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**Code-Switching within the Noun Phrase:
Resolving Papiamentu-Dutch Conflicts**

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Abstract

This thesis focuses on theoretical accounts of code-switching with regard to Papiamentto-Dutch bilinguals. It examines two contrasting theories, the Matrix Language Framework model (Myers-Scotton, 2002) and the Minimalist Program (Cantone and MacSwan, 2009), and compares them by examining which accounts for what happens at conflict sites in occurrences of Papiamentto-Dutch code-switching, looking specifically at switching in noun-adjective word-order conflict sites.

An event-related potential study was carried out at Leiden University with Papiamentto-Dutch bilinguals. Its aim was to provide an objective measure of the neurocognitive processes underlying code-switching in bilinguals (Parafita Couto, Pablos, Boutonnet, de Jong, Perquin, de Haan and Schiller, under review). The two theories were tested using code-switched sentences which comprised six conditions: two control sentences that were not code-switched, two code-switched conditions where the predictions of the theories differed, and two code-switched conditions where the predictions of the theories matched. It was predicted that the results would support the Myers-Scotton MLF model, as that was the case with a similar project carried out with Welsh-English bilinguals ((Parafita Couto, Boutonnet, Hoshino, Davies, Deuchar and Thierry, 2013).

The results of the Papiamentto-Dutch experiment showed a slight trend in support of the Minimalist Program. These results differed from those of the project regarding Welsh-English bilinguals which found significant results in support of the Matrix Language Framework model (Parafita Couto, Boutonnet, Hoshino, Davies, Deuchar and Thierry, 2013). The disparity between the conclusions in these two experiments could be due to the difference in the types of bilinguals which participated. Further research will benefit from considering the sociolinguistic features of the bilingual group which participated in the Papiamentto-Dutch study discussed in this thesis.

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1 Introduction

1.1 Research Area

As the world becomes increasingly interconnected, bilingualism is becoming more common, described by Bialystok, Craik, Green and Gollan as 'the rule and not the exception' (2009:89). Increased global mobility means that the number of bilinguals has grown rapidly, and various sociohistorical factors have led to increased contact among different language groups (Winford, 2003:101). In 1997, Crystal estimated that two thirds of the children in the world are raised in a bilingual environment, a number which has now likely increased (Crystal, 1997:14). Multilingualism is officially recognised as the norm in many countries across the world, such as Luxembourg (Luxembourgish, German and French), Paraguay (Guaraní and Spanish), Canada (French and English), and South Africa (which has eleven official languages) to name but a few. Many others have only one official language, which at first glance hides the wealth of linguistic diversity that is characterised by widespread multilingualism. Nigeria, for instance, has only one official language (English) but over 500 local languages (Lewis, Simons and Fennig, 2015).

Due to bilingualism being on the rise, the study of bilingualism and how bilingual brains work in both comprehending and producing language is becoming increasingly relevant in the fields of Linguistics and Psychology. An interesting feature of the bilingual brain is the ability to control which language to use or 'access' at any given moment, both in speech production and comprehension. Abutalebi et al. refer to this ability as the 'language control' or 'language selection' mechanism, giving bilinguals the ability to 'selectively communicate in one target language while minimizing the interferences from the non-target language' (Abutalebi, Annoni, Zimine, Pegna, Seghier, Lee-Jahnke, Lazeyras, Cappa, and Khateb, 2007:1496). Poarch and van Hell describe the ease with which bilinguals access lexical items from both languages as a 'fascinating' phenomenon (2012:420).

Code-switching (which will be described in detail in §2.2) is the event in which a speaker alternates between two languages in a single utterance. The study of code-switching is described as fundamental to psycholinguistic research on bilingualism as 'its potential provides insight into the storage, retrieval, processing, and production of languages by bilingual speakers' (Lipski, in press). While many linguists have attempted to come up with models which explain what is possible and what is not possible when one code-switches, thus far, there has been no consensus. This thesis will compare two contrasting theories posited by Myers-Scotton and MacSwan - the Matrix Language Framework model and the Minimalist Program - by explaining and expanding upon the work carried out by Parafita Couto, Pablos, Boutonnet, de Jong, Perquin, de Haan and Schiller in 2013 to 2015, and drawing conclusions from the results.

1.2 Implications of the Findings

The results from this study will shed light on the validity of the two theoretical models in question. Myers-Scotton (1993, 2002; Myers-Scotton and Jake, 2009) and MacSwan (1999, 2004, 2005a, 2005b, 2009, 2010, 2013) have done extensive work into this area of study, proposing two seemingly incompatible models for analysing the phenomenon of code-switching in bilinguals. This project compares the two models, echoing a similar experiment involving Welsh-English bilinguals (Parafita Couto, Boutonnet, Hoshino, Davies, Deuchar and Thierry, 2013). Depending on the results, this project could either confirm what was found in the previous Welsh-English study, or (if the results differ) could bring new questions to light. This comparative reflection will help determine areas for improvement which will serve as a point of departure for future similar studies.

The Welsh-English experiment (*Testing alternative theoretical accounts of code-switching using event-related potentials*, under review) used the 'contrasting syntactic rules underpinning adjective-noun word order in Welsh and English' to test

predictions of two mainstream models of code-switching. The predictions of the Matrix Language Framework model were the exact opposite of the predictions of the Minimalist Program (see §2.5 for an outline of these theories). The results from the Welsh-English study supported Myers-Scotton's Matrix Language Framework model. If the results from the present Papiamentto-Dutch study mirror those found in Welsh-English bilinguals, then this would further strengthen Myers-Scotton's theory. If, however, they differ, then this could lead to further debate in the approach to code-switching theories.

1.3 Thesis Structure

To begin, I will explore the most current findings on bilingualism and examine code-switching in the literature review. I start with some preliminary definitions of bilingualism (§2.1) and code-switching (§2.2), before analysing the way in which languages are represented in the bilingual brain (§2.3), and the effect that code-switching can have on language selection (§2.4), looking at results from neurolinguistic studies. In addition, the two theoretical code-switching models which are tested will be described and compared in detail (§2.5), before looking into the two languages that this thesis is concerned with (§2.6). Finally, I introduce the research questions (§2.7).

The methodology (§3) will detail the way in which data was collected. I will first describe the relevant information regarding participants (§3.1), and materials (§3.2), before discussing the procedure employed (§3.3).

Section 4 will detail the results found and lead into the discussion (§5), which will describe the data gathered, and what conclusions can be drawn from it. Following from the comparative approach in this study, I will first describe the results of the similar study of Welsh-English bilinguals, and what conclusions were drawn from it (§5.1). I will then describe the findings from the present study on Papiamentto-Dutch

bilinguals, and their implications (§5.2), before comparing the results from both experiments with other similar studies (§5.3).

Section 6 concludes with a summary (§6.1), description of limitations (§6.2), and suggestions for further research (§6.3).

2 Literature Review

2.1 Bilingualism

A broad description of a bilingual is someone with 'a native or native-like control of two languages' (Matthews, 2007:40), however a more in-depth definition of bilingualism is much more elusive. Bilingualism is difficult to define with any precision, as it differs depending on which aspects one is considering and there is extreme variation between individuals. For instance, Harley describes the definition of bilingualism as 'a little vague' as it is entirely dependent on what one defines as being 'fluent' (2008:153). Grosjean and Li (2013:7) state that 'a common misconception is that bilinguals master two languages fluently', and go on to discuss how, although level of fluency is important to take into account, many researchers place emphasis on language use as a defining factor. This has led to their revised definition of bilingualism as being 'the use of two or more languages (or dialects) in everyday life' (Grosjean and Li 2013:7).

Bilingualism has many other defining factors. The most well considered being age of acquisition (early vs. late bilingualism), conditions in which the language(s) are learned (sequential vs. simultaneous bilingualism), and domains in which the languages are used (such as the home, school or business setting). Harley (2008:154) mentions three kinds of bilingualism: simultaneous bilingualism, where the L1 (first language) and L2 (second language) are learned at the same time; early sequential bilingualism, where the L1 is learned first while the L2 is learned relatively early on in childhood; and late bilingualism, where the L2 is learned from adolescence onwards.

It is worth bearing in mind that bilingualism is by no means a concrete notion, and though an individual may be bilingual at one point in time, they will not necessarily be bilingual throughout their lifetime. Individuals will often use one language more than another, or switch which language they use more throughout their lifetime. The

more dominant language (the language which they are more skilled in) will often change as life circumstances change, namely with which linguistic groups they interact with and are immersed in on a daily basis. In the same way, dormant languages can become 'resurrected'. As Grosjean and Li state, 'the bilingual's languages will wax and wane over the years and the different stages will have an impact on psycholinguistic processes' (2013:11). Knowing the language history of bilinguals is incredibly important when studying them, as it can explain reasons behind certain behaviours, and can shed insight onto how a language is processed, and how the brain stores and deals with it.

Bilinguals, although highly proficient in both languages, are rarely equally skilled in each language. Grosjean and Li state that 'the majority of bilinguals do not have equal fluency in their languages; many have an accent in at least one of their languages' (2013:7). According to Harley (2008:154), the majority of bilinguals are early sequential. This means that their first language (L1) is likely to be more dominant than their second language (L2). Even if an individual is highly proficient in both languages to a similar degree, it is likely that they will still identify one language as being dominant.

Bilinguals often use both languages in a single conversation - a phenomenon known as code-switching. The following section describes code-switching in detail.

2.2 Code-Switching

Bilinguals are able to 'exploit the resources of the languages they command in various ways, for social and stylistic purposes' (Winford, 2003:101), something which monolinguals can only achieve in a limited way, by switching between registers and dialects. As Bullock and Toribio state, 'all speakers selectively draw on the language varieties in their linguistic repertoire, as dictated by their intentions and by the needs of the speech participants and the conversation setting' (2009:2).

Meisel (1994:414) neatly sums up the concept of code-switching, which is often referred to as CS in the literature, as follows: 'the ability to select the language according to the interlocutor, the situational context, the topic of conversation, and so forth, and to change languages within an interactional sequence in accordance with sociolinguistic rules and without violating specific grammatical constraints'. This notion is illustrated in the following three examples involving English and other languages. All of the following examples are illustrations of intrasentential code-switching (when an alternation takes place below sentential boundaries), and show how the two grammars overlap (discussed further in §2.2.2).

In example (1), the speaker starts the sentence with the Spanish auxiliary verb *estaba*, but goes on to use the English past participle *snowing*, in place of the Spanish *nevando*.

(1) Spanish-English

Estaba snowing

'It was snowing.' (Miccio, Hammer and Rodríguez, 2009:242)

With example (2), according to Bullock, the bilingual homophone *smal* ('narrow' in Dutch) 'triggers' the switch from English to Dutch; 'the coincidence of the phonetic surface form across languages triggers a CS [code-switch] in an unlikely syntactic context (between a modifier and adjective)' (2009:178). (For a comprehensive overview of triggering and intrasentential code-switching see Van Hell, Litcofsky and Ting, in press.)

(2) Dutch-English

En we reckoned Holland was too smal vor uns. Het was te benauwd allemaal.

'And we reckoned Holland was too small/narrow for us. It was too oppressive altogether.' (Clyne 2003:146, in Bullock, 2009:177)

In example (3), the English word *grass* (inserted into an otherwise Russian sentence) is fully incorporated into the Russian sentence to the extent that it is even marked with a prepositional case agreement morpheme from Russian (Myers-Scotton and Jake, 2009:347).

(3) Russian-English

Zachem ty na grass-e valjajesih'sja

what-for you.SG on grass- PREP.SG roll-around

'Why are you rolling around on the grass?'

