

Possibility and necessity modals in Gbe and Surinamese creoles

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Abstract

In this paper we compare positive possibility and necessity modals in the Gbe languages and Surinamese creoles that emerged out of language contact between European and African languages, most importantly the Gbe languages. We propose that different varieties of Gbe languages played a role in the development of the modals in the creoles. A comparison of the influence of the modals on the temporal interpretations of the sentences in which they occur in the substrate languages with that of equivalent modals in superstrate languages suggest that while there is indeed substrate influence in the development of the modals, the influence from the superstrate cannot be discounted. The findings nuance earlier proposals that explain the emergence of the modality system as deriving from a Gbe model. © 2012 Elsevier B.V. All rights reserved.

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1. Introduction

The expression of Tense, Modality and Aspect (TMA) in creole languages has been the focus of scholarly attention since the late 19th century. Van Name (1869), Schuchardt (1914) and Hesseling (1905) already suggest that in particular the ways in which TMA is expressed in creole languages exhibit influences from the African languages of the slaves who were deported from West Africa to the Caribbean, including Suriname. In contemporary contact linguistics it is heavily debated whether the creole TMA system can be traced back to Africa. The Surinamese creoles feature prominently in this debate, resulting in a wealth of studies on the expression of TMA in Sranan, Ndyuka, Pamaka and Saamáka, also referred to as Saramaccan in the literature, with often conflicting outcomes.³ For example, McWhorter (1999) maintains that the Surinamese creole TMA system only dimly reflects West African patterns. He states that the system has instead developed largely according to its own dictates. Migge (2006), Winford and Migge (2007) and Migge and Winford (2009), on the other hand, show that the TMA systems of the Surinamese creoles display many features that, in their view, parallel

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³ Here we will mention only Rens (1953), Simons (1955), Voorhoeve (1957), Charry et al. (1983), Seuren (1981, 1983), Alleyne (1987), Byrne (1987, 1992), Sebba (1987), Wendelaar and Koefoed (1988), Huttar and Huttar (1994), Veenstra (1996), Arends and Perl (1995), McWhorter (1999), Carlin and Arends (2002), Essegbey (2005), Aboh (2006), Lefebvre and Loranger (2006), Damonte (2002), Migge (2003, 2006), Narrog (2008), Winford (2000), Van den Berg (2007), Bally (2005), Goury (2003), Van de Vate (this volume).

those of the Gbe languages. Examples are the perfective and imperfective in the Surinamese creoles which, according to Winford and Migge (2007), draw on the perfective and the progressive respectively in the Gbe languages. Similarly, Migge and Winford (2009:130) argue that the Eastern Maroon creoles (EMC) express all the senses of possibility in a manner similar to the Gbe languages and, therefore, that “the overall structure of this subsystem is modeled on Gbe [...]” However, within the Gbe languages, some varieties (e.g. Maxigbe, Xwlagbe, and Fongbe) use a strategy that is somewhat different from that of other varieties (e.g. Ewegbe). This raises two possible sources for the parallelism identified by Migge (2006) and Migge and Winford (2009) for which they make different choices: Migge (2006) proposes that they are based on the Gbe varieties like Maxigbe, while Migge and Winford (2009) consider an alternative scenario according to which they are modeled on the potentiality modal in Ewegbe.

In this paper we revisit the comparison of expressions of possibility and necessity modality in the Gbe languages with the Surinamese creoles, in particular (diachronic and synchronic) Sranan and Saamáka.⁴ We explore the similarities and differences in form and meaning between the languages under investigation. In particular we look at the influence of the modals on the temporal interpretation of sentences in which they occur and compare these to interpretations in the modal equivalent in the Gbe languages. We note that while there are some notable semantic similarities between the Gbe forms and their creole counterparts, there are important differences as well. Thus, the findings of our study enable us to determine with greater precision the African input in the creole formation process. Under Lefebvre’s (1998) version of relexification theory, the agents of creole formation copy their West African L1 structures to the emerging creole, while replacing the L1 lexical items with items derived from the European input. Our findings suggest that the issue is more nuanced. Migge (2003), however, proposes a different directionality. She assigns a greater role to the European input in the creole formation process, as the European source structures serve as the main frames onto which the African L1 structures were superimposed rather than vice versa (Migge, 2003:128). Thus it is particularly important to include the structural patterns of the modals in our investigation.

The paper is divided as follows: in section 2 we discuss the reason why we chose to compare the Surinamese creoles with Gbe languages. Section 3 explores the expression of possibility and necessity in the Gbe languages and the Surinamese creoles. We note that the Gbe languages distinguish between two types of ability (referred to here as “inherent” and “acquired” ability which, depending on the way one looks at it could be said to exhibit some reflexes in the creoles. Section 4 divides the verbs in all the languages into two groups based on the temporal interpretation of their unmarked form. One group is composed of verbs that have present-time interpretation in unmarked contexts while the second group has past-time interpretation. This grouping of verbs is relevant for the temporal interpretation of the modals. In section 5, we compare the temporal interpretations that possibility and necessity modals discussed in section 3 yield when they embed verbs in the two groups. Included in this section are the interpretations of modals in two superstrate languages. Section 6 concludes the paper and discusses implications for theories of creole formation.

2. Making a case for the Gbe languages

In this paper we investigate the extent to which Gbe languages impacted the TMA of Surinamese creoles in comparison with English and Portuguese, the superstrate languages. For the purposes of our argumentation we assume that a property that exists in the Gbe languages and the creoles but not in the superstrate language is due to influence of the Gbe languages. Likewise if it exists in the creoles and the superstrate but not in the Gbe languages, then it is due to the superstrate. If all the languages have the said property, we consider both superstrate and substrate to have reinforced the feature in the creole. We choose the Gbe languages because records show that a great number of the slaves exported to Suriname was from the Slave Coast, the historical region name for the area that now includes south-eastern Ghana, eastern Togo, Benin and the western part of Nigeria (Arends, 1995). The records consist of combined findings of the Dutch historian Johannes Postma on the Dutch Atlantic slave trade between 1675 and 1803, including port of embarkation, destination and numbers of slaves, as well as findings from the historian Patrick Manning and P.E. Hair on the internal political developments in the region, as the origins of the slaves were not necessarily limited to the surroundings of the ports from where the slaves were shipped. The table below (Table 1) gives a rough summary of the distribution of the ethnolinguistic origins of the slaves (for more details the reader is referred to the introduction of this volume and the work of Arends, 1995).

The main languages of the Slave Coast were the Gbe languages, among which Fongbe, spoken in present-day Benin lies in the east, and Ewegbe, spoken in present-day Ghana, lies in the west. Smith (1987b, 1996, 2001) has demonstrated

⁴ The Surinamese creoles include Sranan, the creole language and lingua franca that emerged on the plantations and in the cities, and further the Western Maroon Creoles Saamáka, the Eastern Maroon Creoles Ndyuka (or Okanisi), Pamaka and Aluku or Boni, as well as Kwinti, that is lesser known and underdocumented. The Maroon Creoles are generally viewed as an offspring of an earlier variety of (proto-)Sranan, with Saamáka being the oldest sister.

Table 1
Slave distribution from 1650 to 1803.

Years	Origin	Ratio
1650–1700	Slave Coast (Gbe):Loango (Kikongo)	1:1
1690–1720	Slave Coast (Gbe):Loango (Kikongo)	3:1
1720–1740	Gold Coast (Akuapem, Ga):Slave Coast (Gbe)	3:1
1740–1803	Windward Coast (Kru, Southern Mande, Gola, Baule):Slave Coast (Gbe):Gold Coast (Abron, Anyi-Baule)	2:1:1

that the Gbe languages played an important role in the lexicon and syntax of Surinamese creoles. In section 1, we also mention the hypothesis by Migge (2006), Winford and Migge (2007), and Migge and Winford (2009) that the Surinamese creole TMA system has been modeled on the Gbe languages.

All of the Surinamese creoles have their origin in an early contact language that emerged as a means of interethnic communication between Europeans and Africans on the coastal plantations and in the main city of Suriname from the late 17th to the 18th centuries. While contemporary Sranan can be seen as a direct continuation of this early contact language, Saamáka is one of its earliest offshoots. Founders of the oldest Saamáka *lo* (clan), the Matjau clan, escaped from the plantations far to the south in 1690, while founders of other Saamáka clans are generally assumed to have left later (1690–1712). The escape from the plantations and the subsequent settlement in the far south brought about changes in several social and linguistic factors, resulting in, for example, less influence of the European languages on this creole than before. Furthermore, as the population of these new settlements was more homogenous in terms of origin in comparison to plantation life (e.g. there were no Europeans), with a different, perhaps less complex, social stratification and a higher percentage of locally-born children, it is not difficult to see how that would favor L1 transfer alongside innovations that would result from universals operating from first and second language acquisition and use in order to establish a new local identity.

Considering the above, we do not adopt a unitary scenario of creole formation in Suriname. The histories of the Surinamese creoles are not all that similar to warrant such a unified theory. For example, the nativization of Saamáka and Sranan proceeded at a different pace. Whereas Saamáka nativized relatively fast, the rate of nativization of Sranan was very slow: even in late 18th century Suriname, over a century after colonization, a large proportion of the plantation slaves were still sent to the plantations from West Africa, owing to the very high replacement rate of slaves in Suriname. Only 30% of the slave population was locally-born at that time (Arends, 1995:269). In contrast, even though precise figures on population growth in the case of the Saamáka in the 18th century are lacking, Price (1975) estimates that by the late 18th century, “well over 99% of the population would have been Suriname-born” (Price, 1975:471). For example, several (late) 17th century kinfolk of Alabi, a renowned chief of the Saamáka in the late 18th century, were already Suriname-born (Price, 1990).⁵ Furthermore, since 1762, Saamáka society had been relatively closed to newcomers, as this was one of the conditions stipulated in the peace treaty between the Saamáka and the Dutch colonial government (Arends and van den Berg, 2004).⁶ Thus while Africans outnumbered Suriname-born creoles on the plantations throughout the 18th century, locally-born Saamáka soon formed the majority among the Saamáka population. Given these sociohistorical circumstances, we agree with Price, 1975: “[I]t would not be surprising, then, to find on the plantations in 1800 much purer “Africanisms” in certain realms of life than existed in [Saamáka] at the same point in time” (Price, 1975:471).

