answers to the question: *How does the phonological similarity between HC and French affect Haitian children's spelling in the latter?* The hypothesis was that Haitian children would perform differently on this task from the Spanish bilingual group or the monolingual group. Equally possible scenarios involving facilitation and interference between different aspects of HC and French had been envisioned. For Homophones, the facilitation of the retrieval of phonological information could be dampened by orthographic interference from HC's transparent spellings. For Cognates, the deterioration of phonological input due to the close pronunciation of these words coupled with negative transfer from the transparent orthography,

was most likely to cause interference. As for Noncognates, a small effect of facilitation could occur but mostly at the conceptual level.

In general, these speculations turned out to be true. The category of words Haitian children found hardest to spell were those that were close approximations in both languages but had either one more or one less phoneme in French compared to HC (Cognates). The high lexical and phonological similarity between HC and French is so striking at times that the two could be mistaken as dialects of the same language. In this sense, the data from this study would corroborate Treiman's (2004) findings about the intrusion of a dialect's phonology into spelling. The results of this study that show a disadvantage of HC speakers when writing cognates should nevertheless be interpreted very cautiously. A direct test of the BIA model was not executed and the facilitation and interference effects that were mentioned are suppositions. It remains unclear why Spanish-speaking children in this sample also found the Cognate category more difficult to spell. Thus, it is possible that this finding is an artifact of the word stimuli that were used. Also, it is likely that Haitian children and Spanish children's difficulty come from two completely different sources, i.e. phonological similarity for Haitian children and general spelling difficulties for the Spanish speakers. These specific hypotheses could not be tested in the present study because the spelling task contained too few items. In the future, error analysis on Haitian children's misspellings of words with very similar phonological forms in HC and French could reveal whether these children are

more likely to omit or change phonemes in words in their second language based on pronunciation of these words in their first language.

The global error analysis performed for cognate words did not reveal any salient interference effects for the different groups. As would be expected for children in Grade 1 and 2, the most common mistakes for all groups were phonetic spellings of opaque words in French. This is a normal phenomenon, which actually demonstrates that these children have internalized the most common grapho-phonemic correspondences in French and have proper encoding skills. Groups did slightly differ in the quantity of phonemes they omitted when spelling words in the Cognate category. French children appeared to forget to represent sounds in words more often than Haitian children who in turn omitted phonemes more often than Spanish children. Presumably, this is an indication of the different spelling strategies employed by the different groups of children. Using a more holistic spelling strategy, i.e. memorizing the spelling of words as a whole instead of encoding each phoneme separately, could lead to a higher proportion of phoneme omissions. Because Hispanophone children are usually more exposed to reading materials in their transparent language at home than Haitian children, due to the restricted access to print material in creoles, they possibly internalized the alphabetic principle, stating that each sound must be represented by a letter, more than the other two groups. Although they have a tendency to represent each phoneme in a word, the differences in phonology between Spanish and French appear to cause Spanish children to make mistakes by replacing certain phonemes with similar-sounding ones.

Research Question 4: Reading and Spelling of Language-Minority Children in French

This study is the first to empirically examine language-minority children's attainment in reading and spelling in French compared to native speakers of French in Quebec. The present data suggests that children of Haitian and Hispanophone origins performed as well as native French speakers on the reading and spelling subtests of the French WIAT-II. These findings replicate those discussed by Lesaux et al. (2006) in the report of the National Literacy Panel (NLP). However, the results of this study contradict those of the report of the NLP when it comes to Reading Comprehension. Lesaux et al. (2006) state that "existing large-scale data sets on the school achievement of language-minority students in the United States and abroad suggest that comprehension is a significant area of difficulty for these learners." (p. 100). Surprisingly, this was not the case for second-language learners in this study. Perhaps this is due to the "submersion" of the language-minority children in this sample in a French learning environment from kindergarten and the intensity with which the instruction of French continues in the early elementary grades in Quebec. It is also possible that the superior reading comprehension of children in current sample compared to bilingual students in the U.S. is due to the nature of their two languages. As was mentioned before, both HC and Spanish are similar to French in many respects, which could have facilitated vocabulary as well as word reading development in the children in this sample. Nevertheless, the similarity between languages in this study probably does not completely account for these findings.