(Schmitt 2006, in Myers-Scotton and Jake, 2009:347)

Code-switching has been defined by Grosjean as 'the alternate use of two or more languages in the same utterance or conversation' (1982:145). Code-switching can include 'the alternating use of relatively complete utterances from two different languages, alternation between sentential and/or clausal structures from the two languages, and the insertion of (usually lexical) elements from one language into the other' (Winford, 2003:101). Although code-switching is generally spontaneous, this does not mean that it is random. As MacSwan observes, code-switching is patterned and rule-governed behaviour (2009:309). Different types of code-switching have been identified in the literature. These are discussed in section 2.2.2, following a brief explanation of the difference between language switching and code-switching.

2.2.1 Language Switching in contrast to Code-Switching

It is essential to highlight the difference between code-switching and language switching or shifting. Code-switching is spontaneous, and occurs within or between utterances. In contrast, language switching (termed 'language shifting' by Bullock and Toribio, 2009) occurs when a bilingual individual segregates the use of his or her languages, speaking exclusively in one language in certain domains (for example, at home) while shifting to another language in a different context (for example, at school) (Bullock and Toribio, 2009). Language switching will often occur due to

external influence. In the laboratory environment, for example, a study on language switching may ask participants to change language if a certain cue is given (Gullberg, Indefrey and Muysken, 2009:21). In contrast to the spontaneous nature of code-switching which occurs within utterances, language switching is absolute in that it involves a complete shift from one language to another. Most Event Related Potential (ERP) studies to date have focussed on language switching rather than code-switching (Gullberg, Indefrey and Musken, 2009); however, the present study will focus on the latter.

2.2.2 Types of Code-Switching

There are three different kinds of code-switching relevant to our discussion - extrasentential, intersentential, and intrasentential code-switching (Hamers and Blanc, 2000:259; Poplack, 1980). Extrasentential code-switching (also known as 'tag-switching') occurs when a speaker adds a tag in one language to the beginning or end of an utterance in another language (Hamers and Blanc, 2000:259). This is shown in example (4), where a speaker adds the English tag *sorry* to the end of an otherwise Afrikaans sentence.

(4) Afrikaans - English

O nee hier's 'n paar goedjies, sorry

'Oh no here are a few things, sorry'

(van Dulm, 2005:1)

Intersentential code-switching involves switching between languages at sentential boundaries (MacSwan 1999:1), with one clause or sentence in one language, and the next clause or sentence in another. Example (5) illustrates intersentential code-switching. In it, the first clause *I love Horlicks* is in English and is followed by the Afrikaans clause *maar hier's niks* 'but there's none here'.

(5) English - Afrikaans

*I love Horlicks **maar hier's niks***

'I love Horlicks but there's none here'

(van Dulm, 2005:1)

Intrasentential code-switching occurs when an alternation takes place below sentential boundaries (Cantone and MacSwan, 2009:244). This is exemplified in example (6), where the English prepositional phrase *down my throat* occurs within the Afrikaans sentence *Ek weet nie of daar iets was nie* 'I don't know whether something was there'.

(6) Afrikaans - English

*Ek weet nie of daar iets **down my throat** was nie*

'I don't know whether there was something down my throat' (van Dulm, 2005:1)

Poplack (1980) found that bilinguals who were less fluent in one of the two languages favoured switching between sentences (intersentential code-switching), which allowed them to code-switch 'without fear of violating a grammatical rule of either of the languages involved' (Poplack, 1980:581). In contrast, more fluent bilinguals would more often display intrasentential code-switching. Miccio, Hammer and Rodríguez found that intrasentential switching is typically not observed in those who are only just beginning to acquire a second language, because 'intra-sentential switches require a mastery of more complex syntactic structures' (Miccio et al., 2009:242).

As Cantone and MacSwan (2009:244) point out, the vast majority of research on grammatical aspects of code-switching focuses almost exclusively on the intrasentential kind. This is due to the fact that with the extrasentential and intersentential code-switching, the grammar of the two languages remains intact and is not mixed, while with intrasentential code-switching the two grammars overlap so you can see how they interact with each other.

2.2.3 Motivation for Code-Switching

Researchers now generally acknowledge that code-switching is not 'a haphazard behaviour' resulting from an inability to properly use both languages (Grosjean and Li, 2013:19). Rather, it is often a conscious process, and can occur for a variety of reasons. As Grosjean and Li state, 'The reasons for code-switching are many: using the right word or expression, filling a linguistic need [...], marking group identity, excluding or including someone, raising your status, and so on' (Grosjean and Li, 2013:19). Some researchers have found that switches between languages can occur unintentionally, especially in moments of stress or heightened emotion (Meuter and Allport, 1999:25). The reasons behind code-switching (humour, identity, attitudes, economic well-being, etc.) are important, as they can often reveal how and why an individual relates to a certain language, or elements of a language, over another.

2.2.4 Proficiency and Code-Switching

It is important to note that code-switching is not a sign that an individual is unable to fully express him or herself in one language, nor is it the random mixing of two languages. Code-switching carries the stigma that it results from improper language use, laziness, or the inability to speak a language correctly; it is in fact the opposite. Although Montanari (2009, in Grosjean and Li, 2013:137) found that mixed utterances by Tagalog-Spanish-English children were generally caused by vocabulary gaps, Miccio et al. state that describing code-switching as an indication of confusion or lack of proficiency is a commonly held misconception; furthermore, the authors state that code-switching, in particular intrasentential code-switching, requires 'a high degree of both pragmatic and grammatical competence in both languages' (2009:242). They go on to describe how code-switching 'reflects the ability of the speaker to appropriately select a language while obeying socially and culturally imposed constraints' (Miccio et al., 2009:242).

Poplack found code-switching to be a skill which requires ‘a large degree of linguistic competence in more than one language, rather than a defect arising from insufficient knowledge of one or the other’ (1980:615), in particular when employing intrasentential code-switching, as mentioned in section 2.2.1.1. Muysken, Kook and Vedder describe code-switching as ‘a quite normal and widespread form of bilingual interaction’, which ‘requires a high level of bilingual competence’ (1996:486). Bullock and Toribio found that a significant amount of research shows that code-switching ‘does not represent a breakdown in communication, but reflects the skillful manipulation of two language systems for various communicative functions’ (2009:4). This is nicely illustrated in the following quote from Valdés: ‘It is helpful to imagine that when bilinguals code-switch, they are in fact using a twelve-string guitar, rather than limiting themselves to two six-string instruments’ (1988:126).

Understanding the way in which a bilingual’s brain differs from those who are monolingual can shed light onto linguistic processing. The following two sections (§2.3 and §2.4) will look at some of the results from neurolinguistic studies into how bilingual brains work – how languages are represented, and how languages are accessed and selected. The findings provide examples which can not only help us see what goes on in a bilingual brain, but also give insight into experimental methodologies, and ways in which we can further illustrate what happens in bilingual language processing.

2.3 How Languages are Represented in a Bilingual Brain

Research carried out on how languages are represented in a bilingual’s brain has focussed particularly on whether words are stored in a separate lexicon for each language. A study by Thierry and Wu in 2007 looked at bilingual brain processes during second-language comprehension tasks, aiming to discover whether or not the first language is also active in such tasks. They showed Chinese-English bilinguals pairs of English words. Participants were then required to determine whether or not

the words were semantically related. What participants did not know is that some of the words, once translated into Chinese, had a character in common.

Using event-related potentials (ERPs), the authors found that although there was no effect on behavioural performance, the ERPs revealed that the first language was active during the second-language comprehension task (Thierry and Wu, 2007). The authors concluded that the study made a 'direct observation of spontaneous lexical activation of the native language during an experiment involving only second-language stimuli' (Thierry and Wu, 2007:12534). In the same vein, Perani et al. found evidence in similar experiments that the bilingual brain 'cannot be viewed as the sum of two monolingual language systems', but should be considered as a 'unique and complex neural system which may differ in individual cases' (Perani, Abutalebi, Paulesu, Brambati, Sifo, Cappa and Fazio, 2003:180).

Bialystok et al. state that 'it is now well documented that both languages of a bilingual are jointly activated even in contexts that strongly bias towards only one of them' (2009:93). They go on to describe that this joint activation creates a 'unique need for selection' in which bilingual language processing must resolve competition from between-language alternatives, as well as within-language alternatives between close semantic neighbours (Bialystok et al., 2009:93). Following this, Grosjean and Li found that there is no definitive answer as to whether the processing of a bilingual's languages is represented by common or distinct neural systems. So many variables can modulate the functional activities in the brain, such as proficiency, task demands, cross-language overlap and age of acquisition (Grosjean and Li, 2013:225).

The findings from these various experiments seem to show that both languages in a bilingual brain are jointly activated, at least to some degree. The research also seems to point towards the fact that various factors can influence the degree to which the two languages are 'intertwined'.

The following section (§2.4) will analyse language selection in bilinguals. This is an important issue because it highlights factors which can affect switching between languages. Such information needs to be taken into account when analysing the results from this experiment and similar studies.

2.4 Language Selection in Bilinguals

With regard to language selection in bilingual speech production, an important topic in much of the research has focussed on investigating the time it takes to switch from one language to another. It is well established that 'switching between languages takes a measurable amount of time' (for example Dalrymple-Alford, 1967; Kolers, 1966, 1968; Macnamara, Krauthammer and Bolgar, 1968; Macnamara and Kushnir, 1971; in Meuter, 2005:350). In relation to response latency studies, the symmetry or asymmetry of bilingual speech - that is, the balance between languages or the dominance of one language over another - has been the focus in much research.

Meuter and Allport (1999) found that language selection is not symmetrical. In their study, participants were presented with numbers and were asked to name the number as accurately and quickly as possible. The background colour was either blue or yellow, informing participants of which language to use. Meuter and Allport found that, as expected, the 'switch trials' (when one language is followed by a different language, rather than the same language) had larger response latencies, as participants took longer to respond (1999:31).

Nevertheless, the researchers also found evidence to show that language switching is asymmetrical, that switching to one language is easier (or less costly) than switching to another. According to Meuter and Allport, the 'cost of switching language to the relatively stronger L1 is greater than the cost of switching in the opposite direction, to L2' (1999:33). Interestingly, however, Grosjean and Li were able to show that despite the fact that language switching clearly takes time, spontaneous bilingual

speech containing code-switches takes no more time than monolingual speech (2013:59). These findings show that measuring response latencies for code-switching in certain contexts can help shed light on the possible level of dominance of one language over another in bilingual speech production. In relation to this, researchers have begun exploring how patterns of code-switching may have an effect on language selection.

2.4.1 Factors in Language Selection

Various factors affect language selection. These include the frequency with which one carries out code-switching, the frequency with which one uses a language over another, age of acquisition and language exposure. The topic of frequency of code-switching has received little attention in the literature. Poarch and van Hell state that a bilingual's 'extended use of two languages in various settings, and switching back and forth between two languages, may increase cross-language permeability during speech performance' (Poarch and van Hell, 2012:421). Situations like this produce fertile ground for code-switching because speakers are more apt to handling switching between the two languages. Intuitively, it follows from this that speakers who use a language less often will likely be less prone to display code-switching behaviour because they have a predisposition for one language over another.

Some researchers found that the frequency with which one uses a language can affect how easily they switch between languages. Gollan et al. argue that using a language less frequently results in weaker connections in the network (Gollan et al., 2008, in Bialystok et al., 2009:93). Indeed, Bialystok et al. found that older bilinguals find lexical retrieval tasks more difficult than younger bilinguals, which is made worse in older bilinguals who 'have spent the majority of their adult lives using one of their two languages' (2009:94).