Saamáka further differs from Sranan in terms of co-existence not only with the African languages but also with the European languages. While in the case of Sranan, the European planters, merchants, indentured servants, and soldiers, as well as their wives and children, may have transferred features of their European languages into the creole speech that subsequently may have been transferred to the speech of the slaves, this is less likely in the case of Saamáka. Thus, we agree with Muysken (2012:17) who writes: “[Saamáka] may be the best example of an L1-oriented creole (Alleyn, 1980), given its origin as a Maroon creole and the dominant contribution from the Gbe languages.”

In sum, based on the different histories and concomitantly different social factors, we assume that the African languages may have exerted their influence on the Surinamese creoles in different stages of their developments. Some crosslinguistic effects that can be traced back to the African languages are expected to occur in the earliest developmental stages of the creoles, while other effects may manifest themselves only in later stages of development as long as societal and individual bilingualism are maintained. Since societal bilingualism did not last for a long time in the case of Saamáka,

⁵ The Surinam-born foreparents of Alabi include Yáya (1684–1782), Dabí (1689–1765), Adjágbò (1705–1799), Abini (1700–1767) and Akoomí (1700–1780), see Price (1990:10).

⁶ Occasionally the Saamáka accepted newcomers as members of their society, but their numbers were not great and they maintained a different social status.

crosslinguistic effects of the latter later kind are not expected to occur in the Saamáka language. They are, however, expected to occur in Sranan as societal and individual bilingualism has been a characteristic feature of Surinamese plantation society throughout the 18th century. One support for this is that in contemporary Sranan the default position of demonstrative *disi* is the postnominal position which similar to the position of the demonstrative in the African substrate languages. However, Bruyn (1995) shows that the postnominal position is not the original position of the Sranan demonstrative. Initially, *disi* occupied in prenominal position. From the mid-18th century onwards it is found before as well as after the noun. The appearance of *disi* in postnominal position results from substrate influence, more specifically transfer from the Gbe languages (Bruyn, 1995). Contemporary Saamáka differs from contemporary Sranan in that it has no postnominal demonstrative *disi*. It does have, however, definite determiner *di* (<*disi*) in prenominal position. This is evidence that substrate languages can exert their influence at different stages of creole formation. In this paper, we observe how this plays out in the modality domain, particularly regarding possibility and necessity modals.

3. On the expression of possibility and necessity

Migge (2006) and Migge and Winford (2009) note the existence of a strong parallelism in the expression of possibility in the Gbe languages and, particularly, the Eastern Maroon creoles (EMC). Sranan, on the other hand, displays some differences which they attribute to Dutch influence. In the following sections we discuss the forms that are used to express possibility modality (ability, permission, root and epistemic possibility) and necessity (obligation and inferred certainty) in the languages. One sense of possibility modality discussed by Migge (2006) that all the languages express in similar manner is learned ability which they all express with a 'know'-verb in combination with a nominalized complement in the Gbe language, and a noun or activity verb in the creoles.⁷ That discussion is not repeated in this paper.

3.1. Possibility modality in the Gbe languages and the Surinamese creoles

We begin this section by looking at the various expressions for possibility modality in the Gbe languages and then the Surinamese creoles, Saamáka and Sranan, followed by a discussion of the similarities and differences.

3.1.1. Possibility modality in the Gbe languages

The Gbe languages make two main distinctions in the expression of possibility modality, especially positive possibility. The first one is semantic, and involves a distinction between what we propose to call 'inherent' and 'acquired' physical ability. This distinction, as far as we can tell, occurs in all the Gbe languages. The second distinction is in the forms used to express possibility in the languages: while some varieties use a monomorphemic form, others use a bi-morphemic form. These distinctions are discussed in the following subsections. We then propose that the difference in form is due to grammaticalization.

3.1.1.1. Possibility distinctions in the Gbe languages. We begin this section with a discussion of the distinction between inherent and acquired physical ability. By inherent physical ability we refer to ability that is part of the natural development of an entity. This includes the ability to walk, see and speak. When these are conceptualized as inherent abilities of an entity, they are expressed in the progressive. Consider the examples below from Ewegbe and Fongbe:

- | | | | | |
|----|-------------------------|------------|-----------------|---------------------|
| 1. | <i>ɖɛví-á</i> | <i>le</i> | <i>zɔ-zɔ-ní</i> | Ewegbe ⁸ |
| | <i>yɔkpɔví-ɔ</i> | <i>ɖɔ</i> | <i>zizɔ-wɛ</i> | Fongbe |
| | child-DEF | be_at:PRES | RED-walk-PROG | |
| | 'The child is walking.' | | | |
| | 'The child can walk.' | | | |

The two translations in (1) illustrate that the progressive can express a state of affairs that is currently ongoing, as well as an inherent ability. This is the expression that would be used to talk about a child who has gone from the stage of crawling to that of walking. The (in)ability reading of the progressive is underscored by the following examples from Ewegbe and Ajagbe, that feature a permanently blind man.

⁷ In Saamáka, the 'know'-verb can be followed by a FU-complement clause but not the possibility modal *sa*. In Early Sranan the know-verb can occur with as well as without a FU-complement.

⁸ The following abbreviations are used in glossing: 3 = third person, DEF = definite, IMPF = imperfective, MOD = modal, NARR = narrative, NEG = negative, NPRES = non-present, PL = plural, POT = potential, PREP = preposition, PRES = present, PROG = progressive, PST = past, RED = reduplication, REL = relativizer, SC = serial connective, SG = singular, TP = terminal particle.

- 2a. *ɲútsu-a mé-le nú kpɔ-m̩ o* Ewegbe
 man-DEF NEG-be_at:PRES thing see-PROG NEG
 ‘The man cannot see (lit. the man is not seeing).’
- 2b. *ɔ-ɲ-kpɔ nú nɔ, ɲkú gbã nɔ* Ajagbe
 3SG-NEG-see thing PROG eye break give:3SG
 ‘He can’t see, he is blind.’

Replacing the progressive with a modal shifts the interpretation from inherent to acquired or circumstantial ability. Consider the sentence below:

3. *Nyɔnu-a â-téɲú á-kpɔ nú* Ewegbe
 Woman-DEF POT-be_able SC-see thing
 ‘The woman is able to see.’

This sentence describes a situation where something blocking the view of the woman has been removed and she is thereby able to see. It does not describe a situation in which the woman is able to see because she is not blind.⁹ All the other senses of positive dynamic possibility, including ability, permission, epistemic and root possibility, are expressed through forms in different stages of grammaticalization. We begin with the expression of dynamic possibility in Ewegbe followed with the other possibility senses. In the next subsection, we discuss our grammaticalization proposal.

In Ewegbe dynamic possibility senses are expressed by the *a*-morpheme in combination with *téɲú* ‘be able’, as shown in example (3) above. The *a*-morpheme has been analyzed as a modal that expresses potentiality (Essegbey, 1999, 2008). The expression of the various senses is illustrated below:

Ability

- 4a. *M-a-téɲú á-dró nú má¹⁰* Ewegbe
 1SG-POT-be_able SC-lift thing that
 ‘I am able to lift that thing.’

Permission

- 4b. *Kofi â-téɲú á-yi afíma* Ewegbe
 Kofi POT-be_able SC-go there
 ‘Kofi may go there.’

Root possibility

- 4c. *Ga qó Kofi sí azɔ́, â-téɲú á-fle vu-a* Ewegbe
 Money reach Kofi hand now 3SG:POT-be_able SC-buy vehicle-DEF
 ‘Kofi has got money now, he can buy the vehicle.’

The above senses are expressed with the mono-morphemic forms like *sixú*, *téɲ* (or its variants, such as *tíɲ*) alone in some varieties like Fongbe and Xwlagbe (cf. Migge, 2006; Migge and Winford, 2009). The examples provided below from Xwlagbe are discussed in Migge (2006)¹¹:

(Physical ability)

- 5a. *é jɔ́ àsú, é tén kɔ́ kilo kɔ́nwèwì* Xwlagbe
 He be man 3SG can lift kilo 100
 ‘He is strong, i.e. he acts like a man should. He can lift 100 kilos.’ Migge (2006:ex 10)

⁹ We presented 5 speakers of Ewegbe with sentences containing the progressive and equivalent with the ‘be-able’ modal. When asked to tell the difference between the two, the modal sentence was always given a circumstantial reading instead of inherent ability.

¹⁰ One could argue that the ability to lift an object could also be inherent. Our use of the term is narrow, and, in that sense, not everyone can lift any object as part of their natural development.

¹¹ An anonymous reviewer informs us that in Maxigbe, *la* is used for physical ability in (5a), *sixu* for (5b) and either *la* or *sixu* for (5c). Interestingly, there is no combination of *la* and *sixu*.

(Permission)

- 5b. *èvi ɔ tɛn nɔ fí xwèsà xèɔ* Xwlagbe
 Child DET can stay here night this
 'The boy may stay here tonight.' Migge (2006:ex 11)

(Root possibility)

- 5c. *vɔ é tɛn lutter ná mɛ-bú yá é tɛn kpé dɔ ɛmɛ-bú wú* Xwlagbe
 But 3SG can fight PREP person-other EMPH 3SG can associate
 PREP person-other skin
 [Talking about the presidential campaign:] 'But he can fight for someone else, he can get together with someone else.' Migge (2006:ex 12)

Compared to the Ewegbe examples discussed earlier, one would say that varieties like Xwlagbe that use *tɛn*, as in (5a–c), have dropped their equivalent of the potential in the expression of dynamic possibility.

In the expression of epistemic possibility, Ewegbe drops the *téŋú*-morpheme and uses the potential alone while Xwlagbe maintains *téŋ* alone (a strategy employed by Fongbe also which uses *sixú*). Consider the following examples: Epistemic possibility

- 6a. *Kofi â-nɔ afé-á me* Ewegbe
 Kofi POT-be_at:NPRES house-DEF inside
 'Kofi may be in the house.'
- 6b. *Jan tɛn le ɔxwéme sìɔ* Xwlagbe
 Jean can COP house now
 'Jean may be at home now.' (Migge and Winford, 2009)

Ewegbe uses a modal *nyá* to express certainty of a state of affairs that occurred in the past. When the modal occurs with the potential, it indicates the possibility that the state of affairs occurred. It is no longer a certainty. This is shown below:

- 7a. *Kofi nyá fle afé-á* Ewegbe
 Kofi MOD buy house-DEF
 'Kofi did buy the house.'
- 7b. *Kofi â-nyá fle afé-á* Ewegbe
 Kofi POT-MOD buy house-DEF
 'Kofi may have bought the house.'

This is further evidence that the *a*-morpheme expresses potentiality in Ewegbe.