Despite educational circumstances and similarities between languages, the Spanish-speaking children studied had a poorer receptive vocabulary than children in the two other groups. In spite of their smaller vocabulary in French, the reading comprehension of these children was equal to that of their Haitian and French peers.

Overview of Findings

Overall, our findings suggest that second-language learners of French have reading and spelling skills equivalent to those of native speakers. The only significant difference between groups on standard measures was found in receptive vocabulary, in which Spanish children were lower than French native speakers.

Even though our main focus in this study was the development of reading and spelling skills in HC bilinguals, it was also deemed important to draw an accurate picture of Spanish-speaking children. It was hypothesized that lexical and phonological similarities between HC and French would cause differences in Haitian children's performance compared to the Spanish bilinguals in our sample. Surprisingly, on all measures except the experimental spelling task, this was not the case. The latter measure yielded particularly intriguing findings. Haitian children appear to find the spelling of cognate translations in French significantly more difficult than the spelling of noncognates or homophones. However, these results need to be validated with more sensitive spelling tasks because children's scores on the Cognate words were not normally distributed. This is a possible

threat to the reliability of the data and the soundness of the previous interpretations.

Limitations of the Present Study

The main limitation of this study was its small sample size. In order to benefit from more statistical power and perform more precise analyses, a larger number of participants would be required.

Although this study has suggested ways in which HC's phonology influences children's spelling in French, the number of items used in word categories in the experimental French spelling task was too small. A more tightly controlled experiment using at least 30 items in each word category of phonological similarity would be needed to determine whether Haitian speakers really find it harder to spell phonologically similar words than homophones or words or noncognates in French and HC. Another limitation of this study is that no pilot testing had been conducted on word stimuli before the study took place. As a result, children performed at ceiling on one of the Cognate word category. Apparently, they found words in this category significantly easier to spell than Homophones or Noncognates. In a future task exploring this issue, words in the different categories should be more closely matched for frequency, phoneme types (number of plosives versus liquids, etc.) and even audiological properties of words in HC and French.

Practical Implications and Recommendations for Further Research

This study has proven useful in debunking folk theories about the "defective" nature of creole languages and the negative effects they have on their

speakers when learning a second language. The current data testify for the equivalence of Haitian children's skills compared to other bilinguals or native speakers. It would be interesting to investigate whether creole speakers' level of proficiency in their first language as well as their early educational experiences influence the development of their reading and spelling skills in other languages as predicted by Cummins's (1979) Linguistic Interdependence and Threshold Hypotheses. Hence, much more research is needed in this area before language and literacy outcomes can be stated unequivocally for these learners. It is paramount that the paucity of research on speakers of a creole and its associated languages be addressed. It cannot be assumed *a priori* that native speakers of a creole develop in the same manner as bilingual speakers of languages that are significantly farther apart historically and linguistically speaking. However, before anything can be said of the development of *bilingual* creole speakers, more research is needed on the emergence of language and literacy skills in monolingual creole speakers. As one of the oldest and most widely spoken creoles, HC is a very good candidate to verify how the linguistic and orthographic particularities of these relatively "new" languages influence their speakers' metalinguistic and cognitive capacities. The study of linguistic characteristics of HC is still quite recent (for a review of the linguistic properties of HC, see Lefebvre, 1998) in comparison to that of European languages, thus the study of language and reading acquisition in HC lags behind that of other minority languages.

Furthermore, the thorough exploration of lexical, phonological and even syntactical influences creoles have on their speakers' development in other

languages is a necessary and informative endeavor. The application of the BIA to language processing in bilingual creole speakers would have very interesting and practical implications. From a theoretical point of view, the discovery of strong facilitation effects in picture naming or word reading in creole bilinguals would be a strong testament to the validity of this model. In turn, the study of the patterns of lexical and sublexical activation and inhibition in these learners would help devise effective curricula for the acquisition of reading and spelling in other languages by identifying the types of words that are easiest or hardest for them to process. According to creolists such as Bickerton (1977), creole languages and their evolution, both in oral and written forms, provide us with an unparalleled opportunity to learn about cognitive processes that underlie the development of language at large. Bickerton (1977) also claims that because of how they were developed, only creoles provide insight in the development of innate grammar in children. A similar argument can be made for lexical and phonological development. Hence, both the fulfillment of the educational needs of creole speakers as well as untapped potential of creoles in answering fundamental questions about language acquisition in all children warrant the expansion of this rich field of study.