An interesting study by Perani et al. explored the effect of age of acquisition and language exposure on a group of Spanish-Catalan bilinguals, claiming that few

researchers take into account the role of 'environmental exposure on cerebral language representation' (Perani et al., 2003:171). Perani et al. define exposure as being 'reflected in a more intense and frequent usage of a given language'. Using fMRIs, they found evidence to show that the amount of exposure to a language can have an effect on the extent of activation during the lexical search and retrieval task (2003:180). They conclude that language exposure is a 'crucial factor for the neural representation of multiple languages' (2003:180). Although they had a small number of participants (eleven), their study provides a starting point for further investigation into the issue of age of acquisition and language exposure as effects on language selection.

The analysis of similar studies in the field of psycho- and neurolinguistics can not only help show which methodologies are most effective, but can also provide valuable insight into the inner workings of the bilingual brain, which in turn can shed light on how to interpret the results from this study. This section has highlighted important factors discussed in previous studies - such as age of acquisition, age of exposure, and how frequently one uses a language - which will be taken into account when analysing data from this study.

2.5 Theoretical Models of Code-Switching

There are different theoretical models of code-switching, with varying degrees of acceptance. This study focuses on two contrastive theoretical models of code-switching - the *Matrix Language Frame* (MLF) model and the *Minimalist Program* (MP). These are outlined in detail in section 2.5.1 and section 2.5.2 respectively.

2.5.1 The Matrix Language Frame Model

The Matrix Language Frame (MLF) model was first introduced by Myers-Scotton in 1993, in *Duelling Languages: Grammatical Structure in Code-Switching* as 'a model to

account for the structures in intrasentential CS' (Myers-Scotton, 1993:5), and is presented in the revised Myers-Scotton, 2002.

The MLF model is 'based on the asymmetry between the frame-building potentials of the participating languages in CS' (Jake and Myers-Scotton, 2009:213). The model suggests that bilingual utterances consist of a Matrix Language and an Embedded Language, wherein the Matrix Language is the one that provides the morphosyntactic framework for any utterance. The MLF model highlights the asymmetry of the roles that the two languages play within an utterance, the Matrix Language being more dominant than the Embedded Language.

As Myers-Scotton states, 'specifically the Matrix Language supplies essential morphosyntactic structure for mixed constituents, while the Embedded Language may supply content morphemes to be inserted into this frame' (2002:25). In this sense, the MLF model predicts that both finite verb morphology and word order within a clause, which constitute the morphosyntactic structure, will be sourced from the same language - the Matrix Language. This is derived from the two principles discussed in the following section

2.5.1.1 Identifying the Matrix Language

One issue which arises when considering the MLF model is how to identify which language is the Matrix Language. The MLF model has two principles which can be used to identify the Matrix Language: the *Morpheme Order Principle* and the *System Morpheme Principle*. The *Morpheme Order Principle* states that the surface morpheme order will be that of the Matrix Language. The *System Morpheme Principle* states that 'all system morphemes which have grammatical relations external to their head constituent [...] will come from the ML [Matrix Language]' (Myers-Scotton, 1993:83), or as Grosjean and Li put it, 'lexical but not functional morphemes can be inserted as embedded language elements' (2013:135).

The example of Chinese-English code-switching below (taken from Myers-Scotton, 2002) illustrates the predictions of the MLF model. It is clear that Chinese is the Matrix Language in this example as the word order is that of Chinese SOV (subject – object – verb) rather than that of English SVO. In addition, function words and inflections are from Chinese, and only the lexical morphemes (*paper, finish, term paper, slow*) are from English (Myers-Scotton, 2002:9).

(7) Chinese - English

ni paper hai mei finish a? wode san-fen term paper
 you paper yet not finish PART/AFFIRM my three-CLASSIF term paper
qiantian yijin jiaoshangqu le. ni tai slow le.

The day before yesterday already turn in PART/PERF you too slow PART/AFFIRM

‘You haven’t finished your paper yet? My three term papers were already turned in the day before yesterday. You are too slow.’

(Myers-Scotton, 2002:9)

2.5.2 The Minimalist Program

The Minimalist Program is derived from Chomsky’s generative approach to theoretical linguistics. Within the Minimalist Program, all parameters are encoded into the lexicon, meaning that linguistic variation comes from the morphological properties of the lexical items (Cantone and MacSwan, 2009:251). As MacSwan (2010:11) states, ‘structures are built from a stock of lexical items, with lexical insertion [...] taking place at the outset’, and allows those who research code-switching to ‘probe the structural consequences of particular lexical items from specific languages, with no need to keep track of which language may contribute which specific lexical elements during a final stage of lexical insertion’ (MacSwan, 2010:11). Cantone and MacSwan note that ‘if all syntactic variation is associated with the lexicon, as in the Minimalist Program, then CS may be seen as the simple consequence of mixing items from multiple lexicons in the course of a derivation’ (2009:251).

2.5.3 Mutual Criticism

Criticism of the MLF model does exist (see MacSwan, 1999; MacSwan, 2005a; MacSwan, 2005b). Cantone and MacSwan (2009:252) state that 'there are theoretical problems associated not only with the MLF Model but with all approaches to CS which posit CS-specific constraints' (Cantone and MacSwan, 2009:255). Some linguists find fault with the MLF model, as they believe that code-switching can be explained without adding 'new constructs to generative models' (Jake and Myers-Scotton, 2009:239). A number of researchers have criticised the notion of the Matrix and Embedded Languages (Grosjean and Li, 2013; MacSwan, 1999). MacSwan found it 'difficult' to know which language is the Matrix one and which is the Embedded one, and that complications arise 'with the stipulation that the ML may change even within a single conversation' (MacSwan, 1999:158). Grosjean and Li state that 'while this model can usefully be applied to bilingual children, it has weaknesses both in general [...] and specifically in bilingual development' (2013:135).

Nevertheless, the concept of Matrix Languages is widely believed by code-switching researchers to exist (Wei, 2013:42). The Minimalist Program (more specifically MacSwan's application of it to code-switching) has been criticised by Jake, Myers-Scotton and Gross as seeing 'no difference in the principles governing monolingual and bilingual data', going on to state that 'MacSwan's claim that Minimalism alone will explain CS is not supported' (Jake, Myers-Scotton and Gross, 2005). Indeed, Jake, Myers-Scotton and Gross argue that only a 'modified' minimalist approach could work, and state that, while recognising that there is some value to a minimalist approach, 'such an approach may even only succeed partially if it incorporates a basic asymmetry between the language participating in CS' (Jake, Myers-Scotton and Gross, 2002:69).

2.5.4 Conflict Sites

The notion of conflict sites is central to the present study. A conflict site is the area(s) in which the structures of two languages differ; in other words, 'sites where the grammars of the two languages in contact *conflict*' (Poplack and Meechan, 1998:132). As Papiamentu and Dutch have differing adjective-noun ordering, the conflict site investigated in this study concerns the position of an attributive adjective in relation to its head noun.

Consistent with views in the Minimalist Program, Cinque proposed that a Universal Base underlies adjectives, with adjectives universally preceding the noun (Cantone and MacSwan, 2009:261; Cinque, 1999). Following Cinque's theory, differences in word order between a language such as Dutch (which has pre-nominal adjectives) and one like Papiamentu (with post-nominal adjectives) would follow from 'overt movement of the noun in Papiamentu to a position above the adjective', which results in the contrasting surface order between the two languages (Parafito Couto et al., under review). Drawing on Minimalist theory from both MacSwan (2004) and Cinque's (2005) research, Cantone and MacSwan propose that it is the language of the adjective that determines word order in a noun phrase when code-switching (Cantone and MacSwan, 2009:266-267). Adjective-noun ordering is the principle focus of investigation central to this thesis in the context of Papiamentu - Dutch code-switching.

2.6 Outline of Languages

The two languages which will be analysed in this thesis are Papiamentu and Dutch, chosen due to their different word order and the large number of individuals who code-switch between these two languages in the current place of research (the Netherlands). Dutch and Papiamentu are spoken on the islands of Aruba, Bonaire

and Curaçao in the Caribbean. They are also spoken by many of those who typically originate from these islands and now live in the Netherlands.

Severing and Verhoeven observe that, on Curaçao at least, Papiamentu is the main language of communication, and that Dutch is acquired as a foreign language at school (2001:255). In the same vein, Muysken, Kook and Vedder state that, despite being an official language on Aruba, Bonaire and Curaçao, Dutch is still seen as a foreign language, and Papiamentu is used more frequently in daily life (1996:492). However, the language situation ‘changes drastically’ for those who immigrate to the Netherlands (Muysken, Kook and Vedder, 1996:492). Understandably, due to the social and cultural context of the Netherlands, speakers of Papiamentu in the Netherlands typically use Dutch, the language of the majority, on a daily basis more so than those in Aruba, Bonaire and Curaçao do.

Relevant to the focus of this thesis is the topic of Papiamentu and Dutch adjective-noun ordering. Below is a brief overview of both languages.

2.6.1 Papiamentu

Papiamentu - known as Papiamentu in Bonaire and Curaçao, and Papiamentu in Aruba - is an Iberian-based creole predominantly used on the Caribbean islands of Aruba, Curaçao and Bonaire, but it is also spoken by minority groups on Sint Maarten, as well as in the Netherlands. Over 260,000 people worldwide speak Papiamentu as a first language (Lewis et al., 2015).

In Papiamentu adjective-noun ordering, the majority of attributive adjectives follow the nouns that they modify. This is shown in example (8) below, where the adjective *bunita* ‘pretty’ is preceded by the noun phrase which it modifies – *tur e strea nan* ‘all the stars’.

(8) Papiamentu

*Tur e strea nan **bunita** den shelo*

all the star PL pretty in sky

'All the pretty stars in the sky.'

(Kouwenberg and Murray, 1994:50)

Maurer states that in the majority of cases, attributive adjectives come after the noun, but that in some 'rare cases' they may precede the noun (Maurer, 2013:169). Kouwenberg and Murray too explain that, while the majority of adjectives are post-nominal, there are some adjectives that appear in the position preceding the noun. Examples of such attributive adjectives include *delaster* 'last', *promé* 'first', *di dos* 'second', *henter* 'whole' (Kouwenberg and Murray, 1994:48). Often, if the adjective precedes the noun then the adjective is emphasised by the speaker (Maurer, 2013:169; Kouwenberg and Murray, 1994:48). The following examples show the difference in meaning that arises from when an adjective precedes the noun it modifies. In example (9), the adjective *bunita* 'pretty' is in its usual post-nominal position, following the noun phrase it modifies – *un mucha* 'a child'. In contrast, in example (10), the adjective *bunita* 'pretty' has been fronted, occupying the slot directly in front of the head noun *mucha* 'child'. This fronting emphasises the adjective, as can be seen in the free translation with 'very pretty/beautiful'.

(9) Papiamentu

*Un mucha **bunita***

a child pretty

'A pretty child.'

(Kouwenberg and Murray, 1994:48)

(10) Papiamentu

*Un **bunita** mucha*

a pretty child

'A very pretty/beautiful child.'

(Kouwenberg and Murray, 1994:48)

2.6.2 Dutch

Dutch is a Germanic language, used principally in the Netherlands, Belgium, Suriname, as well as in Bonaire, Curaçao, Aruba, and Sint Maarten. It has over 21 million speakers worldwide (Lewis et al., 2015). Attributive adjectives in Dutch occur before the noun that they modify (Donaldson, 2008; Shetter and Ham, 2007), which is shown in the following examples. In example (11), the attributive adjective *klein* ‘small’ precedes the head noun *huis* ‘house’. Similarly, in example (12), the attributive adjectives *groene* ‘green’ and *stille* ‘quiet’ occur directly before the head nouns *auto* ‘car’ and *straat* ‘street’ which they modify respectively.

(11) Dutch

Een klein huis

‘a small house’

(Donaldson, 2008:106)

(12) Dutch

De groene auto staat in de stille straat.