In sum, all the Gbe languages distinguish between inherent and non-inherent ability, expressing the former with a progressive construction but they differ slightly in the expression of the other possibility meanings. While varieties like Xwlagbe, Maxigbe and Fongbe express all of them with a mono-morpheme, varieties like Ewegbe distinguish epistemic possibility, which they express with a potential morpheme only, from the remaining possibility meanings which they express with the potential and *téŋú*. The varieties that use the mono-morpheme include Ajagbe, Wacigbe, Xwelagbe, Xwlagbe and Maxigbe, all spoken in Benin, and Gengbe, spoken in Togo (Migge, 2006). Note that Fongbe also behaves in a like manner. These languages are all to the east of Ewegbe which uses the other strategy. Note that all the discussions involve positive possibility.¹²

¹² The discussion is strictly about positive possibility meanings. The expression of negative possibility meanings is more varied. Space does not allow us to get into the detail here but see Migge (2006).

3.1.1.2. *A grammaticalization trip.* A question that needs to be answered regarding the distinction in form which we described in the preceding section is how come varieties like Fongbe and Xwlagbe use a mono-morphemic form for all the possibility senses while Ewegbe uses a bi-morphemic form for all but one possibility sense. We propose that this is due to grammaticalization of the forms in the Gbe languages. A sentence like (8a) below, which is a repetition of (4a), shows that unlike Fongbe the expression of dynamic possibility in Ewegbe can be said to conflate having the ability to do something, and circumstances making it possible to do so:

- 8a. *M-a-téŋú á-dró nú má* Ewegbe
 1SG-POT-be_able SC-lift thing that
 'I am able to lift that thing.'
- 8b. *N-(ná) sixú sɔ* Fongbe
 1SG-FUT be_able take
 'I will be able to lift it.'

As (9) below shows, when the potential is removed from *téŋú*, one gets the interpretation that the ability has been demonstrated. It is therefore no longer a potential.

9. *Me-téŋú dró nú má* Ewegbe
 1SG-be_able lift thing that
 'I was able to lift that thing'

This example demonstrates clearly that the potential sense in (8a) is expressed by the potential morpheme. The curious thing is that the *na*-morpheme in Fongbe (8b), unlike the *a*-morpheme in Ewegbe (8a), is optional in the expression of potential ability (one consultant told us that it is used when a speaker wants to be polite). Note that as we observed above, in Gbe varieties like Xwlagbe, *téŋ* does not even occur with a *(n/ŋ)a*-form. How do we explain this?

A comparison of *(l/n)a* and *téŋ(ú)/sixú* in the Gbe languages shows that while *(l/n)a* occurs as a modal in some varieties and tense in others, *téŋ(ú)/sixú* runs the gamut from (partially) lexical in some variants to fully grammaticalized in others. The flux between a lexical and a grammatical-category item in the status of *téŋú* is captured in the following quote by Ameka (2008:145):

Ability and possibility are expressed by the verb noun collocation *té ŋú* 'press body' [...]
 As a preverb modal expression the form *té* does not take the Habitual marking for verbs.
 When it occurs with the Habitual then it is unambiguously a verb. In many cases it functions as a modal.

Ameka goes on to provide the following example which shows that speakers optionally assign the habitual to *té* when they treat it as a verb:

10. *ɖeví-á mé-té(-á) ŋú ɖu-a nú o* Ewegbe
 Child NEG-press-HAB BODY eat-HAB thing NEG
 'The child is not able to eat (customarily).' (Ameka, 2008:ex 17)

To the extent that *té* can take the habitual suffix in example (10), the construction is similar to serial verb constructions (SVCs) in Ewe, where all verbs compulsorily take the habitual morpheme. The difference, in this case, is that the Habitual is optional on the *té*-verb.

A second verbal property of *té* involves nominalization. In the Gbe languages, nominalization of a verb and complement involves the fronting of the complement and reduplication of the verb. This yields the result provided below:

11. *Té + ŋú => ŋutété* Gbe
 Overwhelm + body ability

On the one hand, the verbal component *té* of the *téŋú* combination retains some of its verbhood as it can undergo nominalization and take the habitual morpheme. On the other hand, the optionality of the Habitual in examples like (10) is an indication that *té* is losing its verbhood and undergoing grammaticalization. Further evidence of the grammaticalization of *téŋú* is the fact that the verb and nominal can act as a unit that takes a pronominal complement, as shown below:

12. *a-téŋú-i-a?* Gbe
 2SG:POT-be_able-3SG-Q
 'Can you do it?'

The third person pronoun is the only pronoun that can occur as a complement for *téŋú* and it can only refer to an activity. Yet while *té* hovers between a lexical item and a grammaticalized element in combination with its complement *ŋú* in Ewegbe, the two have completely grammaticalized into a modal verb in other varieties (cf. Migge and Winford, 2007), to the point where they have even undergone phonological erosion to yield *téŋ* in some variants and *tíŋ* in others.

There is also a difference in the degree of grammaticalization between the *(l)a*-morpheme in Ewegbe and the *(n)a* counterpart in varieties like Fongbe and Xwlagbe. Essegbey (1999, 2008) shows that the *a*-morpheme expresses states of affairs that have the potential to occur either in the present, past or future. As such, it is not a tense marker. By contrast, Lefebvre and Brousseau (2002) argue that *na* is fully grammaticalized as tense in Fongbe, an argument that Aboh (2004) also makes for Gungbe, and Winford and Migge (2007) observe for other varieties like Maxigbe and Xwlagbe. Since grammaticalization paths generally move from modal (deontic modality) to tense (future) rather than the other way round (Traugott, 1972; Bybee et al., 1994), we may conclude that the *na*-morpheme is more grammaticalized than the *a*-morpheme.¹³

Based on the above discussion, we propose an earlier (call it Proto-Gbe) scenario in which a lexical *té* combined with a spatial nominal *ŋú* to express ability. In order to indicate that this ability is a potential in an entity, the potential modal was required. Without the potential, the verb expressed the realization of an ability to carry out a state of affairs specified by a following verb (cf. example 9 above). With the passage of time, the verb and nominal began to grammaticalize into a single unit. Those varieties in which they grammaticalized fully dropped the potential morpheme, as the emergent form took on modal meanings itself. For these languages the potential modal morpheme, thus freed, moved on to undertake a tense function. Such varieties no longer required a potential to express a modal meaning. In varieties like Ewegbe, on the other hand, the verb retained some part of its lexical meaning. As such, the potential was still required to express potentiality of possibility meanings. In the next subsection we discuss possibility markers in the creoles.

3.1.2. Possibility modality in the Surinamese creoles

The Surinamese creoles express possibility modality quite differently, as is discussed in great detail by Winford and Migge (2007) and Migge and Winford (2009) for Sranan and EMCs. While the EMCs and Saamáka subsume all types of positive possibility under the modal *sa*, Sranan uses different auxiliary verbs in addition to *sa* to express different types of possibility modality.¹⁴ In what follows we focus on Saamáka and Sranan.

3.1.2.1. Possibility modality in Saamáka. In Saamáka, the modal *sa* expresses possibility modality. The morpheme conveys several possibility readings, including learned ability, physical ability, general ability, permissive and speculative epistemic possibility. Saamáka contrasts the use of *sa* with its imperfective morpheme in a way that is similar to the distinction that the Gbe languages make between inherent and acquired ability. The following sentences illustrate this:

- 13a. Context: The man is blind
Di womi á ta si sondi Saamáka
 DET man NEG IMP see thing
 'The man cannot/doesn't see.'
- 13b. Context: The children are playing in front of the man's house and they are partially blocking his view.
Di womi á sa si di sondi Saamáka
 DET man NEG MOD see DET thing
 'The man cannot see the thing.'
- 14a. Context: A man has been in an accident and as a result of that his is paralyzed and will not be able to walk anymore.
Di womi á ta waka (moo) Saamáka
 DET man NEG IMP walk more
 'The man cannot walk anymore.'
- 14b. Context: Someone has broken his leg and cannot walk at the moment, but he will be able to do so when her leg is healed.
Di womi á sa waka. Saamáka
 DET man NEG MOD walk
 'The man cannot walk.'

¹³ It remains to be explained why Ewegbe has a more reduced form (i.e. *a*) than Fongbe, (i.e. *na*) although, it should be pointed out that the varieties spoken in Togo still use *lá*.

¹⁴ In the case of the EMCs, *sa* is primarily used for positive constructions while *man* and *poy* are found in negative constructions. Occasionally, *sa* is found in negative constructions, and then mostly in the case of epistemic possibility (Migge, 2006).

(13a) and (14a) involve the use of the imperfective to express blindness and paralysis respectively, both of which deprive an individual of an inherent ability. (13b) and (14b) show that when the disability is temporary, then the imperfective is used. This is exactly the kind of distinction that speakers of the Gbe languages would make raising the question whether that is the distinction being made here. Saamáka consultants explain that they use the imperfective to refer to a permanent state meaning that they are making any conscious connection between the imperfective and inherent ability. However, considering that the superstrates do not make such a distinction, we consider its existence in Saamáka to be significant. In the conclusion, we propose that this distinction is influenced by the one in the Gbe languages. Let us now consider the other possibility senses.

Permissive

- 15a. *Ée i libí búnu tidé nóo i sa gó peé ku déé óto mii.* (Saamaka)
 if 2SG live good today NARR 2SG MOD go play with DET.PL other child
 'If you behave well today, you may go and play with the other children.'

Root possibility

- 15b. *Mi ké dí tyúba pasá u mi sa gó* (Saamaka)
 1SG want DET rain pass FU 1SG MOD go
 'I want the rain to pass so that I can go.'

Speculative Epistemic possibility

- 15c. *Senni sa mbéi dí wósu akí, kandé hén baáa hén mbéi hén.*
 Senni MOD make DET house here maybe 3SG brother 3SG make 3SG
 'Senni might have built this house, maybe his brother, he has built it.'

The examples show that Saamáka uses *sa* to express (almost) all positive possibility meanings.

3.1.2.2. Possibility modality in Sranan. In contemporary Sranan, *sa* generally expresses uncertain or dubitative future, as well as intention, weak obligation and requirement, hypothetical and speculative epistemic possibility meanings (Winford, 2000; Wendelaar and Koefoed, 1988; Voorhoeve, 1957; Simons, 1955 etc.). The modal auxiliary *kan* (from English *can* and/or Dutch *kan* 'can') is used to express most types of (positive) root possibility as well as (physical) ability and permission; *mag* (from Dutch *mag* 'may') also expresses permission, and *man* occurs in cases of (negative) root possibility and (physical) ability. Except for *man*, all the other forms and uses are already attested in the historical sources from the 18th century that offer a window on the language as it was spoken in earlier stages of its development (Van den Berg, 2007:208–220).¹⁵ Some Early Sranan examples are the following:

Root possibility

- 16a. *Langa monni mi kan kisi alle zantie na engelsze konderi* (van Dyk, ca. 1765)
 With money 1SG can get all thing PREP English country
 'With money I can get everything in England.'