References

- Abd-Kadir, J., Hardman, F., & Blaize, J. (2003). Dialect interference in the writing of primary school children in the commonwealth of Dominica. *L1-Educational Studies in Language and Literature*, 3(3), 225-238.
- Abu-Rabia, S., & Siegel, L. S. (2002). Reading, syntactic, orthographic, and working memory skills of bilingual Arabic-English speaking Canadian children. *Journal of Psycholinguistic Research*, 31(6), 661-678.
- Bialystok, E. (1988). Levels of bilingualism and levels of linguistic awareness. *Developmental Psychology*, 24(4), 560-567.
- Bialystok, E. (1991). *Language processing in bilingual children*. Language processing in bilingual children. New York, NY: Cambridge University Press.
- Bialystok, E., & Majumder, S. (1998). The relationship between bilingualism and the development of cognitive processes in problem solving. *Applied Psycholinguistics*, 19(1), 69-85.
- Bickerton, D. (1977). Pidginization and creolization: Language acquisition and language universals. In A. Valdman (Ed.), *Pidgin and Creole linguistics*. Bloomington: Indiana University Press.
- Bradley, L., & Bryant, P. (1985). *Children's reading problems: psychology and education*. Oxford, UK: Blackwell Press.
- Bruck, M., & Genesee, F. (1995). Phonological awareness in young second language learners. *Journal of Child Language*, 22, 307-324.

- Campbell, R., & Sais, E. (1995). Accelerated metalinguistic (phonological) awareness in bilingual children. *British Journal of Developmental Psychology*, 13(1), 61-68.
- Cisero, C. A., & Royer, J. M. (1995). The development and cross-language transfer of phonological awareness. *Contemporary Educational Psychology*, 20(3), 275-303.
- Colome, A. (2001). Lexical activation in bilinguals' speech production: Language-specific or language-independent? *Journal of Memory and Language*, 45(4), 721-736.
- Costa, A., Caramazza, A., & Sebastian-Galles, N. (2000). The cognate facilitation effect: Implications for models of lexical access. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26(5), 1283-1296.
- Costa, A., Miozzo, M., & Caramazza, A. (1999). Lexical selection in bilinguals: Do words in the bilingual's two lexicons compete for selection? *Journal of Memory and Language*, 41(3), 365-397.
- Cummins, J. (1976). The influence of bilingualism on cognitive growth: A synthesis of research findings and explanatory hypotheses. *Working Papers on Bilingualism*, 9, 1-43.
- Cummins, J. (1978). Educational implications of mother tongue maintenance in minority-language children. *The Canadian Modern Language Review*, 34, 395-416.
- Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research*, 49(2), 222-251.

- Da Fontoura, H. A., & Siegel, L. S. (1995). Reading, syntactic, and working memory skills of bilingual Portuguese-English Canadian children. *Reading and Writing*, 7(1), 139-153.
- DeCamp, D. (1977). The development of Pidgin and Creole Studies. In A. Valdman (Ed.), *Pidgin and Creole Linguistics* (pp. 3-20). Bloomington: Indiana University Press.
- DeGraff, M. (2001). Morphology in creole genesis. In M. Kenstowicz (Ed.), *Ken Hale: A life in language*. (pp. 53-121). Cambridge MA: MIT Press.
- Démont, E. (2001). Contribution of early 2nd-language learning to the development of linguistic awareness and learning to read. *International Journal of Psychology*, 36(4), 274-285.
- Dijkstra, T., & Van Heuven, W. J. B. (1998). The BIA model and bilingual word recognition. In J. Grainger & A. M. Jacobs (Eds.), *Localist connectionist approaches to human cognition* (pp. 189-225). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Dressler, C., & Kamil, M. L. (2006). First- and Second-Language Literacy. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 197-238). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Dunn, L. M., Thériault-Whalen, C. M., & Dunn, L. M. (1993). *Échelle de vocabulaire en image Peabody*. Toronto, ON, Canada: Psycan Corporation.