‘The green car is parked in the quiet street.’

(Shetter and Ham, 2007:46)

2.7 Research Questions

The aim of this thesis is to test the acceptability of artificially constructed sentences in order to present different combinations of language, adjective-noun order, and code-switching within a set syntactic frame, replicating what was previously carried out in Parafita Couto et al. (2013). The two theoretical models discussed in section 2.5 predict differing patterns for our study. This thesis aims to test both theories by using code-switched sentences of two languages with differing word order for adjective-noun structure.

The MLF model states that the Matrix Language determines the word order of a code-switched utterance (Myers-Scotton, 2002), which would mean that, in a Dutch sentence with a Papiamento adjective inserted, the word order would be Dutch with the Papiamento adjective preceding the Dutch noun. This is illustrated in example (13), where the Papiamento adjective *blanku* 'white' is inserted into the Dutch sentence *De beer joeg op een koe* 'The bear chased a cow', and appears before the noun it modifies – *koe* 'cow' – fulfilling the Dutch word order requirement of adjective > noun, as Dutch is the Matrix Language. If the sentence were Papiamento, then the Dutch adjective would appear after the Papiamento noun, as in example (14). The same sentence ('the bear chased a cow') is translated into Papiamento *E oso a yag un baka*, and has the Dutch adjective *witte* inserted after the noun, as word order in Papiamento dictates.

(13) Dutch – Papiamento

*De beer joeg op een **blanku** koe.*

'The bear chased a white cow.'

(14) Papiamento – Dutch

*E oso a yag un baka **witte**.*

'The bear chased a white cow.'

In contrast, the Minimalist Program predicts that the language of the adjective establishes the word order in a noun phrase (Cantone and MacSwan, 2009). So, an adjective in Dutch would come before a noun in Papiamento, and a Papiamento adjective would come after a Dutch noun. Example (15) illustrates this prediction with a Papiamento sentence. In it, the Dutch adjective *witte* 'white' controls for its position in relation to the Papiamento head noun *baka* 'cow' which it modifies. The adjective precedes the head noun as with Dutch adjective-noun ordering, thus fulfilling the word order predicted by the Minimalist Program. In example (16), the Papiamento adjective *blanku* 'white' appears post-nominally in accordance with Papiamento syntax, as predicted by the Minimalist Program.

(15) Papiamento – Dutch

*E oso a yag un **witte** baka.*

‘The bear chased a white cow.’

(16) Dutch – Papiamento

*De beer joeg op een koe **blanku**.*

‘The bear chased a white cow.’

To test these theories, code-switched sentences – both Papiamento-Dutch and Dutch-Papiamento – were used, with the word order either compatible with the MLF theory or the Minimalist Program. Event-related potentials were used to measure reactions to the stimuli. The following section will describe event-related potentials in more detail.

2.7.1 Event-Related Potentials

Event-related potentials (ERPs) are the ‘average electrical responses from the brain to individually presented stimuli’, often used to test which of the critical conditions would elicit an effect traditionally associated with the detection of a violation. According to Thierry and Wu’s study on language comprehension in bilinguals (2007), ERPs are an ideal tool for investigating neural stages of both language comprehension and production. ERPs provide ‘a continuous account of brain activity time-locked to an external stimulus’, and can reveal aspects of second language processing that ‘cannot be detected on the basis of behavioural measurements alone’ (Thierry and Wu, 2007:12530).

In the case of this project, ERPs were used to find out what happens at the conflict sites in the sentences (where the code-switched adjective occurs). There are a number of components which are linked to language processing, in particular the N400, which is described by Swick as ‘a mainstay of language processing tasks’ (2005:47).

While the N400 is elicited mainly by semantic violations, this thesis is concerned with syntactic violations. According to Luck, syntactic violations elicit distinctive ERP components (2005:46). Syntactic violations can elicit a left frontal negativity (also known as left anterior negativity or 'LAN'), from approximately 300-500 ms (Luck, 2005:46). Parafita Couto et al. reiterate that syntactic violations generally elicit an ERP deviation known as the left anterior negativity (LAN), and that they vary depending on the type of violation encountered (Parafita Couto et al., 2013).

Parafita Couto et al. find that major ERP components associated with code-switching differ depending on whether single code-switches or sentence-internal code-switches are in question. In the former, 'the most frequently elicited components are N2, N250 and N400 both in comprehension and production, whereas in sentence internal code-switches the most recurrent components are LAN, N400 and LPC in comprehension' (Parafita Couto et al., 2013).

2.7.2 Note on Experimental versus Naturalistic Data Collection

This study is primarily based on experimental data because of the useful angle it provides in approaching this topic. There has been some debate as to whether experimental or naturalistic data collection is superior, with Cantone and MacSwan stating that it is a 'persistent controversy' (2009:261). While naturally-occurring data has benefits due to the fact that it places code-switching in a realistic context, it has disadvantages if one is looking to construct an explicit theory of a bilingual's linguistic competence - 'without examples of utterances inconsistent with a bilingual's linguistic intuitions, it is not possible to construct such a theory' (MacSwan, 2013:324). Kootstra found that, while many linguists regard experimental data as artificial, using experimental data makes it possible to 'exclusively tap into specific (combinations of) variables while controlling for possibly intervening variables [...] in a large sample of participants in controlled situations that are repeatable across experiments and allow for quantitative inferential analyses' (Kootstra, 2015:53).

A similar study to the one discussed in this thesis (by Parafita Couto, Deuchar and Fusser, 2015), on conflict sites of two languages with differing noun-adjective word-order (Welsh and English), used a combination of data gathering techniques (including an elicitation task and a judgement task). Their findings suggest that 'neuroscientific evidence among other innovative methods can make a useful contribution here' (Parafita Couto, Deuchar and Fusser, 2015:82). In the same vein, Kootstra states that language contact could 'benefit from the addition of a psycholinguistic road' (2015:58).

In the experiment discussed in this thesis, while some relevant naturalistic data has also been studied in order to give the best approach possible (Parafita Couto and Gullberg, 2015), experimental data collection is necessary to control and measure reactions to set sentences, specifically structured to test the two theoretical models of code-switching. The use of ERPs gives a particular advantage as you can measure unconscious readings. The use of neurolinguistic techniques to test code-switching theory is a relatively new practice and can hopefully provide a new angle for approaching code-switching theory.

3 Methodology

This chapter describes the methodology used in this research. It first presents the relevant information regarding participants (§3.1), and materials (§3.2), before discussing the procedure employed (§3.3).

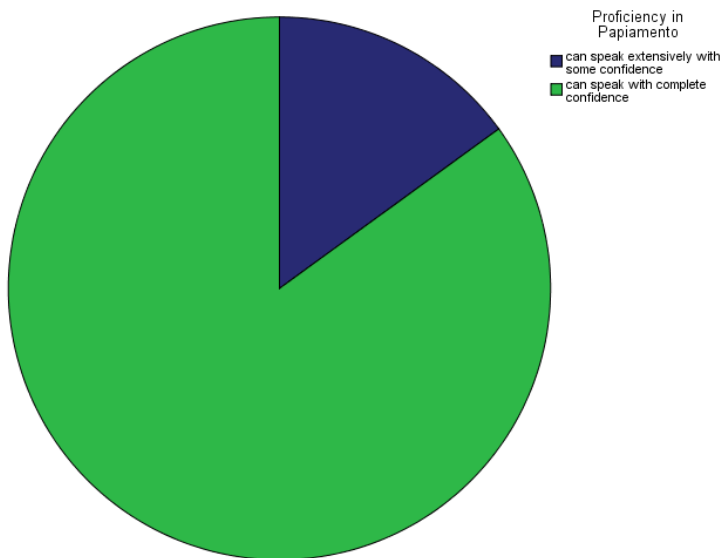
3.1 Participants

Twenty highly proficient Papiamento-Dutch bilinguals (14 females, 6 males; mean age 24) took part in the experiment. Almost all of the participants grew up in either Curaçao or Aruba, and the majority moved to the Netherlands for their studies. All had normal, or corrected to normal, vision. The data from two participants was discarded due to technical problems during recording, and another was discarded due to insufficient data quality.

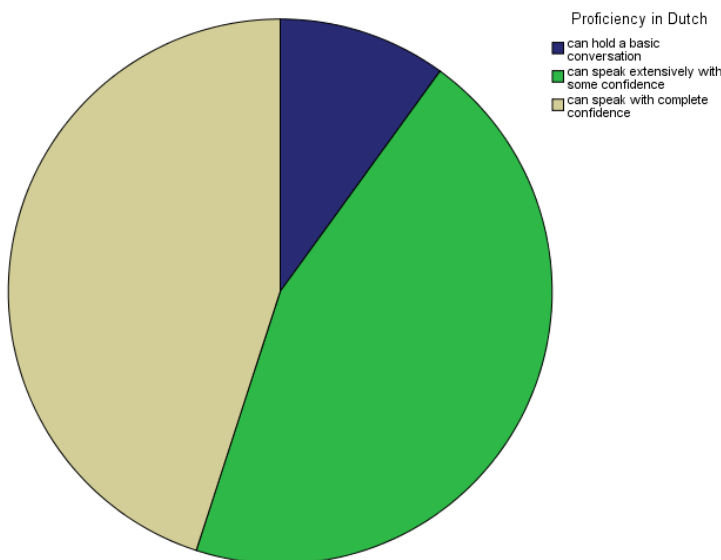
A questionnaire was used to acquire more information about the language background of participants, copies of which can be found in appendix sections 8.1 and 8.2. This was provided in a choice of either Dutch or Papiamento, with the majority of participants choosing to fill out the questionnaire in Dutch. The questionnaire included information about where participants have lived, what languages they use on a daily basis, and their attitudes towards code-switching and towards Dutch and Papiamento (for a complete copy, see §8). The results from the questionnaires provide relevant background information concerning the bilinguals. This aids in the analysis of the experiment results (refer to the relevant introduction on bilingualism presented in §2.1). In the following section, I will detail the information gathered from the results of the questionnaire, which give us more information about the participants.

3.1.1 Questionnaire Results Pertaining to Participants' Backgrounds

Participants were asked to rate how proficient they were in Dutch and Papiamento, on a 4-point scale ranging from 'can speak with complete confidence' to 'know a few words and phrases'. Overall, participants reported a proficiency of 3.8 for Papiamento and 3.3 for Dutch. A paired sample t-test suggests a significant dominance of Papiamento ($t(17)=2.47, p=0.02$). The following two pie-charts illustrate the results. Despite this, only a quarter of the participants chose to complete the questionnaire in Papiamento, with 15 choosing to complete it in Dutch.