Ability

- 16b. *Mi no kan blibi alle da takki den negere ben doe na mi*
 1SG NEG can believe all DET talk DET.PL black PST do PREP 1SG
 'I cannot believe everything the blacks are telling me.' (van Dyk, ca. 1765:94)

¹⁵ Over the years multiple historical documents in and on the languages of the slaves of African descent in Suriname have been uncovered, resulting in a substantial and digitized corpus of 18th century texts (the Suriname Creole Archive, www.suca.ruhosting.nl and www.mpi.nl/resources). The texts include (a) religious texts such as bible translations and hymns (Schumann, 1781; Anonymous, ca. 1800); (b) judicial documents such as transcripts of interrogations and witness reports (Court Records); (c) official documents such as a peace treaty; (d) travel reports and (e) documents that were created for the purpose of language instruction such as dictionaries and language manuals by a Moravian missionary (C.L. Schumann) as well as secular persons (J.D. Herlein, P. van Dyk, J. Nepveu and G. C. Weygandt).

Permission

- 16c. *myki Koridon go hakkesi na da misi disi libi na zy kerki*
 Make K. go ask PREP the lady REL live PREP side church
Offe a plessi mi kan kisi passi lange boote. (van Dyk, ca. 1765:91)
 if 3SG please 1SG can get passage with boat
 'Let Koridon go and ask the lady who lives next to the church whether it is alright with her for me to travel on her boat.'

Permission

- 16d. *zomma no mag jarri hem da ogeri kwitti na mi hay.* (van Dyk, ca. 1765:76)
 Person NEG may carry 3SG PRS evil really PREP 1SG eye
 'People may not carry him off, it is a terrible sight.' [talking about a dead body on the site, that may not be removed as ordered by the director of the plantation.]

Note that (16d) is the only example in the entire corpus of Early Sranan in which *mag* is used to express permission. In most cases permission is expressed through the use of *kan*, as illustrated in (16c) above.

The use of *man* as an auxiliary verb expressing ability is not encountered in Early Sranan, whereas it is found frequently in contemporary Sranan. The contemporary modal auxiliary *man* grammaticalized from the noun *man* in a nominal predicate construction (early 18th century) via an intermediate stage where it co-occurs with a reduced sentential complement (late 18th century) to an auxiliary verb (19th century).¹⁶

(Ability)

17. *ju sa mann va tjarri datti?* (Schumann, 1783:107)
 2SG POT able to carry that
 'Will you be able to lift that?'

Even though most of the contemporary forms are attested already in Early Sranan, the grammaticalization of *man* illustrates that the Early Sranan modality system was more varied than its contemporary equivalent. Further evidence of this variation is presented by the use of *wil* in one of the earliest sources,¹⁷ that is replaced with *sa*, and sometimes *wanni* 'want' (desire, intention), in later works. Compare (18a) with (18b):

- 18a. *Oe tem wie wil gaeu na Riba?* (Herlein, 1718:122)
 Q time 1PL IRR go LOC river
 'When will we go up river?'
- 18b. *Hoe tem wi za jam* (van Dyk, ca. 1765:26)
 Q time 1PL IRR eat
 'When will we eat?'

Sa is not encountered in this Early Sranan source. In addition to auxiliary *wil*, possibility modality can be expressed through adverbial phrases in this source, leaving the main verb unmarked (19a). In later revisions of early sources these uses are sometimes corrected, as in (19b).¹⁸

¹⁶ See Van den Berg (2001, 2007) and Van den Berg and Arends (2004) for more on the grammaticalization of *man* in Sranan. The impact of the grammaticalization of *man* on the meanings and uses of *kan* have not yet been investigated in great detail and remains for future investigation.

¹⁷ Rens (1953), Voorhoeve and Lichtveld (1975), Arends (1995) and Van den Berg (2007) suggest that *wil* in this source can be interpreted as a marker of later time reference similar to the English future tense marker *will*, or as modal auxiliary expressing intention and desire similar to Dutch *wil(len)* 'want'. Note that in various English-based creoles, such as Jamaican Creole and Carriacouan Creole, the irrealis marker *we/wi* derives from English *will*.

¹⁸ This would imply a frequency rise of the use of *sa* during the 18th century. A comparative quantitative analysis of the distribution and conditioning of *sa(l)* in Sranan and Negerhollands is currently being conducted at the Radboud University of Nijmegen to provide empirical support for this hypothesis.

Table 2
Possibility modals.

	Inherent physical ability	Non-inherent physical ability	Permission	Root possibility	Epistemic possibility
Maxigbe/Fongbe	PROG	tén/tín/sixú	tén/tín/sixú	tén/tín/sixú	tén/tín/sixú
Ewegbe	PROG	â-ténú	â-ténú	â-ténú	â
Saamáka	IMP		sa	sa	sa
Early Sranan	kan	kan, man fu	kan, mag	kan	(wil)/sa
Contemporary Sranan	kan	kan, man	kan, mag	kan	sa

19a. *Mie Misisi take jou oudy. Akesi of joe tan na house?* (Herlein, 1718:122)

1SG miss talk 2SG howdy 3SG-ask if 2SG stay PREP house

'My lady greets you. She asks if you will be at home.'

19b. [2e Reegel men zegt] *a-hakisi effi missie sa tan na* Hosso (Nepveu, 1770:274)

second line one say 3S-ask if lady POT stay PREP house

'second line, one says: "She asks if the lady will be at home".'

It is possible that *sa* was used in a wider range of contexts in Early Sranan than in contemporary Sranan, and that *kan* may have taken over certain meanings that were originally associated with *sa*. One support for this is the fact that in Early Sranan *sa* is the only possible form in a constructions such as (20), whereas both *sa* (epistemic) and *kan* (ability) are allowed in contemporary Sranan.¹⁹

20. *Husomma sa pulu helu na tarrawan?* (Early Sranan, Schumann, 1783:64)

Person POT remove weight PREP other-one

'Who can remove the curse from another person?'

Unlike Saamáka, Sranan does not display any evidence of a distinction between inherent and physical ability.

3.1.3. Summary

The discussions so far can be summed up in the table below.

From the results in Table 2, we can see that if the Gbe languages influenced the creoles, the possible candidate for such an influence is either the potential modal (*la*) in the Ewegbe variants, the Maxigbe/Fongbe *tén/sixú* type, or both. Migge (2006:48) writes:

The most likely scenario would be that native speakers of Gbe established an interlingual identity between *sa* and the native Gbe future marker. As a result, *sa* most likely came to encode notions ranging from a more definite future to an uncertain future. *Sa* then became restricted to expressing potential and uncertain future and epistemic possibility.

The problem from this position, as seen in our discussion is that in Fongbe/Maxigbe type languages where *la/na* has grammaticalized into a future marker, there is no connection between the possibility modals and this future marker when it comes to expressing possibility senses. An alternative proposal by Migge and Winford (2009:149) is that "the range of meanings of the potential closely resembles that expressed by *sa* in the Maroon creoles." However, Table 2 shows that the potential by itself does not cover all the possibility senses in the Ewegbe variant. We revisit this issue in the conclusion where we propose that both variants contributed to the development of possibility modals in the creoles. This position is supported by the temporal interpretation of the modals which we discuss in section 5. Before that we discuss the expression of necessity.

3.2. Necessity

Migge (2006) provides an extensive comparison of the expression of obligation in the Gbe languages and the creoles. In this section we limit ourselves to a discussion of the salient forms.

¹⁹ Interestingly, Schumann (1783:64) translates *sa* with *kan* and not *könnte*, the more epistemic form: 'welcher Mensch kann den andern vom Fluch erlösen?'.

3.2.1. Expressing obligation in Gbe

Migge (2006) shows that both strong and weak obligations are expressed with *dó* (*/n*)*a* in some Gbe varieties. One of these varieties is Maxigbe which has the example provided below:

21. *Egbets dó ná nu esi* Maxigbe
Human must FUT drink water
'Humans must drink water.'

In Ewegbe both senses are expressed in structures that have schematically been represented as *E- '3SG Expletive' Verb bé COMP' clause*" (Ameka, 2008:147). There are three such expressions in Ewegbe namely, *éle bé* which means literally 'it is located that', *edze bé* which literally means 'it is fitting that' and *ehĩá bé*, literally, 'it needs that'. For the sake of space we limit illustration to the most common.

22. *É-le bé Kofi ná-dzó* Ewegbe
3SG-be_at that Kofi SUBJ-leave
'Kofi has to leave.'

(22) shows that such expressions require the use of the subjunctive (*n*)*a*.²⁰ *Ele bé*, is also used to express weak obligation, just like *dó ná* in Maxigbe:

- 23a. *É-le bé na-dzra ga dó* Ewegbe
3SG-be_at that 2SG:SUBJ-hide money arrive
'You should save money.'
- 23b. *O dó na kple akwé tuwe* Maxigbe
2SG must FUT collect money yours
'You should save your money.' (Migge, 2006:ex 49)

Éle bé is also used to express deductive epistemic modality (inferred certainty). Variants like Maxigbe (and Fongbe) still use *dó* (*n*/*l*)*a*. These are illustrated below:

- 24a. *É-le bé wo-a-nɔ afé-á me* Ewegbe
3SG-be_at that 3SG-POT-be_at:NPRES house-DEF inside
'He has to be at home.'
- 24b. *Kəkɛtɔ á dó lá kú kpo é* Maxigbe
Driver DET must FUT die sure EMPH
'The driver must surely be dead.' (Migge, 2006:ex 57)

The discussion shows that while Ewegbe uses a phrasal form to express strong and weak obligation as well as deductive epistemic modality, other varieties use *dó* (*n*/*l*)*a*. The varieties which employ the latter strategy include Ajagbe, Wacigbe, Xwelagbe, Xwlagbe and Maxigbe, Fongbe, and Gengbe, (Migge, 2006) all of which, with the exception of Gengbe, are spoken in Benin.

3.2.2. Obligation in the Surinamese creoles

The modal auxiliary *musu* (from English *must* or Dutch *moeten*) is used to express (strong and weak) obligation as well as deductive epistemic modality. Some examples for Saamáka and Early Sranan are presented below.²¹

Obligation

- 25a. *Dí mii musu féndi dí soóto feen, ée náso á sa gó a wósu déndu.* (Saamáka)
DET child MOD find DET key FU.3SG if NEG 3SG.NEG MOD go PREP house inside
'The child must find his key, if he does not find it he cannot enter the house.'

