



TEMPORAL INTERPRETATIONS OF NEGATION IN KARITIANA

INTERPRETAÇÕES TEMPORAIS DA NEGAÇÃO EM KARITIANA

Maria del Mar Bassa Vanrell¹

Karin Camolese Vivanco²

Abstract: In this paper, we investigate the behavior of the particle *-ki* in Karitiana, which acquires a meaning roughly similar to English ‘before’ when it appears in embedded clauses together with the adverbial suffix *-t*, but otherwise seems to behave as a negative particle in all other instances. Contrary to prior literature that analyzes *-ki* as a sort of aspectual marker in embedded clauses (cf. Rocha 2016 and Müller and Heleno 2023), we claim that *-ki* is still truly negation and has the same core meaning of a negative particle be it in matrix or embedded clauses, or adjectival constructions. The temporal meaning of *-ki* simply arises pragmatically as an implicature from the fact that the event denoted by the embedded clause has not (yet) occurred (as opposed to the event denoted from the matrix clause) and is though expected to occur, yet—even then—the later occurrence of the event is cancellable (which is a key difference from the default interpretation of a temporal clausal connective such as English ‘before’). This will allow to maintain a uniform analysis of the suffix *-ki* across all of its uses.

Keywords: negative particle, temporal expressions, negative polarity item, NPI, embedded clauses, negation, before meaning, aspect, double negation

Resumo: Neste artigo, investigamos o comportamento da partícula *-ki* em karitiana, a qual adquire um significado similar ao *before* (‘antes’) no inglês quando ocorre em orações subordinadas com o sufixo adverbial *-t*. Contudo, em todos os outros contextos, *-ki* se comporta como uma partícula de negação. Ao contrário da literatura anterior, que analisa o *-ki* como uma espécie de marcador aspectual nestes contextos (cf. Rocha 2016 and Müller and Heleno 2023), propomos que *-ki* é também a negação nestas orações subordinadas e que ele possui sempre o mesmo significado de negação esteja em orações matrizes ou subordinadas, ou em construções adjetivais. O significado temporal de *-ki* seria gerado pragmaticamente como uma implicatura através do fato de que o evento denotado pela oração subordinada (ainda) não ocorreu (em oposição ao evento denotado pela matriz). Este evento da subordinada tem uma expectativa de ocorrência, que pode ser cancelada — uma diferença crucial com a interpretação *default* de um conectivo temporal como o *before* no inglês. Essa proposta nos permite manter uma análise uniforme do *-ki* em todas as suas ocorrências.

Palavras-chave: partícula negativa, expressões temporais, item de polaridade negativo, NPI, orações subordinadas, negação, significado de anterioridade, aspecto, dupla negação.

1. INTRODUCTION

This paper deals with the particle *-ki*, one of the various forms to express negation in Karitiana. Specifically, we investigate *-ki* in adjunct embedded clauses, when it

¹ Lecturer at Wellesley College, Wellesley, MA, United States of America. mbassava@wellesley.edu
Orcid: 0009-0006-0984-3866

² Professor at Universidade Estadual de Campinas, Unicamp, Campinas, SP, Brasil. vivanco@unicamp.br
Orcid: 0000-0002-7582-2047

sometimes gives rise to a kind of temporal interpretation frequently translated as ‘before’ by native speakers:

- (1) [São Paulo *pip y-otam ki-*]t \emptyset -*naka-pop*- \emptyset *Maria*
 São Paulo in 1-arrive NEG-ADVZ 3-DECL-die-NFUT Maria
 “**Before** I arrived in São Paulo, Maria died.” (STORTO, 2012)

In this paper, we defend that *-ki* is always the negation—even when these temporal meanings arise. The anteriority interpretation in cases such as (1) is regarded as an epiphenomenon; in other words, a by-product of the interaction of other factors. In this case, three ingredients will be relevant to give rise to this reading: the negation *-ki*, the adverbializing suffix *-t*, and an implicature of precedence.

This paper is divided as follows. Section 2 describes the behavior of two negative particles in Karitiana, *padni* and *-ki*, with emphasis on the distribution of the latter. Sections 3 and 4 focus on alternative analyses of *-ki*: the possibility of it being (i) a tense marker (perhaps similar to Past Perfect in English), or (ii) a codifier of some kind of aspectual information such as a perfective of anteriority or perfect. We defend that neither of them are adequate for *-ki*, and the explanation of how a negative particle generates the ‘before’ interpretation is spelled out in Section 6. Finally, Section 7 sums up our main findings.