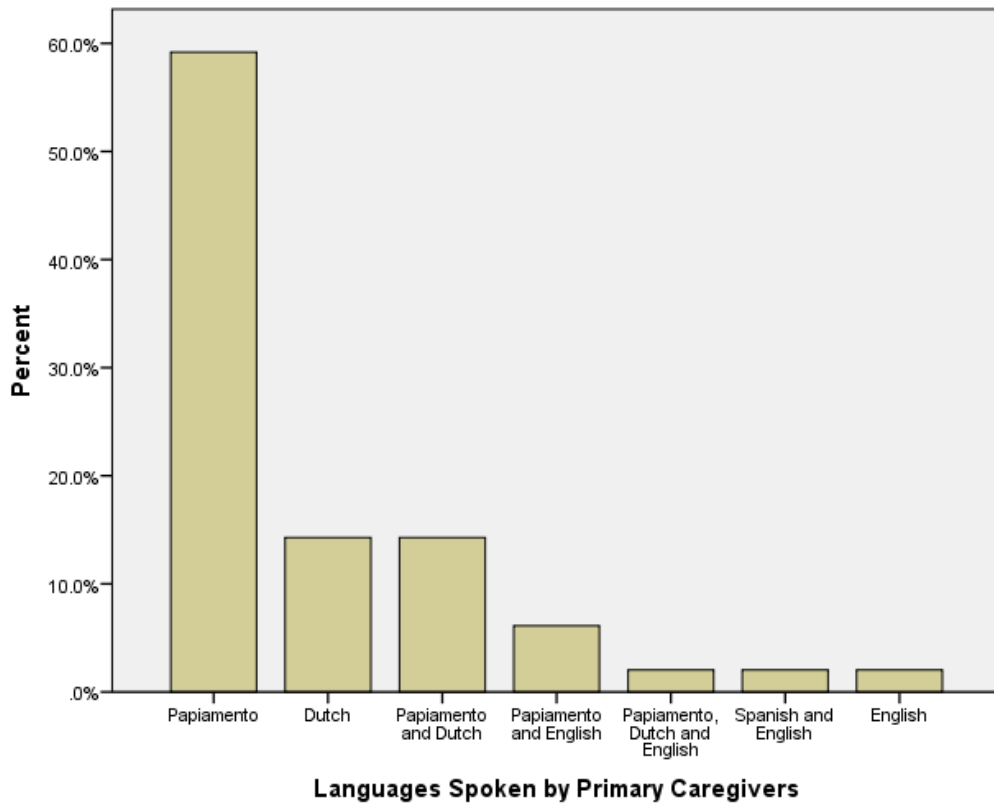


Graph 1. Proficiency in Papiamento



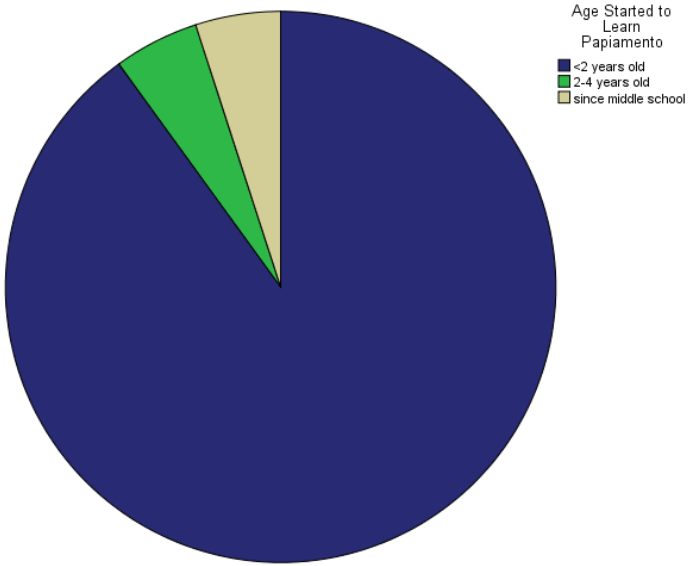
Graph 2. Proficiency in Dutch

Of the twenty participants, all but one participant grew up in Curaçao, Aruba or Sint Maarten; participant 18 grew up in the Netherlands. While children, the majority of participants were spoken to in Papiamentu, as illustrated in graph 3 below. 80% of the participants had lived in the Netherlands for 5 years or less.

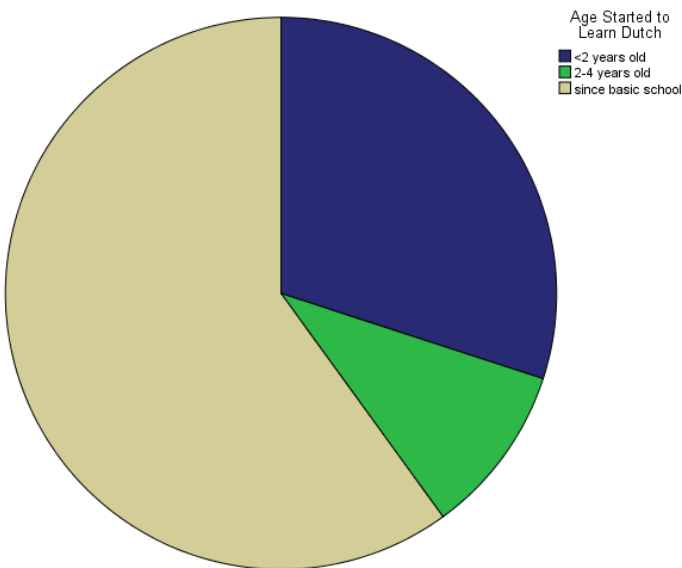


Graph 3. Language exposure during childhood

The language of instruction in basic school was either solely Dutch (60%) or a mixture of Dutch and Papiamentu (40%). The results from middle school were similar, with 75% of participants taught in Dutch, and 25% taught in a mixture of Dutch and Papiamentu. Most participants did not start to learn Dutch until they attended school. These details are illustrated in graphs 4 and 5.

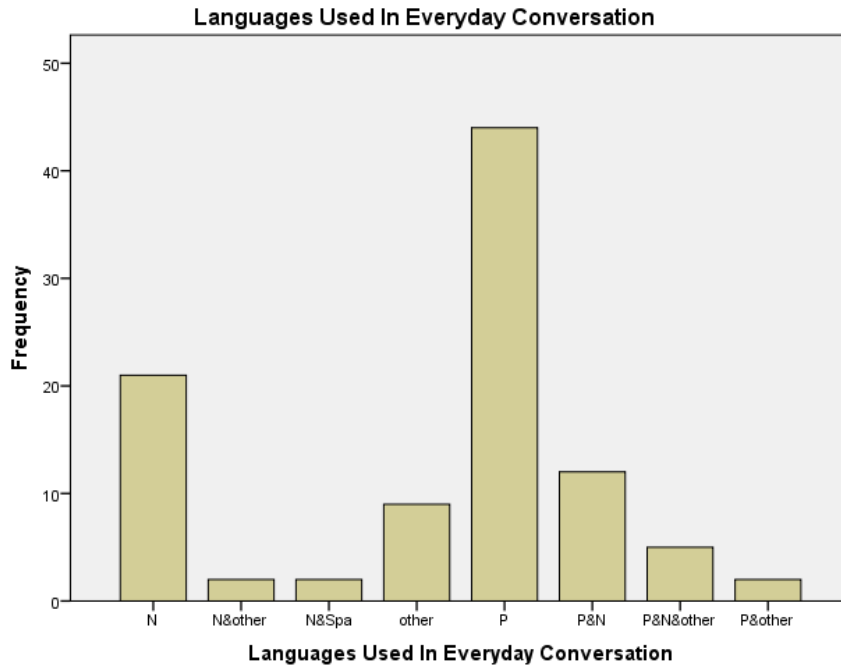


Graph 4. Papiamentu: Age of exposure



Graph 5. Dutch: Age of exposure

With regard to current language use, participants were asked to list five people who they speak with on a daily- or near daily-basis, and to specify what language(s) they use with those people. The following graph displays the results ('P' stands for Papiamentu, 'N' for Dutch, and 'Spa' for Spanish).



Graph 6. Language use

Participants were also presented with a number of subjective characteristics describing Dutch and Papiamentu, and were asked to rate how they felt these terms reflected their views of the languages on a scale from one to five. For example, they were asked to rate first Dutch, then Papiamentu, on how ‘beautiful’ or ‘ugly’ they found the language, with one corresponding to ‘ugly’, and five being ‘beautiful’. Results showed that there was generally little difference in how positively participants rated Papiamentu and Dutch. Participants found Dutch to be more ‘influential’ than Papiamentu, and they found Papiamentu to be slightly more ‘beautiful’ than Dutch.

When asked to state what they would identify themselves as, 50% of participants used ‘Curaçaoan’, three stated that they were ‘Aruban’, two ‘Antillean’ and one ‘Surinamese’. One participant did not respond, and another stated they were a ‘world citizen’. Only two of the participants identified themselves as ‘Dutch’.

These results reveal something about the type of bilinguals that we are dealing with in this study. There are many different factors to bilingualism, which can have an

effect on how and why bilinguals code-switch (Lipski, in press; Licerias, Fernández-Fuertes and Klassen, in press). Knowing more about the group of people we are studying provides essential data to help interpret the results of the experiment (a point put forward in §2.1).

3.1.2 Ethics

To ensure that the data was gathered ethically, all participants gave informed consent before taking part in the investigation. All persons involved were made aware of what would be asked of them, so that they could make an informed decision as to whether or not to take part. They were aware that participation was entirely voluntary, and that they could opt out of taking part at any time without explanation.

3.2 Materials

15 nouns and their corresponding drawing were sampled as a direct object noun from Székely et al. (2003). 17 nouns and their corresponding line drawing were sampled as a subject noun. Furthermore, 15 and 17 nouns respectively were selected as control pictures. An additional 40 non-cognate nouns were selected as a subject noun from the same sources. In addition to the nouns, eight non-cognate adjectives were chosen. For one-third of the sentences, drawings were modified by colouring or resizing the original, so that one of the two drawings was in accordance with the adjective (e.g., a white cow, not a black cow).

No nouns or adjectives used were cognates (words that have a similar orthography, phonology and meaning) in Papiamento and Dutch, as cognates are processed differently to non-cognates (see Van Hell, Litcofsky and Ting, in press; Koostra, Van Hell and Dijkstra, 2012:801).

Using these nouns and adjectives, 40 sets of six simple sentences were created, in the same manner as in the Welsh-English experiment (Parafita Couto et al., under review). Each sentence set contained two control sentences (one in Papiamento and one in Dutch) with grammatical word order. The remaining sentences contained code-switches; two with Papiamento as the matrix language, and two with Dutch. The code-switched sentences had the adjective either before or after the noun.

As an illustration, table 1 below shows the six different rendering of the sentence ‘the bear chased a white cow’, their corresponding matrix language, and whether or not they are compatible with the predictions of the MLF hypothesis and Cantone and MacSwan’s minimalist approach. It is comprised of six conditions: the two control sentences which have no code-switch (A and B), two sentences where the theories make contrasting predictions (D and F), and two sentences where the predictions match (C and E).

Table 1. Characteristics of Materials and Associated Predictions (Papiamento in italics)

	Matrix Language	MLF prediction	MP prediction
A. <i>E oso a yag un koe blanku.</i>	Papiamento	+	+
B. <i>E oso a yag un witte baka.</i>	Papiamento	-	+
E. De beer joeg op een <i>baka</i> witte.	Dutch	-	-
F. De beer joeg op een <i>blanku</i> koe.	Dutch	+	-
C. De beer joeg op een witte koe.	Dutch	No switch	No switch
D. <i>E oso a yag un baka blanku.</i>	Papiamento	No switch	No switch

3.3 Procedure

The experiment took place at Leiden University, in the Social Sciences EEG lab. First, participants were asked to fill out an informed consent form. They were then given a

questionnaire (based on the Bangor Bilingualism centre questionnaire) about their language background, in a choice of either Dutch or Papiamentu (appendix §8.1 and §8.2).

Participants were tested individually, seated in front of a computer. They were instructed to read sentences that were presented to them on the screen, and select the corresponding picture by pressing a button. First, they were given a small preview of six sentences and were asked if they had any additional questions following the training. Next, they were presented with six blocks, each comprising 40 sentences.