²⁰ Migge takes the *na* that occurs in the eastern varieties to represent Future.

²¹ In addition to *musu*, Early Sranan displays a range of less grammaticalized constructions that are used to express obligation and possibility (Van den Berg, 2007), including *futti* 'fit'. The meanings and uses of *futti* resemble to some extent Ewe *edze bé* 'it is fitting that' mentioned in the previous section. Like its Ewe counterpart, *futti* is found in constructions with an expletive subject, but it also occurs with an agentive subject in the Early Sranan sources.

Table 3
Necessity modals.

	Strong obligation	Deductive epistemic
Maxigbe/Fongbe	<i>dó (n/l)á</i>	<i>dó (n/l)á</i>
Ewegbe	<i>éle bé</i> <i>edze bé</i> <i>éhiā bé</i>	<i>éle bé</i>
Saamáka	<i>Musu</i>	<i>musu</i>
Early Sranan	<i>Musu</i>	<i>mu(su)</i>
Contemporary Sranan	<i>mu(su)</i>	<i>mu(su)</i>

- 25b. *Dem musse pulu dem hatt* (Early Sranan, Schumann, 1783:29)²²
 3PL must pull 3PL hat
 ‘They have to take off their hat.’

Deductive Epistemic

- 25c. *Freddy musu dóu a wósu kaa a dí yúu akí.* (Saamáka)
 Freddy MOD arrive LOC house already PREP DET hour here
 ‘Freddy must have arrived at home already, at this hour.’
- 25d. [A] *Joe abie dan da slotro foe d’jarrie* (Sranan)
 2SG have then DET key of garden
 ‘Do you have then the key of the garden?’
- [B] *Nono, mara mie briebe a hanga na ondro da spieglic*
 nono but 1SG believe 3SG hang PREP bottom DET mirror
 Nono, but I think it is below the mirror.’
- [A] *Mie no sie em*
 1SG NEG see 3SG
 ‘I don’t see it.’
- [B] *Dan a moe didon na tapoe tafla* (Early Sranan, Weygandt, 1798:117)
 Then 3SG must lie.down PREP top table
 ‘Then it must be on the table.’

The above discussion can be summed up in the table below (Table 3).

Migge (2006) notes that while the Gbe languages and the creoles use a single form to express strong and weak modality, English uses two different forms (i.e. *must* and *should*) to express these two senses. She therefore proposes that the creole form is modeled on the Gbe languages. It is clear that unlike ability which we propose is modeled on the potential in Ewegbe, the necessity modals would be modeled on the Fongbe/Maxigbe type modals. This is because the Ewegbe uses phrasal forms while the Fongbe/Maxigbe variants use real auxiliaries. We now explore how the various modals affect the temporal interpretation of sentences in the two groups of languages. The interpretation is dependent on the group to which the verbs in the sentences belong. We therefore discuss that first.

4. Verb groups

Verbs in the Gbe languages and the creoles can be divided into two main groups depending on the default temporal interpretation that their unmarked form receives in a sentence.

4.1. Verb groups in Gbe

Welmers (1973:346) uses the term ‘factative’ to refer to an unmarked aspect in West African languages. Functionally, verbs belonging to one of the classes receive a present-time interpretation while those in the second class receive a

²² Slaves were required by law to take off their hat when passing free Europeans on the street.

past-time interpretation. Consider the following two examples from Fongbe which are adapted from Avolonto (1995, examples 9 and b):

- 26a. *Àrinòlá kùn m̀̀to*
 Arinhola drive car
 'Arinola drove a car.'
- 26b. *Mêmê t̀̀n Àrinòlá*
 Mêmê know Arinhola
 'Mêmê knows Arinhola.'

Both sentences do not take overt tense/aspect marking. Verbs like *kùn* 'drive' yield a past-tense interpretation in such cases. By contrast, verbs like *t̀̀n* 'know' yield a present state of affairs.

4.2. Verb groups in the creoles

creole verbs can also be divided into two classes depending on the interpretation of their unmarked form. Consider the sentences below:

- 27a. *Alingo dé ku siki.* Saamáka
 Alingo BE with ill
 'Alingo is ill.'
- 27b. *mi tatta de na libi jette* Sranan
 1SG father BE PREP life yet
 'My father is still alive.' (Schumann, 1783:102)
- 28a. *Di womimii sun a lio* Saamáka
 DET boy swim LOC river
 'The boy has swum in the river.'
- 28b. *Dago jam mi* (Early) Sranan
 Dog eat me
 'The dog has bitten me.' (Schumann, 1783:71)

All the sentences in the above examples do not occur with any over tense-aspect morpheme. While sentences (27a and 27b) express present states of affairs, sentences (28a and 28b) refer to states of affairs which occurred in the past.

4.3. Summary

The examples show that like the Gbe languages, unmarked verbs in the creoles fall into two groups based on their temporal interpretation. As we have already noted, this distinction is relevant for our discussion of the interpretation which the verbs receive when they occur with the modals. For the purposes of discussion in the following sections, we refer to unmarked verbs which receive a present-time interpretation in the default as group 1 verbs and those that yield past time reference as group 2 verbs.

5. Modals and temporal interpretation

In this section, we establish the temporal contribution of the modals in the Gbe and creole languages. A clause in which a modal occurs has two time intervals; a temporal perspective and a temporal orientation (see e.g. Condoravdi, 2002; Laca, 2008). Temporal perspective refers to "time from which the modal background is accessed," i.e. modal anchor time, while temporal orientation refers to "the time at which the temporal property is instantiated" (Laca, 2008:4), i.e. modal evaluation time. These two time intervals do not need to overlap. We show that the temporal perspective of the modal anchor time is present for both the possibility and necessity modals in all three languages. A difference occurs in the temporal orientation of the modal evaluation time in the languages.

5.1. Ability modals

We begin with a discussion of the contribution of ability modals.

5.1.1. Physical ability modals and temporal interpretation in Gbe

We established that potential physical ability is expressed by a combination of the potential modal *a-* and *téŋú* in Ewe, and *sixú* only in Fongbe.

Group A

- 29a. *Kofi á-téŋú á-nyá akontá ma* Ewegbe
 Kofi POT-be_able SC-know maths that
 'Kofi can know (the solution to) that mathematics (problem).'
- 29b. *Kofi sixú tũ mathématique ɔ* Fongbe
 Kofi be_able know maths DEF
 'Kofi may know (the solution to) the maths (problem).'

Group B

- 30a. *Kofi á-téŋú á-xlẽ agbalẽ má* Ewegbe
 Kofi POT-be_able SC-read book that
 'Kofi can read that book.' (not happened)
- 30b. *Kofi sixú xa wemá ɔ* (he is old now) Fongbe
 Kofi be_able read book DEF
 'Kofi can read the book.' (not happened)

Sentences (29a and 29b) refer to Kofi's capability to know (the solution for) a particular mathematics problem. Both sentences mean Kofi either has the said capability at the moment of speech or that he can possess it in the future. In contrast, the reading referred to in sentences (30a and 30b) can only happen after the moment of speech and, hence, the future. This means that while the modal anchor time is present for the all the sentences, the modal evaluation time for the 'know'-verb is present and future while that for the 'read'-verb is simply future. As we see in the next subsections, a similar situation pertains in the creoles.

5.1.2. Ability and temporal interpretation in Saamáka

Recall that the modal used to express ability in Saamáka is *sa*:

Group A

- 31a. *Senni á sa sábi naáse u dé bigá wá píki én naáse u ó gó.*
 Senni NEG MOD know where 1PL BE because 1PL.NEG tell 3SG where 1PL MOD go
 'Senni cannot know where we are because we have not told him where we would go.'

Group B

- 31b. *Dí mii sa lési.*
 DET child MOD read
 'The child can read.'

For both sentences, the temporal perspective of the modal anchor time has a present time reference interpretation, whereas the temporal orientation of the modal evaluation time depends on whether the verb belongs to group A or B: group A verbs convey a present or future orientation, while group B verbs convey a future orientation.

5.1.3. Ability and temporal interpretation in Sranan

We established earlier that the modal *kan* in Sranan has a range of meanings, including ability:

- 32a. *Mi no kan blibi alle da takki den negere ben doe na mi.*
 1SG NEG can believe all DET talk DET.PL black PST do LOC 1SG
 'I cannot believe everything the blacks are telling me.' (van Dyk, ca. 1765:94)
- 32b. *Massera mi no kan kom, somma voeloe rommotto mi detappe pasi*
 Master 1SG NEG can come, person many surround 1SG 3P-stop passage
 'Master, I cannot come, many people surround me, they block the passage.' (Court Records 1762)

In (32a) the belief can hold at the time of speaking or in the future and, in the case of (32b), the movement can only occur after time of speaking, hence future.

5.1.4. Summary

In all the Gbe and creole languages, the temporal interpretations of the ability modals are the same. We have shown that the exact interpretation depends on whether the verb with which the modals occur belongs to group A or B. This is represented below:

Ability in Gbe and Surinamese creoles

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

5.1.5. Deontic modals and temporal interpretation

5.1.5.1. *Deontic modals and temporal interpretation in Gbe.* Like ability, deontic modality is also expressed by a combination of the potential and *téńú* morphemes in Ewegbe and *sixú* alone in Fongbe. The Ewegbe consultants did not accept the collocation of a 'know'-verb with 'mathematics' in this context so we used a 'spoil'-verb instead.²³ We elicited the Ewegbe equivalent for Fongbe as well. These are provided below:

Group A

- | | | | | | |
|------|---|---------------|------------|-------------|--------|
| 33a. | <i>A-téńú</i> | <i>á-gblě</i> | <i>éfé</i> | <i>ńkɔ</i> | Ewegbe |
| | 2SG:POT-be_able | SC-spoil | POSS | name | |
| | 'You may spoil his name (i.e. you are allowed to).' | | | | |
| 34a. | <i>A-sixú</i> | <i>gblé</i> | <i>ńkɔ</i> | <i>tse.</i> | Fongbe |
| | 2SG-be_able | spoil | name | 1SG | |
| | 'You may spoil my name.' | | | | |

Group B

- | | | | |
|------|---|--------------|--------|
| 34a. | <i>A-téńú</i> | <i>á-yi.</i> | Ewegbe |
| | 2SG:POT-be_able | SC-go | |
| | 'You may go (you are permitted to go)' | | |
| 34b. | <i>A-sixú</i> | <i>yi.</i> | Fongbe |
| | 2SG:-be_able | go | |
| | 'You may go (you are permitted to go).' | | |

In this case, while the modal anchor time is present, the modal evaluation time is future for verbs in the two groups. This is because the spoiling of the person's name in (33a and 33b) and the going of the interlocutor agent in (34a and 34b) have not yet taken place.