2. PREVIOUS LITERATURE ON -KI

Karitiana (ISO 639: ktn) is a Tupian language spoken in Rondônia, a northwestern state in Brazil. According to Storto e Rocha (2018), it currently has 396 speakers.

The first description of negation in Karitiana was given by Landin (1984). He identified two types of negation in the language, what we call in this paper *padni* negation and *-ki* negation. Each of these negative particles has its own distribution, which are described in the two following subsections.

2.1 *padni* negation

Landin (1984) noticed that matrix clauses could be negated in some way even when the negative particle itself was absent. Consider Landin’s examples (glosses and morphemic segmentation are ours):

- (2) *Y-ta-oty-j yn.*
 1s-DECL-bathe-fut I
 “I will bathe.” (LANDIN, 1984, adapted)

- (3) *Y-oty yn.*
 1s-bathe I
 “I will not bathe.” (LANDIN, 1984, adapted)

One can see in example (3) that a negated matrix clause loses mood and tense morphology, and this led Landin to propose a transformation rule to account for this pattern. Nonetheless, Storto (2007) proposed that the negative particle *padni* is actually dropped in these cases.

As the example below shows, it is possible for *padni* to be added in sentences with the same configuration as (3):

- (4) *Y-otam padni yn.*
 1s-arrive NEG I
 “I did not arrive.” (STORTO, 2007)

This pattern is seen more clearly in the pair of sentences below. Example (6) is reportedly grammatical with and without *padni*:

- (5) *Ø-Pyr-a-m- 'a-dn y- 'ete 'et' yj-boo-p.*
 3-ass-PASS-CAUS-do-NFUT 1-nephew 1pl-gone-LOC
 “(It is how) it was done, my nephew, with our dead.” (STORTO, 2007)
- (6) *I-a-m- 'a (padni) y- 'ete 'et' yj-boo-p.*
 3-PASS-CAUS-do NEG 1-nephew 1pl-gone-LOC
 “(It is how) it was not done, my nephew, with our dead.” (STORTO, 2007)

In (5), the verbal cluster *m'a* is marked with mood and tense morphemes, whereas the negative counterpart in (6) does not show such morphology. Therefore, *padni* itself can be omitted because there are other indicators—such as the absence of mood and tense—of negativity.

One evidence that *padni* is present even when not pronounced comes from the phenomenon of vowel epenthesis with certain verbs. According to Storto (2007), *padni* forms a prosodic unit with the verb and, when the latter ends in a voiceless stop, an epenthetic vowel identical to the last vowel of the root is inserted:³

- (7) *Yn i-atik<i> padni gopisop.*
 I 3-throw<EPEN> NEG garbage
 “I did not throw the garbage.” (STORTO, 2007)

In Landin’s examples, the same epenthesis occurs regardless of the presence of *padni*:

- (8) *Yn i-m-hok<y> yn tomtom*
 1s 3-CAUS-play<EPEN> I guitar
 “I did not play the guitar” (LANDIN, 1984, adapted)

The phenomenon of negation in other types of clauses, which is the focus of this paper, was also discussed by Landin (1984) and Storto (2007). Storto noticed that *padni* is not allowed in embedded clauses:

- (9) **João Ø-na-aka-t i-osedna-t [carro-ty Maria amy padni]-t.*
 João 3-DECL-COP-NFUT PART-happy-cop.agr. car-OBL Maria buy NEG-ADVZ
 (Intended) “João was happy (when) Maria did not buy the car.”

In this context, the other negative particle of Karitiana, *-ki*, has to be used instead (see also Landin (1984)):

³ Landin was the first to notice the addition of this vowel in negative contexts, but, as he does not discuss the negative particle *padni*, its occurrence is considered not purely phonological.

- (10) [São Paulo pip y-otam ki]-t Ø-naka-pop-Ø Maria (=1)
 São Paulo in 1-arrive NEG-ADVZ 3-DECL-die-NFUT Maria
 “Before I arrived in São Paulo, Maria died” (STORTO, 2012)

Therefore, there is a complementary distribution between *padni* and *-ki*. In addition to embedded clauses, questions are another environment in which *padni* is forbidden and *-ki* is allowed. In (11), one can see that *padni* cannot signal negation in a question. It is completely possible to have a negative question though, but, in this case, *-ki* has to be used as in (12).