For each trial, a fixation cross was displayed for 1000 ms, followed by a blank screen also for 1000 ms. The sentences were presented word by word in the centre of the screen. Each of the six words in the sentences was displayed for 200 ms, and were followed by a black screen for 500 ms. Once the last word had been shown, an image to the left of the screen and one to the right were displayed and remained there until participants responded. One of the pictures matched to the sentence they had just read (with sentences based on the examples given in table 1 above), while the other had a similar meaning. Participants were asked which of the two pictures fitted best with the sentence and were asked to indicate this by pressing a certain button - using the button for the left index finger for the left picture and the button for the right index finger for the right picture). With these responses, it could be ensured that participants would actually read the sentences and would stay attentive throughout the entire experiment. After each response, a blank screen of 500 ms preceded the fixation cross announcing the next trial. Each sentence was presented once during the experiment and only one sentence per set was presented in each block. The sentences were randomised within each block.

3.3.1 Electrophysiological Recording

The EEG was continuously recorded at a rate of 512 Hz from 32 Ag/AgCl electrodes placed according to the extended 10-20 convention from a BioSemi (Active Two)

system. Six additional electrodes were attached on the face of the participant to measure horizontal eye movement and eye blinks. Mastoids were used as the reference electrodes during acquisition. EEG data was referenced on-line to the CMS (Common Mode Sense) and DRL (Driven Right Leg) electrodes, and re-referenced off-line to the mean of the activity at the two mastoid processes. A high pass filter at 0.1 Hz was applied on-line to eliminate DC drifts. Vertical and horizontal eye movements were monitored with two electrodes at the infraorbital and supraorbital and an electrode at the outer canthus of the right eye.

3.4 Data Analysis

EEG recordings were filtered using a high-pass filter with a cut-off of 0.1 Hz (24 dB/oct slope) and a low-pass filter with a cut-off of 30 Hz (48 dB/oct slope). Eye-blink artefacts were corrected using an implementation of the Gratton, Coles and Donchin (1983) algorithm (Brain Vision Analyzer). Epochs with activity exceeding $\pm 75 \mu\text{V}$ at any electrode site were automatically discarded. EEG recordings were then segmented from -100 to 1000 ms relative to stimulus onset. A baseline correction was applied in relation to the 100 ms of pre-stimulus activity. Subsequently, ERPs were calculated by averaging the epochs time-locked to the stimulus of interest.

Four conditions were selected for comparisons. The first condition compared sentence B and D at adjective position. In this condition, the two models make predictions that are mutually exclusive. For example, in sentence B, Cantone and MacSwan's (2009) model predicts a violation while the MLF does not and vice-versa. Conditions A and C were also compared, where the two models predicted a violation in A and no violation in C. In both sets of conditions (B vs. D) and (A vs. C), the language of the adjectives differed: we therefore carried out a control comparison of conditions E and F, in which the language of the adjectives also differed but in which there was no code-switch.

Hypothesis Testing: For each participant, ERP mean amplitudes (μV) as well as peak latencies (ms) were derived from and analysed in the time window 280-340 ms, of an anterior region of the scalp composed of electrodes AF3, F3, F4, AF4 and Fz – a time window and region of interest known to index the processing of a code-switch (Moreno, Federmeier, and Kutas, 2002). The peak detection algorithm was set to return the latency (ms) of the lowest amplitude point (μV) in the time-window region of interest mentioned above. Mean amplitudes and peak latencies were submitted to a repeated-measures ANOVA with Model Prediction as a within-subject factor and amplitude or latency as a dependent variable (Schiller et al., 2003a; Schiller et al., 2003b; Schiller, 2006; Schiller et al., 2006).

One of the limitations of traditional ANOVA approaches as carried out above is that ANOVAs cannot differentiate between the presence and the absence of evidence for the null hypothesis. In other words, once an effect fails to reach a given alpha level ($p < .05$ by convention), it is impossible to know whether this is due to a lack of statistical power or to the genuine absence of an effect. Bayesian statistics, however, can provide such information. We therefore calculated Bayes Factors to investigate our mean amplitude and peak latency effects further. Bayes Factors (BFs) express the ratio of evidence in favour of one vs. another hypothesis. It is therefore possible, from a BF, to obtain information about the likelihood of the null or alternative hypothesis. By convention (Jeffreys, 1961), a BF of > 3 provides moderate evidence for the alternate hypothesis, a BF of > 10 strong evidence in favour of the alternate hypothesis and very strong evidence in favour of the alternate at ratios > 30 . Evidence in favour of the null hypothesis is moderate with a BF $< 1/3$, strong with a BF $< 1/10$, and very strong when BF $< 1/30$. A BF ~ 1 provides no evidence in favour of either hypothesis. BFs were obtained using the Bayes Factor, R package (version 0.9.11-1; Morey & Rouder, 2015). The following section discussed the results from the data analysis.

4 Results

Sentences on which the models make opposite predictions (B vs. D)

The repeated-measures ANOVA on ERP mean amplitudes revealed no significant effect of Model Prediction ($F(1,17) = 0.56; p = .46$; Fig. 2A). Peak-latencies also failed to reveal any significant differences between the sentences of interest ($F(1,17) = .02, p = .89$). We observed moderate evidence in favour of the null hypothesis (Mean amplitude: $BF = 1/3.2$; Peak latency: $BF = 1/4$) indicating no differences between the ERPs elicited by the adjectives in either B or D. These results are illustrated in graph A on the following page.

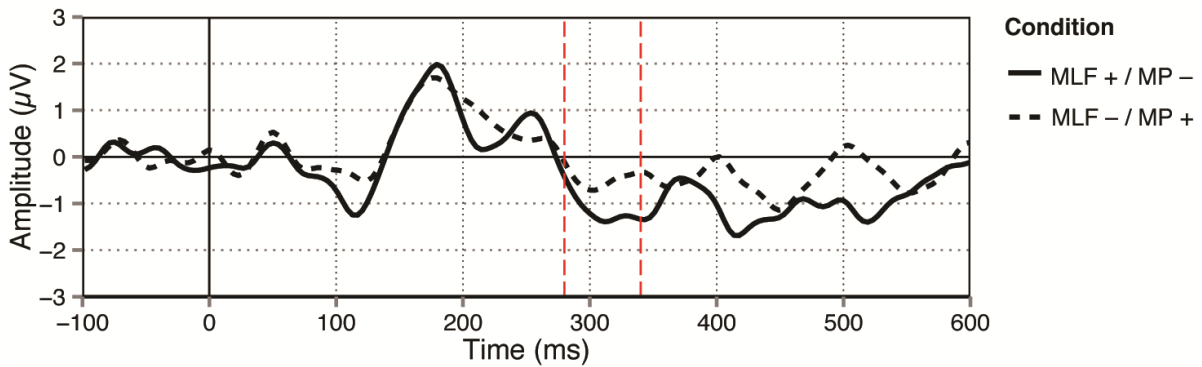
Sentences on which models make similar predictions (A vs. C)

The ANOVA carried out on ERP mean amplitudes revealed no significant effect of Model Prediction ($F(1,17) = .4, p = .53$; Fig. 2B). Peak-latencies were also unaffected by this factor ($F(1,17) = .22, p = .64$). We observed moderate evidence in favour of the null hypothesis (Mean amplitude: $BF = 1/3.4$; Peak latency: $BF = 1/3.8$). These results are illustrated in graph B on the following page.

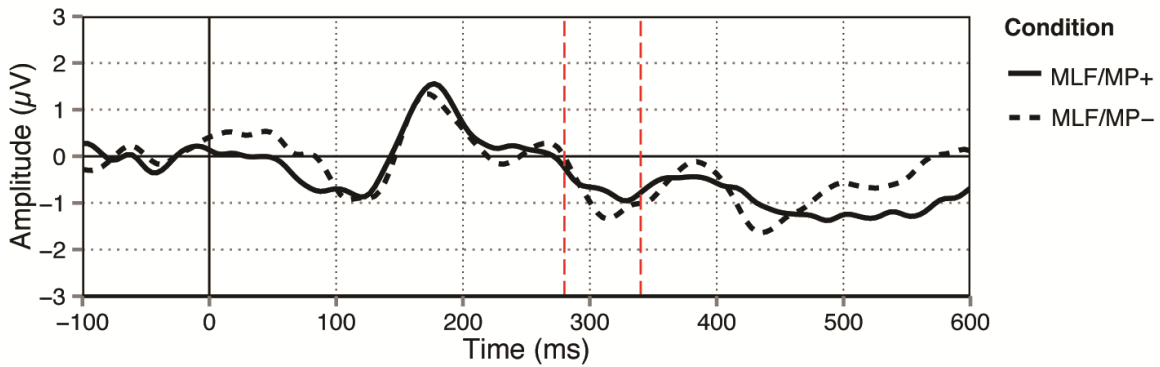
Language control sentences (E vs. F)

There was no significant difference between amplitudes elicited by Papiamento vs. Dutch adjectives ($F(1,17) = 3.58, p = .07$; Fig. 2C). Peak-latency was not modulated by adjective language either ($F(1,17) = 1.53, p = .23$). The Bayes Factors obtained in this comparison (Mean amplitude: $BF = 1.04$; Peak latency: $BF = 1/2.1$) did not provide evidence in favour of either hypothesis. These results are illustrated in graph C on the following page.

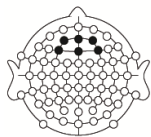
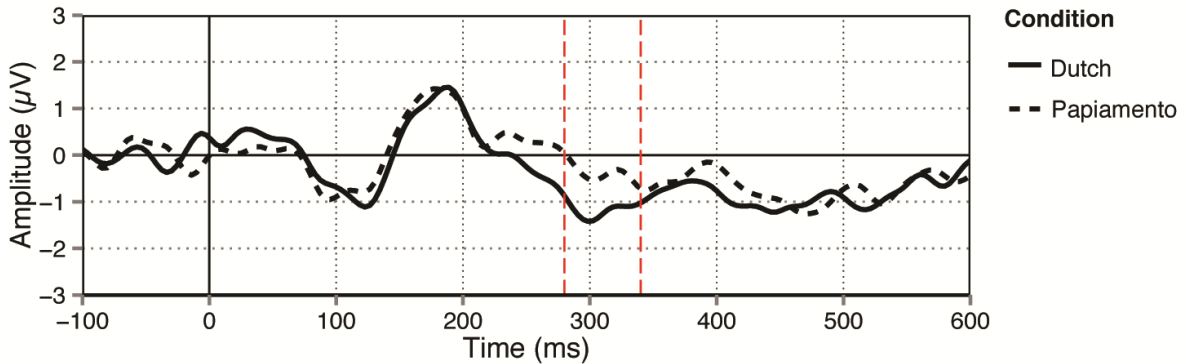
A. Sentences for which both models make orthogonal predictions (B vs. D)



B. Sentences for which both models make parallel predictions (A vs. C)



C. No effect of language on adjective processing



ROI:
AF3, AFz, AF4
F3, Fz, F4

Time window of
analysis (280–340 ms)

5 Discussion

The following section will scrutinise the data gathered, and discuss what conclusions can be drawn from it, with regard to the two theories in question – the MLF theory and the Minimalist Program. I will first describe what was found in the similar study of Welsh-English bilinguals, and what conclusions were gathered (§5.1). I will then describe the findings from this study, and their implications (§5.2). Finally, I will compare these results with those from similar studies (§5.3).

5.1 Summary of results from Welsh-English Studies

The Welsh-English study observed increased anterior negativity only for the violation predicted by the MLF theory, in the sentence where the adjective position was incompatible with the order of the sentence's proposed Matrix Language (Parafita Couto et al., 2013). As anterior negatives flag for syntactic violations, Parafita Couto et al. take this as support of the predictions of the MLF theory. In addition, they did not find any support for the Minimalist Program's predictions. Parafita Couto et al. take this as evidence to support the MLF program.

In similar papers regarding Welsh-English bilinguals, Parafita Couto, Fusser and Deuchar (2015) used a multi-task approach to evaluate the predictions of the MLF and MP models regarding adjective placement in Welsh-English mixed minimal constructions. The naturalistic corpus data and the data elicited through a director-matcher task (Gullberg, Indefrey & Muysken, 2009) were compatible with one another, yielding additional support for the relative superiority of the MLF in terms of word order predictions.