5.1.5.2. *Permissive and temporal interpretation in Saamáka.* Deontic permissive reading is also conveyed by *sa*. The following sentences show a correlation between verb-type and temporal orientation of the modal evaluation time that is similar for the dynamic ability reading.

Group A

- | | | | | | | | |
|------|--|-----------|-----------|-----------|----------|-----------|--------------|
| 35a. | <i>Senni</i> | <i>áá</i> | <i>fu</i> | <i>gó</i> | <i>a</i> | <i>sa</i> | <i>fiká.</i> |
| | Senni | NEG.have | FU | go | 3SG | MOD | remain |
| | 'Senni doesn't have to go, he is allowed to stay.' | | | | | | |

²³ An attempt to elicit a permissive sentence with a know verb in Ewegbe always ended producing what the speakers insist is an ability reading.

Group B

- 35b. *I sa sún gó a bándá lío.*
 2SG MOD swim go LOC other side river
 Mother to child: 'You may swim to the other side of the river.'

As with encoding ability, both sentences convey present temporal perspective of the modal anchor time, while the temporal orientation of the modal evaluation time depends on the groups to which the verbs belong: Group A verbs convey a present or future temporal orientation while Group B verbs convey a future temporal orientation.

5.1.5.3. *Permissive and temporal interpretation in Sranan.* Recall that the category of (deontic) permissive is expressed through *kan* and *mag* in Early Sranan.

Group A

- 37a. *Dan Drictoro kan tam didon so langa a wanie*
 Then director can stay lie.down so long 3SG.SUBJ want
 'Then the director is allowed to remain in bed as long as he wants.'

(Weygandt, 1798:132)

Group B

- 37b. *Mie kan takie gie joe*
 1SG can tell give 2SG
 'I can tell you.'

(Weygandt, 1798:78)

- 37c. *Zomma no mag jarri hem*
 Person NEG allow carry 3SG
 'People are not allowed to carry him off.'

(van Dyk, ca. 1765:76)

Group A in combination with the modal gives either a present or future permissive reading. By contrast, Group B verbs yield only future reading, irrespective of whether the modal is *kan* or *mag*.

5.1.6. Summary

The modals in the Gbe languages have the same interpretation irrespective of whether the verbs belong to group A or group B. Note that this applies to the Ewege case where deontic modality is a combination of the potential *a-* and *téŋú* and Fongbe where it is *sixú* alone. The creoles differ here in that their modal interpretation is dependent on the group to which the verb belongs. The differences are captured below:

Permissive in the Gbe languages:

Groups A & B Circumstantial: ModT = present; EvT = future

Permissive in the creoles

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

5.1.7. Speculative epistemic modals and temporal interpretation

5.1.7.1. *Epistemic modals and temporal interpretation in Gbe.* Unlike (potential) ability and deontic modals, epistemic modality is expressed by the potential morpheme alone in Ewege. Fongbe maintains its use of *sixú* alone. In this case, there is a difference in the interpretations that the modals give rise to. We begin with a discussion of a group A verb:

Group A

37. *Mango-a â-qí*
 Mango-DEF POT-become_ripe
 'The mango may be ripe/the mango may have become ripe/the mango may become ripe.'

The various translations are meant to capture the fact that the temporal interpretation of the verb is indeterminate when it occurs with the potential morpheme. As the following sentences show, adverbial modifiers determine the exact temporal interpretation:

- 38a. *Mango-a â-qí fifiá*
 Mango-DEF POT-become_ripe now
 'The mango may be ripe now.'
- 38b. *Mango-a â-qí etsɔ si vá yí*
 Mango-DEF POT-become_ripe day_removed REL come go
 'The mango may have become ripe yesterday.'
- 38c. *Mango-a â-qí etsɔ si gbɔ-na*
 Mango-DEF POT-become_ripe day_removed REL come-HAB
 'The mango may become ripe tomorrow.'

Sentence (38b) is acceptable in the situation where the speaker and hearer have not seen the ripe mango. They would therefore be speculating both about it having ripened and the fact that the ripening happened yesterday. Where the mango has been seen, the modal *nyá* is required, thereby yielding (see discussion in section 2):

39. *Mango-á â-nyá qí etsɔ si vá yí*
 Mango-DEF POT-MOD become_ripe day_removed REL come go
 'The mango may have become ripe yesterday.'

We conclude from this discussion that the combination of the potential, when used to express epistemic modality, with Group A verbs in Ewegbe yield indeterminate temporal interpretation which requires a temporal adverbial to make more specific. The past tense interpretation is the least preferred interpretation in the default because of the existence of such interpretation with the *nyá*-modal.

The situation is different in Fongbe. There the embedding of a group A verb in a sentence with *sixú* gives rise to a present-time interpretation. This is provided below:

40. *Mánga sixú miá*
 Mango be_able become_ripe
 'The mango may be ripe.'

Unlike the Ewegbe situation, our consultants state that sentence (40) could not represent a situation in which the mango may have ripened in the past or will ripen sometime in the future. In the latter case, they would use *ná* in that case.²⁴

Like the interpretation for verbs in Group A, those in Group B also have different interpretations for the two Gbe varieties when they combine with the potential modal: Ewegbe verbs have a past or future interpretation while the Fongbe ones have only a future interpretation. This is illustrated below:

- 41a. *Papa Doe â-dzo.*
 Papa Doe POT-leave
 'Father Doe may leave' or 'Father Doe may be left.'
 (determined by adverb)
- 41b. *Papa Doe sixú yi.*
 Papa Doe be_able leave
 'Father Doe may go.'

Without an adverb, the default interpretation of the Ewegbe sentence (41a) is future. If Mr. A sees that Papa Doe is not happy where he is (maybe because he is being harassed) and has reason to believe that Papa Doe may leave if the treatment continues, Mr. A could say (41a). Alternatively if Mr. A knows that Papa Doe had planned to leave some days earlier, he could utter the same sentence. The reason why the second use is not the preferred one is due to the *nyá*-modal

²⁴ A third speaker began by insisting that only a future interpretation is acceptable. However, when we asked how he'd say that a mango may be ripe and that they should go and eat, he said it's (40).

construction which we discussed in section 3.1.1.1. When the *nyá*-modal is introduced, it gives rise to a past tense interpretation. Thus a sentence like (39) pre-empts the attribution of past-tense interpretation to this sentence. However, a past-tense adverbial does give a past modal evaluation time. The situation is different for Fongbe where sentence (41b) has future-tense interpretation only.

5.1.7.2. Speculative epistemic possibility modality and temporal interpretation in Saamáka. As exemplified in section 4, *sa* in Saamáka also conveys a speculative epistemic possibility modality reading.

Group A

- 42a. *Lathoya sa dé a lio.*
 Lathoya MOD BE LOC river
 'Lathoya might be near the river.'

Group B

- 42b. *Freddysa téi dí móni u mi a táfa líba akí.*
 Freddy MOD take DET money FU 1SG LOC table top here
 'Freddy might have taken my money from the table.'

The modal anchor time of a sentence containing a group 1 verb has a present temporal perspective and a present temporal orientation. The sentence containing the group 2 verb also has a present temporal perspective. Interestingly, unlike the ability and permissive reading of *sa*, the modal evaluation time does not have future temporal orientation, but a past temporal orientation.

5.1.7.3. Speculative epistemic possibility modality and temporal interpretation in Sranan. *Sa* is used in Early Sranan to express speculative epistemic possibility modality.

Group A

- 43a. *Da stoeloe sa hey toemoesie sontem foe joe* (Weygandt, 1798:122).
 DET chair POT be.high too.much perhaps for 2SG
 'The chair might be too high for you.'

- 43b. *anno doe bon anno za libi zoo lange jarri alredi na da pranasie*
 3SG-NEG do good 3SG-NEG POT live so long years already LOC DET plantation
 'If he didn't do well, he might not have lived for so many years already on the plantation.'

(Van Dyk, ca. 1765:98)

Group B

- 43c. *No myki a jerri a sa kili joe* (van Dyk, ca. 1765:49)
 NEG make 3SG hear 3SG POT kill you
 'Don't let him hear (you), he might kill you.'

In (43a), the state of affairs could be at the time of speaking or in the future. In (43b), the adverb *aredi* 'already' gives a past time interpretation to the sentence. This suggests that verbs in Group A have present, past and future time orientation. Sentence (43c) shows that verbs in Group B have future time orientation only.

5.1.7.4. Summary. The interpretations that epistemic modals give rise to differ not only in for the different groups of verbs but for the different Gbe varieties as well as the creoles. These are represented below:

Epistemic in Ewegbe

Group A: ModT = present; EvT = indeterminate

Group B: ModT = present; EvT = past/future

Epistemic in Fongbe

Group A: ModT = present; EvT = present/(future)

Group B ModT = present; EvT = future

Epistemic in Saamáka

Group A: ModT = present; EvT = present

Group B: ModT = present; EvT = past

Epistemic in Sranan

Group A: ModT = present; EvT = indeterminate

Group B: ModT = present; EvT = past/future

5.2. Obligation modals

For obligation modals in Gbe, we use the *dó ná* from Fongbe and leave *éle bé* from Ewegbe since none of the creoles under consideration expresses obligation with a phrasal expression as Ewegbe does.

5.2.1. Deontic obligation and temporal interpretation in Fongbe

We stated earlier that owing to its phrasal nature, the form used to express necessity in Ewegbe could not have served as a model for the creole. We suggested in line with Migge (2006) that Maxigbe/Fongbe were better candidates. For this reason, we only discuss temporal discussions that *dó ná* give rise to. Obligations expressed by *dó ná* have present and future modal evaluation time interpretation when used with Group A verbs. This is illustrated below:

44. *Kofi dó ná tũ ha ɔ*
 Kofi IMP FUT know song DEF
 'Kofi ought to know the song.'

This sentence is acceptable in the context where the speaker requires Kofi either to have knowledge of whatever it is that he or she is talking about at the time of speaking or to know it sometime in the future.

Verbs in group B yield only a future event-time interpretation. This is illustrated below:

45. *Kofi dɔ ná yi*
 Kofi IMP FUT go
 'Kofi must leave'

This sentence is acceptable if the speaker wants Kofi to leave at some point after the moment of speaking. In sum, verbs in group A receive a present or future interpretation while those in group B receive a future interpretation only.