- Frost, R., Katz, L., & Bentin, S. (1987). Strategies for visual word recognition and orthographical depth: A multilingual comparison. *Journal of Experimental Psychology: Human Perception and Performance*, 13(1), 104-115.
- Galambos, S. J., & Goldin-Meadow, S. (1990). The effects of learning two languages on levels of metalinguistic awareness. *Cognition*, 34(1), 1-56.
- Geva, E., & Genesee, F. (2006). First-Language Oral Proficiency and Second-Language Literacy. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 185-195). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Geva, E., & Siegel, L. S. (2000). Orthographic and cognitive factors in the concurrent development of basic reading skills in two languages. *Reading and Writing*, 12(1-2), 1-30.
- Gombert, J. E. (1994). Development of meta-abilities and regulatory mechanisms in the use of linguistic structures by children. In A. Vyt, H. Bloch & M. H. Bornstein (Eds.), *Early child development in the French tradition: Contributions from current research* (pp. 227-239). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Jackson, N., Holm, A., & Dodd, B. (1998). Phonological awareness and spelling abilities of Cantonese-English bilingual children. *Asia Pacific Journal of Speech, Language and Hearing*, 3(2), 79-96.
- Kinnear, P. R., & Gray, C. D. (2000). *SPSS for Windows made simple. Release 10*. Hove: Psychology Press.

- Lambert, W. E., & Tucker, G. R. (1972). *Bilingual education of children: The St-Lambert experiment*. Rowley: Newbury House.
- Lefebvre, C. (1998). *Creole genesis and the acquisition of grammar: The case of Haitian Creole*. Cambridge, UK: Cambridge University Press.
- Lesaux, N. K., Koda, K., Siegel, L., & Shanahan, T. (2006). Development of Literacy. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 75-122). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Magiste, E. (1984). Stroop tasks and dichotic translation: The development of interference patterns in bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 10(2), 304-315.
- Magiste, E. (1985). Development of intra- and interlingual interference in bilinguals. *Journal of Psycholinguistic Research*, 14(2), 137-154.
- Myers-Scotton, C. (2006). *Multiple voices: An introduction to bilingualism*. Malden, MA: Blackwell.
- Preston, M. S., & Lambert, W. E. (1969). Interlingual interference in a bilingual version of the Stroop color-word task. *Journal of Verbal Learning & Verbal Behavior*, 8(2), 295-301.
- Savage, R., Blair, R., & Rvachew, S. (2006). Rimes are not necessarily favored by prereaders: Evidence from meta- and epilinguistic phonological tasks. *Journal of Experimental Child Psychology*, 94(3), 183-205.

- Siegel, L. S., & Ryan, E. B. (1988). Development of grammatical-sensitivity, phonological, and short-term memory skills in normally achieving and learning disabled children. *Developmental Psychology*, 24(1), 28-37.
- Statistics Canada. (2001). Census of Population. Language composition of Canada: Mother tongue, detailed definition. Retrieved October 9, 2007, from <http://www12.statcan.ca/english/census01/Products/Reference/dict/pop082.htm>
- Statistics Canada. (2001). Census of Population. Level of educational attainment for the age group 25 to 64, percentage distribution for females, for Canada, provinces and territories. Retrieved July 15, 2007, from <http://www12.statcan.ca/english/census01/products/highlight/Education>
- Toukomaa, P., & Skutnabb-Kangas, T. (1977). *The intensive teaching of the mother tongue to migrant children of pre-school age and children of lower level of comprehensive school*. Helsinki: The Finnish National Commission for UNESCO.
- Treiman, R. (2004). Spelling and dialect: Comparisons between speakers of African American vernacular English and White speakers. *Psychonomic Bulletin & Review*, 11(2), 338-342.
- Treiman, R., & Barry, C. (2000). Dialect and orthography: Some differences between American and British spellers. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 26(6), 1423-1430.
- Wardhaugh, R. (2006). *An introduction to sociolinguistics* (5th ed.). Malden, Mass.: Blackwell Pub.