5.2 Present Study

However, in the present study, the results find no support for either theory. As we can see from section 4, the results do not seem to match those found in the similar study regarding Welsh-English bilinguals. While the Welsh-English study (Parafita Couto et al., 2013) found evidence which supported Myers-Scotton's MLF model, none of the data found in this project is significant, though does seem to show slight inclination towards the opposing theory put forth by Cantone and MacSwan (2009). Interestingly, Parafita Couto and Gullberg (2015), who looked at Papiamentu-Dutch corpus data, also found no clear evidence supporting one model over another.

5.3 Comparison with Related Studies

Van Hell, Litcofsky and Ting highlight studies regarding neurocognitive theories and psycholinguistic techniques in the field of intrasentential code-switching, and emphasise the need for further research in the field, to 'further strengthen the link' between psycholinguistics and neurocognitive approaches to the study of intrasentential code-switching (in press). The analysis of similar studies in the field of psycho- and neurolinguistics reveal which methodologies are most effective and provide valuable insight into the inner workings of the bilingual brain, which in turn can shed light on how to interpret the results from this study. The study by Kootstra, Van Hell and Dijkstra aimed to test 'to what extent bilinguals' tendency to copy the position of code-switches from prime sentences in their description of pictures is influenced by lexical repetition between sentences, the presence of a cognate, and by the bilinguals' relative language proficiency' (2012:802). The study analysed the role that lexical repetition, cognates and language proficiency play in priming Dutch-English code-switched sentences in bilinguals, aiming to clarify the 'interactive cognitive mechanisms' which underlie sentence-level code-switching. Describing code-switching as a 'multidimensional process', they conclude by stating that 'the present study shows how general psycholinguistic models of language production

and research on code-switching in sentences can mutually inform each other' (Kootstra, Van Hell and Dijkstra, 2012:814).

In a similar vein, the paper by Parafita Couto, Deuchar and Fusser (2015), on conflict sites of two languages with differing noun-adjective word-order (Welsh and English), used a combination of data gathering techniques, including an elicitation task and a judgement task. They suggest that 'neuroscientific evidence among other innovative methods can make a useful contribution here' (Parafita Couto, Deuchar and Fusser, 2015:82). In addition, Kootstra states that language contact could 'benefit from the addition of a psycholinguistic road' (2015:58). From the conclusions that these various papers find, it seems clear that psycholinguistic and neurocognitive approaches, perhaps combined with naturalistic data, are the right direction when addressing code-switching in this context. The issue does not lie in the approach, but perhaps in the fact that there are different extra-linguistic factors present in bilinguals.

The conflicting results between the Welsh-English and current ERP study point to extra-linguistic factors as being an area of consideration. The disparity between these results and those of the Welsh-English study could be due to differences between the groups of participants. The two groups of participants (the Welsh-English bilinguals and the Papiamento-Dutch bilinguals) did not grow up with the same language background in terms of when they learned and when they use each language. When looking at the details of the two groups of participants, the differences between them are evident.

The Welsh-English bilinguals were mostly early sequential bilinguals, in that they learned Welsh from birth and English a little later in early childhood. Though there was a history of persecution of Welsh in the 19th and 20th centuries, it has become one of language revitalisation's success stories, and there have been significant increases in the number of domains in which Welsh is used (Williams, 2000:677). Bilingualism in Wales is now well established in both policy and practice, and focus

is described as having shifted 'from seeing Welsh in polar opposition to English to a more integrated bilingual one' (Laugharne, 2007:211). Despite Welsh being learnt first, English and Welsh are more or less equally dominant in usage in Wales.

Although the findings from literature and the questionnaire results show that the Papiamentto-Dutch bilinguals in this study are also early-sequential, it is clear that they use Papiamentto more frequently, and that it is therefore more dominant. On Aruba, Bonaire and Curaçao, Papiamentto is the language spoken at home, the language of parents and caregivers. Dutch, in contrast, is not learned until it is obligatorily done so at school. Some authors claim it is still seen as a 'foreign language' and that Papiamentto is used much more frequently in daily life (Severing & Verhoeven, 2001:255; Muysken, Kook & Vedder, 1996:492).

This difference in language dominance could explain why the results of the two experiments differed, as asymmetry between groups of bilinguals and differences in language dominance can have an effect on results. Liceras, Fernández-Fuertes and Klassen focused on Spanish-English code-switching, looking at the effect that language dominance and degree of nativeness have on code-switching patterns and preferences (in press). Drawing from three different hypotheses, their study found evidence that language dominance plays a large role when code-switching with regard to functional-lexical switched Determiner Phrases.

A paper by Van Hell, Litcofsky and Ting (in press) presents a concise overview of a number of studies conducted in the field of intrasentential code-switching. Their analysis of the literature finds that there is a measurable behavioural and neural cost when switching language within a sentence. They found considerable evidence that shows language switching within a meaningful sentence differs fundamentally from switching between single unrelated items.

It could be assumed that the results differed from the Welsh-English study and the present Papiamentto-Dutch study because the groups of bilinguals differed in certain

features, such as dominance. Language dominance might lead to asymmetric reactions of clashes between word order and the morphosyntactic frame. The Welsh-English bilinguals were slightly more 'balanced' in both languages, while Papiamentu was clearly the dominant language in Papiamentu-Dutch bilinguals. Participants were not only slightly more fluent in Papiamentu, but they learned it earlier, and spoke it more often in everyday life.

6. Conclusion

6.1 Summary

As with Parafita Couto et al. 2015 study, we investigated the contrasting predictions of the MLF (Myers-Scotton, 2002) and MP (Cantone & MacSwan, 2009) regarding the mechanisms underpinning code-switching. The specific aim of the study was to see if the findings for Welsh-English bilinguals could be replicated with Papiamentto-Dutch bilinguals, or whether code-switching can be modulated by some other mechanisms.

As we can see from section 4, the results do not seem to match those found in the similar study regarding Welsh-English bilinguals. The Welsh-English study (Parafita Couto et al., 2013) found evidence which supported Myers-Scotton's MLF model. Although none of the data found in this project is significant, it does seem to show slight inclination towards the opposing theory put forth by Cantone and MacSwan (2009).

The disparity between these results could be due to differences between the groups of participants. The two groups of participants (the Welsh-English bilinguals and the Papiamentto-Dutch bilinguals) did not grow up with the same language background in terms of when they learned and use each language. The Welsh-English bilinguals were very much simultaneous bilinguals, in that they learned both languages at more or less the same time from birth. In contrast, on Aruba, Bonaire and Curaçao, the majority of people learn Papiamentto in the home, and do not learn Dutch until they reach basic school, resulting in early-sequential bilinguals. Though the Welsh language was persecuted in British history, the current linguistic status is that both languages are thriving in Wales, and there seems to be little 'competition' between them. On Aruba, Bonaire and Curaçao, Papiamentto is the language of the home, the language of parents and caregivers. Dutch, in contrast, is not learned until it is obligatorily learned in school. It is described by some authors as still being seen as a

'foreign language' and that Papiamentu is used much more frequently in daily life (Severing and Verhoeven, 2001:255; Muysken, Kook and Vedder, 1996:492).

6.2 Limitations

Although interesting results were gathered from this study, further work is necessary for a more conclusive contribution to the field. Had a wider number of participants been available, then we could be more confident in attributing any change to the independent variables. It could be argued that, due to the relatively small number of participants (18), it is difficult to make any bold conclusions from the results gathered, as 18 participants could be considered too small a number for results to be viewed as representative sample.

In addition, one additional comparison (both matrix languages for each condition) could perhaps have been interesting to analyse as well, but was missed out in the present study due to time constraints. Future experiments could benefit from the addition of said conditions.

6.3 Suggestions for Further Work

There have been calls to focus on social and psychological factors which influence CS in bilinguals (Lipski, in press). It would be interesting to conduct a similar experiment with two groups of bilinguals who speak the same two languages but in different contexts. For example, there are many groups of Spanish-English bilinguals across the world, but they differ in terms of which language is used in various situations or domains, which language is learned first, and which is more dominant. Using the same languages controls for various confounding factors, and the comparison across different 'styles' of bilinguals/bilingualism could shed light onto the differing results from the Papiamentu-Dutch and Welsh-English studies. In the

same vein, one could compare bilinguals who are highly fluent with those who are less fluent. As Lipski states, 'the question remains as to whether a single model of bilingual production is responsible for CS by fluent bilinguals as well as by low-fluency L2 learners or heritage or attriting speakers' (in press).

In addition, only one contrasting aspect of the two languages studied was examined in the present experiment, i.e. that of adjective-noun conflict sites. Further studies would greatly benefit from examining other conflict sites in Papiamentu and Dutch, such as Subject Object Word order. These could then be studied in conjunction with adjective-noun conflict sites.

As a final note, it would be worth investigating what would happen if the instructions were given in 'code-switched' form, rather than just in Dutch, which could trigger a code-switching 'mode'. These different approaches may yield fruitful results and, in any case, will contribute to ongoing research in bilingualism and code-switching.

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8 Appendices

8.1 Questionnaire in Dutch

Vragenlijst

Deelnemer nr.

We zouden u erg dankbaar zijn als u ons de volgende achtergrond informatie wilt geven om ons te helpen met ons onderzoek.

1. Bent u: Man Vrouw ? 2. **Leeftijd:**.....

3. Wat is op dit moment uw beroep (of als u met pensioen bent of werkloos, wat was het laatste beroep dat u hebt beoefend voordat u met pensioen bent gegaan of werkloos bent geworden)?

.....

4. Geef alstublieft aan waar u voor langere perioden hebt gewoond:

v.b.: Plaats: *Willemstad, Curaçao* Data: *1982-1993*

Plaats: *Kralendijk, Bonaire* Data: *1993-1999*

Plaats: *Tilburg, Nederland* Data: *1999-2002 +*

Plaats: *Leiden, Nederland* Data: *2002-2005*

Plaats: Data:

Plaats: Data:

Plaats: Data:

Plaats: Data:

Plaats: Data:

Plaats: Data:

5. Wat is uw hoogst genoten opleiding?

Basisonderwijs

MAVO/VMBO

MBO

HAVO

VWO

HBO

Universitair – Bachelor

Universitair – Master

Geen

6. Vanaf wanneer kunt u Papiamentu spreken?

Vanaf dat ik 2 jaar of jonger was

Vanaf dat ik 4 jaar of jonger was

- Vanaf de basisschool
- Vanaf de middelbare school
- Ik heb Papiamentu leren spreken als volwassene

7. Vanaf wanneer kunt u Nederlands spreken?

- Vanaf dat ik 2 jaar of jonger was
- Vanaf dat ik 4 jaar of jonger was
- Vanaf de basisschool
- Vanaf de middelbare school
- Ik heb Nederlands leren spreken als volwassene

8. Op een schaal van 1 tot 4, hoe goed vindt u dat u Papiamentu kunt spreken?

- 1** Ik ken alleen een paar woorden en uitdrukkingen
- 2** Ik kan me met vertrouwen uiten in een basisgesprek
- 3** Ik kan me met wat vertrouwen uiten in uitgebreide gesprekken
- 4** Ik kan me met volle vertrouwen uiten in uitgebreide gesprekken

9. Op een schaal van 1 tot 4, hoe goed vindt u dat u Nederlands kunt spreken?

- 1** Ik ken alleen een paar woorden en uitdrukkingen
- 2** Ik kan me met vertrouwen uiten in een basisgesprek
- 3** Ik kan me met wat vertrouwen uiten in uitgebreide gesprekken
- 4** Ik kan me met volle vertrouwen uiten in uitgebreide gesprekken

10. Welke taal (of talen) heeft uw moeder met u gesproken wanneer u aan het opgroeien was (indien van toepassing)?

- Papiamentu
- Nederlands
- Papiamentu & Nederlands
- Anders (geef a.u.b. aan welke).....
- Niet van toepassing

11. Welke taal (of talen) heeft uw vader met u gesproken wanneer u aan het opgroeien was (indien van toepassing)?

- Papiamentu
- Nederlands
- Papiamentu & Nederlands
- Anders (geef a.u.b. aan welke).....
- Niet van toepassing

12. Welke taal (of talen) heeft een andere voogd of verzorger met u gesproken wanneer u aan het opgroeien was (indien van toepassing)?