5.2.2. Deontic obligation and temporal interpretation in Saamáka

The necessity modal *musu* can convey a deontic obligation reading, as illustrated in section 2.

Group A

- 46a. Context: In the Saamaka society, people who have had an operation need time to recover from it. Therefore, they are not allowed to work for three months after their operation. This implies for women, for example, that they cannot work on their vegetable gardens or pound rice.
Báka té dí opalási nóo i musu dé díí líba sóndo woóko.
 back when DET operation NARR 2SG MOD BE three month without work
 'After an operation, you must be three months without work.'

Group B

- 46b. Context: In the village, a man passed away. His son lives in The Netherlands. In order for him to attend his father's funeral, he must fly to Suriname.
Dí wómi musu buwá ku opaláni gó a Saaná.
 DET man MOD fly with plane go LOC Suriname
 'The man must fly to Suriname.'

In combination with a group A verb, the modal anchor time has a present temporal perspective and the modal evaluation time a present or future temporal orientation depending on the context. When *musu* embeds a group B verb in

its deontic obligation reading, the sentence has a present temporal perspective of the modal anchor time and a future temporal orientation of the eventuality.

5.2.3. Deontic obligation and temporal interpretation in early Sranan

Group A

- 47a. *Mastra wan koffi pranasie a habi vyften tien zomma na fili da*
 Master a coffee plantation 3SG have fifty ten person LOC field DET
gron no mosse morre biki liki wan hondert na vyfiten tien akkers.
 ground NEG must more big like one hundred and fifty ten acres
 'Master, a coffee plantation that has fifty people in the field must not have more than hundred fifty acres of land.' (van Dyk, ca. 1765:87)
- 47b. *Biggi doru vo hosso musse tann na pasi sei* (Schumann, 1783:152)
 Big door of house must stay LOC road side
 'The big door of the house must be located on the side of the road.'

Group B

- 47c. *mi ha paiman na ju, mi musse pai ju* (Schumann, 1783:129)
 1SG have debt LOC 2SG 1SG must pay 2SG
 'I am in your debt, I must pay you.'

(47a and 47b) have present and future-time interpretation while (47c) has future-time interpretation.

5.2.4. Summary

The temporal interpretation to which the modals give rise is the same for both Fongbe and the creoles. This is represented below:

Deontic obligation in Fongbe and the creoles

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

5.2.5. Deductive epistemic

In this section we discuss the temporal interpretation with deductive epistemic modals.

5.2.5.1. *Deductive epistemic modality and temporal interpretation in Fongbe.* *Đó ná* is also used to express a state of affairs that the speaker has strong reasons to believe is true. Consider the sentence below:

48. *e-đó ná gblě*
 3SG-IMP FUT be_spoilt
 'It has to go bad (will happen)'

One consultant was asked that if (48) is uttered in reference to cooked food that was kept outside for a long time what kind of change it would refer to. She replied that it could only refer to a change that would take place in the future. The modal evaluation time is therefore future.

Group-B verbs also yield a future-time interpretation, as the sentence below illustrates:

49. *Ye đó ná yi*
 3PL IMP FUT go
 'They must leave'

According to this sentence, the speaker deduces from things going on that the people will be leaving sometime after the moment of speech, hence future.

5.2.5.2. *Deductive epistemic modality and temporal interpretation in Saamáka.* The data discussed in section 2 indicated that *musu* can also convey a deductive epistemic modality reading.

Group A

50a. Context: The speaker is expecting Freddy to come, someone knocks on the door. The speaker says:

Wán sembe ta náki mi dóo. A musu dé Freddy.
 ART person IMP hit 1SG door 3SG MOD BE Freddy
 'Someone is knocking my door. It must be Freddy.'

Group B

50b. Context: Jacky is one of the women in the village who regularly bakes bread with the intention of selling it. At an earlier time today, the speaker passed Jacky's house. When s/he passed it, s/he smelled freshly baked bread. The addressee asks her/him if s/he knows if Jacky has bread today. The speaker replies:

Jacky musu yasá beée tidé bigá mi sumée feisi beée dí mi pasá neen písi.
 Jacky MOD bake bread today because 1SG smell fresh bread when 1SG pass LOC.3SG place
 'Jacky must have baked bread today, because I smelled fresh bread when I passed her place.'

When a group A verb is embedded in the deductive epistemic reading of *musu*, the sentence has a present temporal perspective and a present temporal orientation, whereas a group B verb in a similar sentence conveys a present temporal perspective and a past temporal orientation.

5.2.5.3. *Deductive epistemic modality and temporal interpretation in Sranan.* In addition to deontic obligation, early Sranan *musu* can also convey a deductive epistemic modality reading.

Group A

51a. *Wan sanie moe dee na pasie datie a no dee kon* (Weygandt, 1798:85)
 INDEF thing must BE LOC road that 3SG NEG IMPF come
 'Something must be in the way that he is not coming.'

Group B

51b. *Dan a moe didon na tapoe tafla* (Weygandt, 1798:117)
 Then 3SG must lie.down LOC top table
 'Then it must be on the table.'

Thus for Sranan, verbs in groups A and B yield a present interpretation when they *musu* functions as a deductive epistemic modal.

5.2.5.4. *Summary.* The various interpretations in Fongbe and creoles are represented below:

Deductive epistemic modality in Fongbe

Group A: ModT = present; EvT = future

Group B: ModT = present; EvT = future

Deductive epistemic modality in Saamáka

Group A: ModT = present; EvT = present

Group B: ModT = present; EvT = past

Deductive epistemic modality in Sranan

Group A: ModT = present; EvT = present

Group B: ModT = present; EvT = present

5.3. The temporal interpretation of the English and Portuguese core modal morphemes

This section discusses the temporal interpretation of modal utterances in English and Portuguese. The reason for focusing on these two languages is that they are the lexifier languages of the creoles: English of Sranan, and English and Portuguese of Saamáka (Smith, 1987a). First, we will present the English data, after which we will present the Portuguese data.

5.3.1. English

Although the focus in this section is on the core modals *can*, *may* and *must*, the generalizations presented here also hold for the other core modals as *might*, *could*, *shall*, *should*, *will*, and *would* (see Palmer, 2001; Condoravdi, 2002; Stowell, 2004; Laca, 2008 for discussion). Further, discussions on temporal interpretation in these languages are mostly based on whether the verbs are stative or eventive. We shall treat the stative as a group A verb and the eventive as a group B.

The modal *can* can convey an ability reading, as exemplified below. Regardless of aktionsart, the most natural interpretation of the modal evaluation time is present. However, in combination with a temporal adverbial a future interpretation is possible.

52a. Group A

John can live in the suburbs if he wants (and he still can get to work on time) (Stephanie Solt (personal communication)).
ModT = present; EvT = present/future

52b. Group B

In winter it can even snow in this hot desert (Nuyts, 2006:4)
ModT = present; EvT = present/future

The modal *may* can convey a permissive modality interpretation. Aktionsart does not influence the temporal interpretation of the eventuality. The modal evaluation time has a future interpretation, as exemplified below.

53a. Group A

Now John may live outside of the city (Stephanie Solt (personal communication)).
ModT = present; EvT = future

53b. Group B

You may come in now (Nuyts, 2006:5)
ModT = present; EvT = future

The modal *may* can also convey a speculative epistemic modality interpretation. In this reading, aktionsart does influence the temporal interpretation of the eventuality. When the verb is stative, the modal evaluation time has a present or future interpretation, whereas when the verb is eventive only the future interpretation is possible, as exemplified below.

54a. Group A

John may be drunk (by the time we arrive) (Laca, 2008:5).
ModT = present; EvT = present/future

54b. Group B

John may talk with the Dean (Laca, 2008:5).
ModT = present; EvT = future

Turning to the necessity modal *must* which can convey an obligation modality reading and a deductive epistemic modality reading. When *must* expresses an obligation modality interpretation, the eventuality favors a future interpretation regardless of aktionsart, as exemplified below.

55a. Group A

You must be at the station at 2PM (Stowell, 2004:26).
ModT = present; EvT = future

55b. Group B

You must leave (Stowell, 2004:26).
ModT = present; EvT = future

Aktionsart does influence the temporal interpretation of the eventuality when must expresses a deductive epistemic modality reading. Stative verbs give rise to present or future interpretation of the modal evaluation time, while eventive verbs give rise to a future interpretation of the modal evaluation time, as exemplified below.

56a. Group A

John must be in class (today) (Stowell, 2004:7)

ModT = present; EvT = present/future

56b. Group B

John must get sick tomorrow/??now/*yesterday (Condoravdi, 2002:60).

ModT = present; EvT = future

To conclude, the group to which a verb belongs does not influence the temporal interpretation when the modals convey a circumstantial modality interpretation. The eventuality embedded by the modal favors a future shifted interpretation. The modal *can* (and also *could*) differs from the other modals in that a present interpretation of the modal evaluation time is a more natural reading. However, a future interpretation is not excluded (see Palmer, 2001; Condoravdi, 2002; Stowell, 2004; Laca, 2008 for discussion).

The group to which the verb belongs does influence the temporal interpretation of a sentence when the modal conveys an epistemic modality interpretation. When the verb is stative, a present modal evaluation time is the most natural interpretation. In combination with temporal adverbials, it is possible to convey a future interpretation. When the verb is eventive, however, the modal evaluation time must have a future interpretation (see Palmer, 2001; Condoravdi, 2002; Stowell, 2004; Laca, 2008 for discussion). This is summarized below:

Dynamic ability modality:

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = present/future

Deontic permissive modality:

Group A: ModT = present; EvT = future

Group B: ModT = present; EvT = future

Speculative epistemic modality:

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

Deontic obligation modality:

Group A: ModT = present; EvT = future

Group B: ModT = present; EvT = future

Deductive epistemic modality:

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

5.3.2. European Portuguese²⁵

The foci of this section are the possibility modal *poder* and the necessity modal *dever*. When the possibility modal conveys an ability reading, the modal evaluation time has a future interpretation when the verb is stative, while it has present or future interpretation when the verb is eventive.

57a. Group A

O João pode viver nos subúrbios se quiser (e ainda pode chegar a tempo ao emprego).
the João can live:INF in.the suburbs if want:SUBJ (and still can arrive PREP time at.the job)

‘John can live in the suburbs if he wants (and he still can get at work on time).’

ModT = present; EvT = future

²⁵ We thank Fernanda Pratas (personal communication) for discussion of and providing the European Portuguese data.