- Wechsler, D. (2005). *Test de rendement individuel de Wechsler, Deuxième Édition – Version pour francophones du Canada (WIAT-II CDN-F)*. Toronto, ON, Canada: The Psychological Corporation.
- Welkowitz, J., Ewen, R. B., & Cohen, J. (1988). *Introductory statistics for the behavioral sciences (Alternate 3rd ed.)*. Introductory statistics for the behavioral sciences (Alternate 3rd ed.). San Diego, CA: Harcourt Brace Jovanovich.
- Yelland, G. W., Pollard, J., & Mercuri, A. (1993). The metalinguistic benefits of limited contact with a second language. *Applied Psycholinguistics*, 14(4), 423-444.

Appendix A

Table 1

Means for Standardized Tests

Group	WIAT-II subtests estimated marginal means					EVIP
	Reading ^a	Pseudo ^a	Comp. ^a	Spelling ^a	Num. Op.	
Haitian	112.92	108.88	106.71	119.21	106.68	108.50
	(8.78)	(7.80)	(8.76)	(9.49)	(13.00)	(9.80)
French	115.71	115.26	110.07	119.03	112.68	109.67
	(9.30)	(6.02)	(16.29)	(13.36)	(6.17)	(15.54)
Spanish	114.42	113.88	111.50	118.20	110.58	98.69
	(14.72)	(16.05)	(10.02)	(11.35)	(8.38)	(12.62)

Note. Standard deviations are in parentheses.

^aEVIP as a covariate

Table 2

*F Values for Main Effect of Group, Probabilities, Eta Squared, Observed Power
and Multiple Comparisons for Standard Measures*

Measures	<i>F</i>	<i>p</i>	η^2	Observed power	Multiple comparisons ^b
WIAT-II					
Word Read. ^a	.33	.72	.01	.10	
Pseudo. ^a	1.80	.17	.05	.36	
Read. Comp. ^a	1.24	.30	.04	.26	
Spelling ^a	.06	.95	< .01	.06	
Num. Op.	2.07	.14	.06	.41	
EVIP	5.20*	< .01	.14	.81	S < F

^a EVIP as a covariate

^b Mean differences are significant at $p < .05$, adjustment for multiple comparisons: Bonferroni

* $p < .01$

Table 3

Means, Skewness and Kurtosis for Experimental Measures

Statistics		Coda ^a	Elision ^a	Spelling ^a	Syntax ^a	HC			Spanish		
						W	P	S	W	P	S
Mean	H	13.95 (4.03)	14.02 (5.79)	24.86 (3.94)	19.09 (2.97)	24.33 (5.17)	25.33 (3.81)	4.57 (2.54)			
	F	16.14 (3.24)	16.12 (5.95)	23.82 (5.49)	19.27 (2.87)						
	S	15.37 (3.30)	14.40 (5.71)	23.16 (3.73)	19.46 (3.05)				18.15 (7.44)	15.56 (7.19)	14/07 (6.63)
Kurtosis		-.42	.27	.98	.45	3.83	3.08	-1.01	-.98	-1.18	-.75
Skewness		-.54	-.79	-1.16	-.80	-1.71	-1.61	.43	-.44	-.24	-.39

Note. Standard deviations are in parentheses. H=Haitian; F=French; S=Spanish; HC=Haitian Creole; W= Word Reading; P=Pseudoword Reading; S=Spelling.

Maximum score in Coda = 20; Maximum score in Elision = 24; Maximum score in Spelling= 30; Maximum score in Syntax= 32; Maximum score in HC tasks

(W,P,S) = 30; Maximum score in Spanish tasks (W,P,S)= 30.