- Papiamentu
- Nederlands
- Papiamentu & Nederlands
- Anders (geef a.u.b. aan welke).....
- Niet van toepassing

13. In welke taal (of talen) kreeg u voornamelijk les op de basisschool?

- Papiamentu
- Nederlands
- Papiamentu & Nederlands
- Anders (geef a.u.b. aan welke).....

14. In welke taal (of talen) kreeg u voornamelijk les op de middelbare school?

- Papiamentu
- Nederlands
- Papiamentu & Nederlands
- Anders (geef a.u.b. aan welke).....

15. Maak hieronder een lijst van vijf mensen waarmee u het vaakst mee in uw alledaagse leven spreekt, hetzij persoonlijk of aan de telefoon, bijvoorbeeld uw partner, uw kind, een vriend(in), een collega etc. Noteer daarbij welke talen u het vaakst gebruikt tijdens een gesprek met die persoon, zoals te zien in de voorbeeldtabel.

Naam van persoon of relatie	Taal meest gesproken met die persoon: (plaats een vinkje in één vakje hieronder voor elke regel)			
	Papiamentu	Nederlands	Zowel Papiamentu als Nederlands	Een andere taal
1. <i>Jan</i>	✓			
2. <i>Moeder</i>		✓		
3. <i>Baas</i>			✓	
4. <i>Janneke</i>				✓
5. <i>Zus</i>		✓		

Vul alstublieft onderstaand tabel in

Naam van persoon of relatie (gebruik fictieve namen als u wilt)	Taal meest gesproken met die persoon: (plaats een vinkje in één vakje hieronder voor elke regel)			
	Papiamentu	Nederlands	Zowel Papiamentu als Nederlands	Een andere taal
1.				
2.				
3.				
4.				
5.				

16. Hoe zou u Papiamentu als taal op een schaal van 1 tot 5 rangschikken volgens de volgende eigenschappen? Omcirkel één nummer in elke regel.

	←—————→					
ouderwets	1	2	3	4	5	modern
onvriendelijk	1	2	3	4	5	vriendelijk
zonder invloed	2	3	4	5		invloedrijk
niet inspirerend	1	2	3	4	5	inspirerend
nutteloos	1	2	3	4	5	bruikbaar
lelijk	1	2	3	4	5	mooi

17. Hoe zou u Nederlands als taal op een schaal van 1 tot 5 rangschikken volgens de volgende eigenschappen? Omcirkel één nummer in elke regel.

	←	→				
ouderwets	1	2	3	4	5	modern
onvriendelijk	1	2	3	4	5	vriendelijk
zonder invloed ¹	2	3	4	5		invloedrijk
niet inspirerend	1	2	3	4	5	inspirerend
nutteloos	1	2	3	4	5	bruikbaar
lelijk	1	2	3	4	5	mooi

18. Vind u uzelf voornamelijk...?

- Curaçaoënaar
- Bonaireaan
- Arubaan
- Antilliaans
- Nederlandse
- Anders (geef a.u.b. aan wat):.....

19. In hoeverre bent u het eens met de volgende stelling:

“In alledaagse gesprekken houd ik de talen Papiamentu en Nederlands gescheiden.”

- 1 Geheel mee oneens
- 2 Oneens
- 3 Niet eens of oneens
- 4 Eens
- 5 Geheel mee eens

20. In hoeverre bent u het eens met de volgende stelling:

“Mensen moeten het vermijden om Papiamentu en Nederlands met elkaar te mengen in hetzelfde gesprek.”

- 1 Geheel mee oneens
- 2 Oneens
- 3 Niet eens of oneens
- 4 Eens
- 5 Geheel mee eens

Hartelijk bedankt voor uw tijd en medewerking.

8.2 Questionnaire in Dutch

Kuestionario

Participante no.....

Nos lo ta hopi buenagradesidu si señor(a) lo por duna nos e siguiente information di señor(a) su pasado pa yuda nos ku nos investigashon.

1. Shon ta: Homber Muhé ? 2. Edat:.....

3. Kiko ta señor(a) su profeshon na e momentu aki (of si señor(a) ta ku penshon of si señor(a) ta desempleá, kiko tabata e delaster profeshon ku señor(a) tabata tin prome ku señor(a) a baha ku penshon of a bira desempleá)?

.....

4. Por favor indiká na unda señor(a) a biba pa tempu significante:

v.b.: Lugá: <i>Willemstad, Kòrsou</i>	Fecha: <i>1982-1993</i>
Lugá: <i>Kralendijk, Bonèiru</i>	Fecha: <i>1993-1999</i>
Lugá: <i>Tilburg, Hulanda</i>	Fecha: <i>1999-2002</i>
Lugá: <i>Leiden, Hulanda</i>	Fecha: <i>2002-2005</i>

Lugá: Fecha:

Lugá: Fecha:

Lugá: Fecha:

Lugá: Fecha:

Lugá: Fecha:

Lugá: Fecha:

5. Kua nivel di edukashon ta e nivel supremo ku señor(a) a gosa di dje?

- Enseñansa básiko
- MAVO/VMBO
- MBO
- HAVO
- VWO
- HBO
- Universidat – Bachelor
- Universidat – Master
- Niun

6. For di kua tempu señor(a) por papia papiamentu?

- For di mi tabata tin 2 aña of menos
- For di mi tabata tin 4 aña of menos
- For di enseñansa básiko
- For di skol sekundario
- Mi a siña papia papiamentu komo adulto

7. For di kua tempu señor(a) por papia hulandes?

- For di mi tabata tin 2 aña of menos
- For di mi tabata tin 4 aña of menos
- For di enseñansa básiko
- For di skol sekundario
- Mi a siña papia hulandes komo adulto

8. Kon bon señor(a) ta pensa señor(a) por papia papiamentu riba un eskala di 1 te 4?

- 1 Mi konose un par di palabra ku ekspreshon so
- 2 Mi por ekspresá mi mes ku konfiansa den un kòmbersashon básiko
- 3 Mi por ekspresá mi mes ku un tiki konfiansa den un kòmbersashon amplio
- 4 Mi por ekspresá mi mes ku hopi konfiansa den un kòmbersashon amplio

9. Kon bon señor(a) ta pensa señor(a) por papia hulandes riba un eskala di 1 te 4?

- 1 Mi konose un par di palabra ku ekspreshon so
- 2 Mi por ekspresá mi mes ku konfiansa den un kòmbersashon básiko
- 3 Mi por ekspresá mi mes ku un tiki konfiansa den un kòmbersashon amplio
- 4 Mi por ekspresá mi mes ku hopi konfiansa den un kòmbersashon amplio

10. Kua lenga(nan) señor(a) su mama tabata papia ku señor(a) ora señor(a) tabata kresiendo (si ta aplikabel)?

- Papiamentu
- Hulandes
- Papiamentu & hulandes
- Otro (por favor nombra kua).....
- No ta aplikabel

11. Kua lenga(nan) señor(a) su tata tabata papia ku señor(a) ora señor(a) tabata kresiendo (si ta aplikabel)?

- Papiamentu
- Hulandes
- Papiamentu & hulandes
- Otro (por favor nombra kua).....
- No ta aplikabel

12. Kua lenga(nan) señor(a) su vogt of kuidadó tabata papia ku señor(a) ora señor(a) tabata kresiendo (si ta aplikabel)?

- Papiamentu
- Hulandes
- Papiamentu & hulandes
- Otro (por favor nombra kua).....
- No ta aplikabel

13. Na kua lenga(nan) señor(a) a haña les durante di señor(a) su enseñansa básiko?

- Papiamentu
- Hulandes
- Papiamentu & hulandes
- Otro (por favor nombra kua).....

14. Na kua lenga(nan) señor(a) a haña les durante di señor(a) su skol sekundario?

- Papiamentu
- Hulandes
- Papiamentu & hulandes
- Otro (por favor nombra kua).....

15. Traha un lista akibou di sinku hende ku señor(a) ta papia ku ne mas tantu den señor(a) su bida di tur dia, sea personalmente of na telefòn, por ehèmpel señor(a) su partner, su yu, un amigu/amiga, un kolega etc. Nota ku esei kua lenga(nan) señor(a) ta usa durante di un kòmbersashon ku e persona ei, manera den e tabèl di ehèmpel.

Number di persona of relashon	Lengá mas papiá ku e persona ei: (marka e den e vak pa tur persona of relashon)			
	Papiamentu	Hulandes	Tantu papiamentu komo hulandes	Un otro lenga
1. <i>Jan</i>	✓			
2. <i>Moeder</i>		✓		
3. <i>Baas</i>			✓	
4. <i>Janneke</i>				✓
5. <i>Zus</i>		✓		

Por favor yena e tabèl akibou

Number di persona of relashon (usa nomber fiktisio si ta nesesario)	Lenga mas papiá ku e persona ei: (marka e den e vak pa tur persona of relashon)			
	Papiamentu	Hulandes	Tantu papiamentu komo hulandes	Un otro lenga
1.				
2.				
3.				
4.				
5.				

16. Kon lo señor(a) pone papiamentu komo lenga riba un eskala di 1 te 5 sigun e siguiente karakterístikanan? Sirkulá un number riba tur liña.

		←	→			
antikuá	1	2	3	4	5	modèrnu
desagradabel	1	2	3	4	5	agradabel
sin influensha	1	2	3	4	5	influyente
sin inspirashon		1	2	3	4	5 inspirá
inútil		1	2	3	4	5 utilisabel
mahos	1	2	3	4	5	bunita

17. Kon lo señor(a) pone hulandes komo lenga riba un eskala di 1 te 5 sigun e siguiente karakterístikanan? Sirkulá un number riba tur liña.

		←	→			
antikuá	1	2	3	4	5	modèrnu
desagradabel	1	2	3	4	5	agradabel
sin influensha	1	2	3	4	5	influyente
sin inspirashon		1	2	3	4	5 inspirá
inútil		1	2	3	4	5 utilisabel
mahos	1	2	3	4	5	bunita

18. Kon señor(a) ta sinti su mes prinsipalmente?

- Kurasoleño
- Bonerianu
- Rubiano
- Antiano
- Hulandes
- Otro (por favor nombra kua).....

19. Den ki medida señor(a) ta di akuerdo ku e siguiente:

“Den kòmbersashon di tur dia mi ta tene e lenganan papiamentu i hulandes separá.”

- 1 Mi no ta kompletamente di akuerdo
- 2 Mi no ta di akuerdo
- 3 Mi ta neutral
- 4 Mi ta di akuerdo
- 5 Mi ta kompletamente di akuerdo

20. Den ki medida señor(a) ta di akuerdo ku e siguiente:

“Hende mester evitá di usa papiamentu i hulandes den un kòmersashon.”

- 1 Mi no ta kompletamente di akuerdo
- 2 Mi no ta di akuerdo
- 3 Mi ta neutral
- 4 Mi ta di akuerdo
- 5 Mi ta kompletamente di akuerdo

Masha danki pa señor(a) su tempu i koperashon.