57b. Group B

No inverno pode mesmo nevar neste deserto quente.
 in.the winter can:3sg even snow:inf in.this desert hot
 'In the winter it can even snow in this hot dessert'.
 ModT = present; EvT = present/future

When *poder* is interpreted in its permissive reading, the modal evaluation time has a present or future interpretation when the verb is stative and a future interpretation when the verb is eventive.

58a. Group A

Agora o João pode viver fora da cidade.
 now the João can live:INF out of.the city
 'Now John may live outside of the city.'
 ModT = present; EvT = present/future

58b. Group B

Podes entrar agora.
 may:2sg come.in:inf now
 'You may come in now'.
 ModT = present; EvT = future

When the modal conveys a speculative epistemic interpretation, the sentence has a present or future interpretation of the modal evaluation time when the verb is stative and a future interpretation when the verb is eventive.

59a. Group A

O João pode estar bêbado (quando chegarmos)
 the João may:3sg be:inf drunk (when we arrive:1pl)
 'John may be drunk (by the time we arrive)'.
 ModT = present; EvT = present/future

59b. Group B

O João pode falar com o deão.
 the João may:3sg talk:inf with the dean
 'John may talk to the dean'.
 ModT = present; EvT = future

Turning to the necessity modal *dever*. In its obligation reading, the modal evaluation time has a future interpretation, regardless of aktionsart.

60a. Group A

Deves estar na estação às 2 da tarde.
 must:2sg be:inf in.the station at.the 2 of.the afternoon
 'You must be at the station at 2PM.'
 ModT = present; EvT = future (but do we need the 'at 2PM'?)

60b. Group B

Deves sair.
 must:2sg leave:inf
 'You must leave.'
 ModT = present; EvT = future

When the modal has a deductive epistemic modality interpretation, the modal evaluation time depends on aktionsart. When the verb is stative, it has a present or future interpretation, while when the verb is eventive, it has future interpretation.

61a. Group A

O João deve estar na aula.
 the João must:3sg be:inf in.the class
 'John must be in class today.'
 ModT = present; EvT = present/future

61b. Group B

O João deve ficar doente.

the João must:3sg get:inf sick

‘John must get sick’.

ModT = present; EvT = future

This is summarized below:

Dynamic ability modality:

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = present/future

Deontic permissive modality:

Group A: ModT = present; EvT = future

Group B: ModT = present; EvT = future

Speculative epistemic modality:

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

Deontic obligation modality:

Group A: ModT = present; EvT = future

Group B: ModT = present; EvT = future

Deductive epistemic modality:

Group A: ModT = present; EvT = present/future

Group B: ModT = present; EvT = future

5.4. Summary

The interpretations that we have discussed for all the modals are summarized in the table below (we do not include modal anchor time because is present in all the instances) (Table 4).

The table shows that the modals which express ability in the creoles yield the same interpretation as the ones in the Gbe languages. The ability modal in English does yield the same interpretation as the Gbe languages and the creoles in the stative (i.e. group A). As permissives the modals in the creoles yield the same interpretations with group A verbs as

Table 4
Temporal interpretations.

	EWEGBE	FONGBE	SAAMAKA	SRANAN	ENGLISH	PORTUGUESE
Ability	Present/future	Present/future	Present/future	Present/future	Present/future	Future
Group A						
Ability	Future	Future	Future	Future	Present/future	Present/future
Group B						
Permission	Future	Future	Present/future	Present/future	Future	Present/future
Group A						
Permission	Future	Future	Future	Future	Future	Future
Group B						
Speculative epistemic	Indeterminate	Present	Present	Indeterminate	Present	Present/future
Group A						
Speculative epistemic	Past/future	Future	Past	Future	Future	Future
Group B						
Deontic obligation	N/A	Present/future	Present/future	Present/future	Future	Future
Group A						
Deontic obligation	N/A	Future	Future	Future	Future	Future
Group B						
Deductive epistemic	N/A	Future	Present	Present	Present/future	Present/future
Group A						
Deductive epistemic	N/A	Future	Past	Future	Future	Future
Group B						

their counterparts do in Portuguese. However, the modals behave alike with group B verbs across the languages. Speculative epistemic modals are particularly telling. This is the only place where Sranan uses *sa*, and Ewegbe uses the potential alone. Interestingly, the modals of both languages yield indeterminate temporal interpretation with Group A verbs. When it comes to verbs in group B, however, the modal in Ewegbe yields past tense interpretation in addition to the future while the one in Sranan yields future time interpretation only. Necessity modals yield mixed results: when they express deontic obligation, the modals yield interpretations which are similar to those of their counterparts in Fongbe. Yet when they function as deductive epistemic modals, then they partially express the result of the superstrates (i.e. present) when they occur with group A verbs. When they occur with group B verbs, the Sranan modal yields an interpretation that is similar to that of the substrate and the superstrate but the Saamáka modal yields a completely different interpretation.

6. Conclusion

In the preceding sections we compared grammaticalized expressions of ability, possibility and necessity in the Gbe languages, Saamáka and (Early) Sranan. In line with Winford and Migge (2007) and Migge and Winford (2009), we find several similarities between the meanings and uses of the Gbe form and their Surinamese equivalents, but we also find some differences that enable us to determine the role the Gbe languages in the formation of the Surinamese creoles in more detail. One potential similarity is the distinction between inherent and acquired abilities. We showed in section 3.1.2.1 that this distinction is clear in the Gbe languages.²⁶ We reported Saamáka makes exactly the same distinctions although speakers attribute different reasons for it. Considering that this is not present in the superstrate languages, it is most likely due to the influence of the Gbe languages. As we reported, one reviewer, also noted that the imperfective construction was the first choice of their Saamáka and a Pamaka consultants who later explained, when asked explicitly, that both the *ta*-construction and the possibility modal are equally acceptable. It is possible that over the years, this distinction is disappearing from the creoles as people get confronted more with the modal morphemes in the official languages (see the footnote 22 about this beginning to happen in Gbe elicitation). An evidence of the change is that our Saamáka data suggest that the positive is not treated the same way as negated sentences. In other words, the positive imperfective construction, merely expresses the progressive or inchoative (depending on the context) and the habitual state of affairs. It does not express inherent possibility, as the example is provided below:

62. *Di womimii ta waka a matu.*
 DET boy IMP walk LOC forest
 'The boy is walking in the forest'.
 'The boy walks in the forest'
 * 'The boy can walk in the forest (he is old enough now and he can walk by himself to our vegetable garden)'.

A different question concerns the role of Gbe modals in the development of possibility modals in the creoles. In section 3.1.1.2 we noted that due to grammaticalization, Gbe varieties like Maxigbe and Fongbe have a future tense form *na* which is distinct from the form they use to express possibility meanings. The latter is either *téŋ*, *sixú*, or a variant of *téŋ*. By contrast, the Ewegbe variants use a combination of the potential (*l)a* and a partially-grammaticalized *be_able* modal verb *téŋú* to express three of the four possibility senses that we investigated. It has been shown that the form *sa* which expresses positive possibility senses in Saamáka did not express possibility senses in earlier records (see Migge, 2006). We argued therefore that since the future morpheme in the Maxigbe/Fongbe varieties is in no way connected to *téŋ/sixú* these variants could not have determined the choice of *sa*. The most likely candidate is the Ewegbe (*l)a* modal which expresses a potential meaning. However, we went on to show that this form alone does not express all the possibility senses (cf. Table 2). Ewegbe could therefore not be said to have influenced the choice of *sa* to express all the possibility senses in Saamáka (i.e. ability, permission, root, and speculative epistemic possibility). So how do we explain the fact that Saamáka speakers chose a form which has a potential meaning to express several possibility meanings? We propose that both Ewegbe and Maxigbe/Fongbe speakers were involved in this. Although Migge and Winford (2009) are right in arguing that the potential in Ewegbe served as the basis for the potentiality in the meaning of *sa* in the creoles Table 2 shows that that is not the whole story. After the Maroons escaped from the plantation, the Ewegbe speakers among them would have made the connection between the potential and possibility senses such as (physical) ability, permission and root possibility. The difference of course is that for the Ewegbe speakers, this potential had to be used in combination with an ability verb/modal. However, once the Ewegbe speakers establish this connection, it required the Maxigbe/Fongbe kind of speakers to generalize the use to all the possibility senses along the lines of what occurred in their L1.

²⁶ An anonymous reviewer mentioned that their Gbe consultants used the ability modal instead. We are inclined to attribute this to translation priming effects.

The influence of the Maxigbe/Fongbe type modal is evident in the interpretation that both forms yield, especially in ability but, to some extent, in the temporal interpretation of permission modals and speculative epistemic possibility. When it expresses ability, *sa* behaves exactly like its counterpart in the Gbe languages (and only partially like English). The interpretation of this modal in the expression of epistemic possibility shows its break from the potential in Ewegbe. That is to say, the Maxigbe/Fongbe speakers changed *sa* from expressing a specific potential meaning to expressing a general possibility meaning. This is seen in the fact that *sa* yields an interpretation that is similar to Fongbe and English but different from Ewegbe. The influence of the potential from Ewegbe is clearer in Sranan which extended the form to the expression of speculative epistemic possibility only. The lack of spread to possibility senses in this creole shows that the Fongbe-type speakers did not gain much influence here. Not surprisingly, it is in this language that the form yields indeterminate interpretation when it occurs with group A verbs, just as it does in Ewegbe.

Migge (2006) and Migge and Winford (2009) note that other factors played a role in the development of these modals as well, including the superstrate languages and language internal development. For instance permissive possibility modals yield an interpretation that is similar to that of Portuguese when they occur with group A verbs. Language internal development includes the past tense interpretation which arises when the speculative epistemic modal occurs with group B verbs in Saamáka.

To conclude, where the superstrate and the substrate languages have a progressive construction, Saamáka which does not have this construction chooses the imperfective (which though similar is not the same thing) to make a distinction in ability similar to the one that is made in the Gbe languages. Furthermore, different Gbe varieties come together with the superstrates to shape the final outcome of possibility modals in the creoles. Given the latter situation, it is not possible to argue that the possibility modals in the creoles represent direct transfer of features from the Gbe languages into the creoles as, for example the relexification hypothesis would claim. That is to say *sa* is neither the Ewegbe potential modal (*l)a* nor the Maxigbe/Fongbe *téŋ/sixú*. Instead, it is a superstrate language form to which they all contribute features. In sum while Gbe language modality played a role in the development of possibility modals in the creoles, the situation is more complicated; an amalgam of features from the Gbe languages came into contact with superstrate features and this, coupled with language-internal factors gave rise to the present modals.

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