^aEVIP scores entered as a covariate

Table 4

F Values for Main Effect of Group, Probabilities, Eta Squared, Observed Power and Multiple Comparisons for Experimental Task

Measures		<i>F</i>	<i>p</i>	η^2	<i>Observed power</i>	<i>Multiple comparisons^a</i>
Coda		2.04	.14	.06	.35	
Elision		.81	.45	.02	.18	
Spelling		.78	.46	.02	.18	
Syntax		.10	.91	.003	.06	
HC and S tasks	W	10.54**	.002	.19	.89	H > S
	P	31.81**	< .01	.41	1.00	H > S
	S	38.54**	< .01	.46	1.00	S > H

^a Mean differences are significant at $p < .05$, adjustment for multiple comparisons: Bonferroni

* $p < .01$

Table 5

Means, Kurtosis and Skewness for Word Categories of French Spelling Task

Statistics		Word categories		
		Homophones	Cognates	Non-cognates
Mean ^a	H	7.95 (2.18)	8.66 (1.39)	7.38 (2.22)
	F	8.01 (2.01)	9.61 (.59)	6.88 (2.56)
	S	7.55 (1.53)	8.95 (.95)	6.70 (2.06)
Kurtosis		.45	5.64	-.92
Skewness		-.90	-1.78	-.40

Note. Standard deviations are in parentheses. H= Haitian; F=French; S=Spanish. Maximum score for all categories = 10.

^aEVIP scores entered as a covariate

Table 6

F Values for Main Effect of Group, Probabilities, Eta Squared, Observed Power and Multiple Comparisons for Experimental Tasks

Word categories	F^a	p	η^2	Observed power	Multiple comparisons ^b
Homophones	.37	.70	.01	.11	
Cognates	4.41*	.02	.13	.74	H < F
Non-cognates	.55	.58	.02	.14	

^aEVIP scores used as a covariate

^bMean differences are significant at $p < .05$, adjustment for multiple comparisons: Bonferroni

* $p < .05$

Table 7

Percentage of Correct Responses for Cognates and Non-Cognates in Spanish and French

Word type	Group		
	H	F	S
Cognates	93.8 (8.33)	96.7 (7.61)	91.0 (5.23)
Non-Cognates	85.5 (5.88)	95.0 (6.92)	88.5 (4.10)

Note. Standard deviations are in parentheses.

Appendix B

Figures

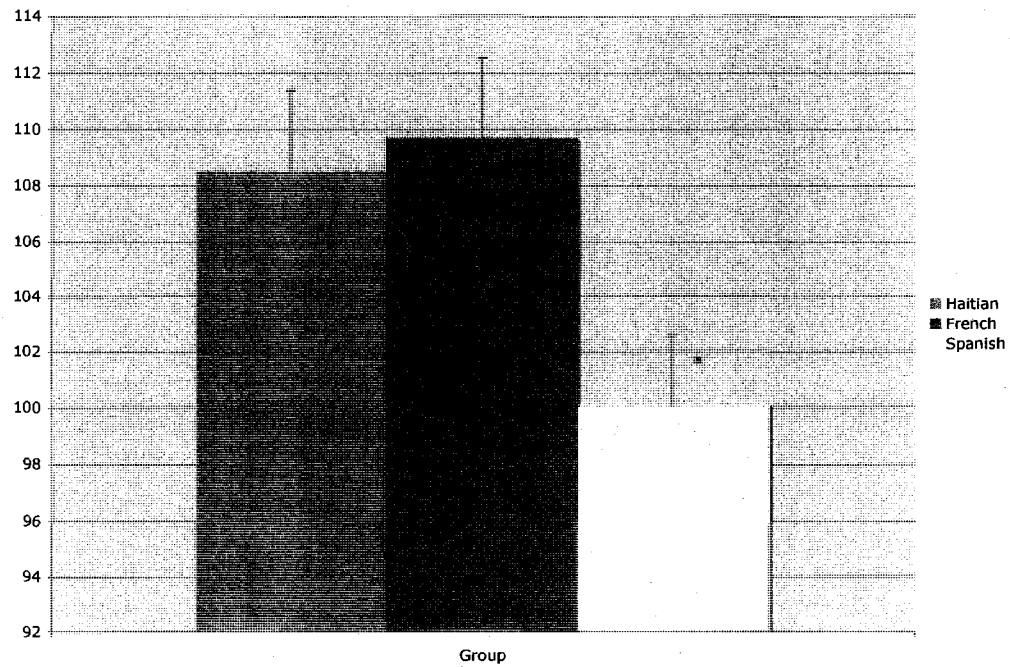


Figure 2. Group means on the EVIP (receptive vocabulary).

* Difference between the French and Spanish group means significant at $p = .04$

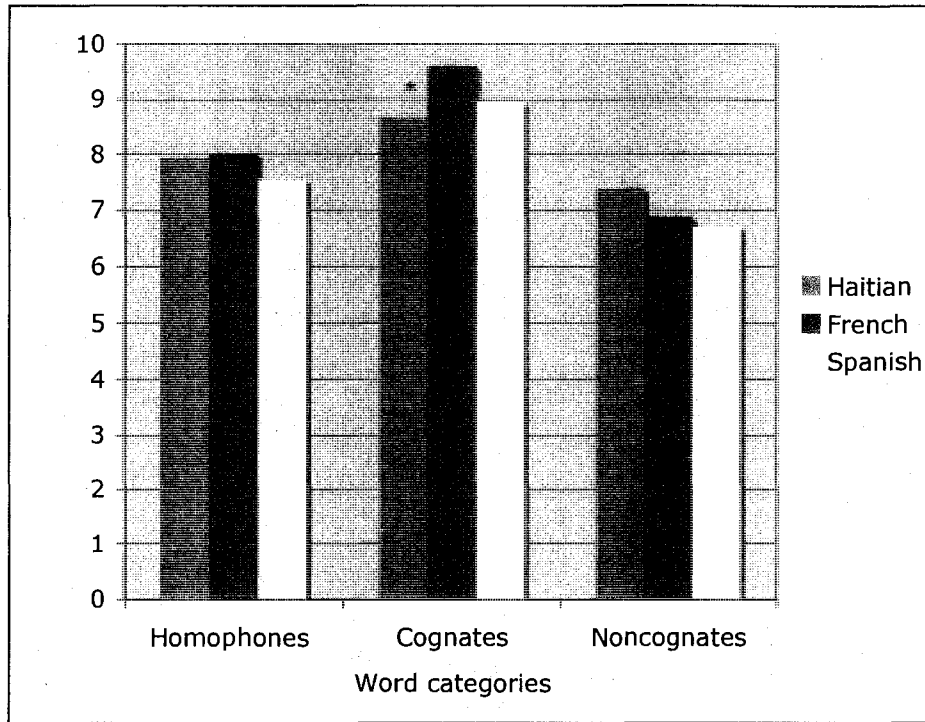


Figure 3. Group means for word categories on experimental French spelling task

*Difference between Haitian and French group means significant at $p = .02$

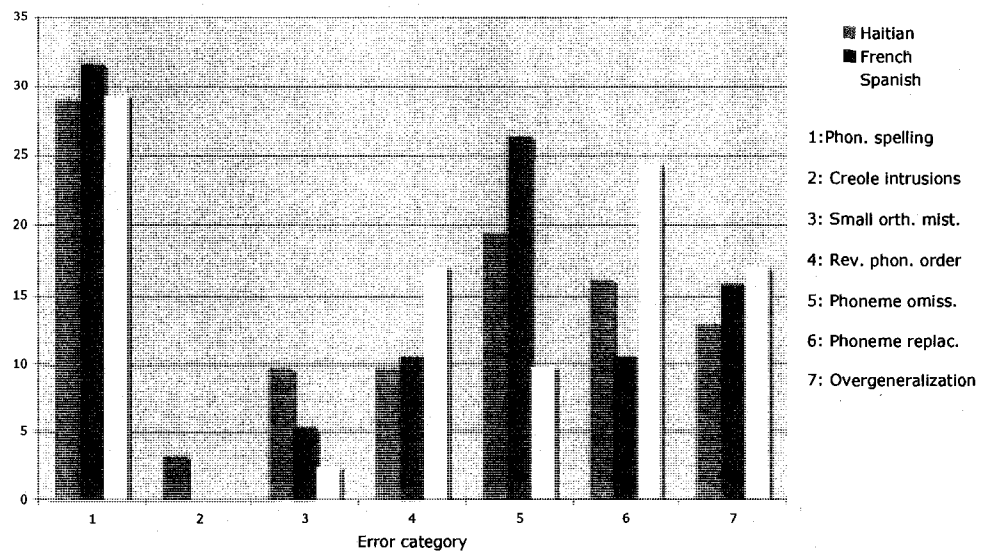


Figure 4. Group percentages for different categories of spelling errors