- (11) **I-tat*<a> *padni* João São Paulo pip?
 3-go<EPEN> NEG João São Paulo in
 (Intended: Didn’t João go to São Paulo?)
- (12) *I-tat*<a>-*ki* João São Paulo pip?
 3-go-<EPEN>-NEG João São Paulo in
 “Didn’t João go to São Paulo?”
 (Context: He was expected to go to São Paulo.)

In the next section, we detail the behavior of *-ki* and also address the interaction between this suffix and *padni*.

2.2 *-ki* negation

Previous works by Landin and Storto also noticed that Karitiana has this other type of negation, performed by the suffix *-ki*. Storto (2007) observed that *-ki* is the negative particle allowed with adjectival constructions.⁴

- (13) *Him hip*<*i*>-*ki*
 game cook-NEG
 ‘raw meat’ (literally: “Uncooked meat”) (STORTO, 2007)
- (14) *Kyry-dna-ki*
 liver-ADJ-NEG
 ‘liverless’ (literally: “Not with liver”) (STORTO, 2007)

-ki emerges in many other constructions as well. As briefly discussed in the last section, *-ki* seems to be in complementary distribution with *padni*, as it occurs in all contexts where the latter is not allowed. Examples (15)-(16) show that *-ki* arises in questions and embedded clauses, whereas (17)-(18) show how *padni* is forbidden in those same environments:

- (15) *I-amy-ki* João carro-ty?
 3-buy-NEG João car-OBL
 “[Why] Didn’t João buy the car?”
 (Context: He was expected to have bought the car)

⁴ Since the presence of *-ki* in these environments lead to a meaning like “-less”, “non-”, or “un-”, Storto called this morpheme a *privative negation*.

- (16) *João* \emptyset -na-aka-t i-osedna-t carro-ty *Maria amy ki-t*.
 João 3-DECL-COP-NFUT PART-happy-COP.AGR car-OBL Maria buy NEG-ADVZ
 “João was happy without Maria buying the car/before Maria bought the car.”
- (17) **I-tat-apadni* *João São Paulo pip?* (=11)
 3-go-EPEN NEG João São Paulo in
 (Intended: Didn’t João go to São Paulo?)
- (18) **João* \emptyset -na-aka-t i-osedna-t carro-ty *Maria amy padni-t* (=9)
 João 3-DECL-cop-NFUT PART-happy-COP.AGR car-OBL Maria buy NEG-ADVZ
 (Intended: João was happy without Maria buying the car/before Maria bought the car)

Conversely, *-ki* cannot be used alone in matrix clauses, which *padni* can do (see Section 2.1):

- (19) **I-amy-ki* *João carro-ty*.
 3-buy-NEG João car-OBL
 (Intended: “João didn’t buy the car.”)

Landin (1984) first observed this limited distribution and called *-ki* a “verb root” negation.

The point we address is that, in certain embedded clauses, this morpheme may give rise to a special meaning. To detect this behavior more clearly, two types of embedded clauses are provided below: a relative clause in (20) and an adjunct clause in (21), both marked with *-ki*:

- (20) [*Jonso ti’y ’y-ki*] i-engy *padni*.
 woman food eat-NEG 3-vomit NEG
 “The woman who didn’t eat the food didn’t vomit.” (STORTO, 2007)
- (21) [*Projeto Açaí pip a-tat<a>-ki]-t* y-ta-so’oot yn.
 Project Açaí in 2s-go<EPEN>-NEG-ADVZ 1-DECL-see I
 “When you had not gone to Projeto Açaí (yet)/Before going to Projeto Açaí, I met you.”⁵ (STORTO, 2007, adapted)

In the relative clause in (20), *-ki* negates the whole VP ‘eat the food.’⁶ Nonetheless, cases of adjunct clauses such as (21) are much more complex, as they seem to include some sort of temporal meaning, frequently codified by the temporal conjunction ‘before’ in the translations.

In this paper, we claim that even in cases where the temporal meaning arises, *-ki* is still truly negation. However, before moving to our own analysis of *-ki*, alternative analyses of *-ki* as either a tense marker or an aspectual marker are discussed in Sections 3 and 4, respectively.

⁵ ‘Projeto Açaí’ mentioned in example (21) was an educative initiative of the State of Rondônia for training indigenous teachers to work in their communities. Many Karitiana participated in this project.

⁶ Relative clauses in Karitiana are internally-headed—see Storto (1999) e Vivanco (2014).

3 -KI IS NOT TENSE

Whenever *-ki* arises in adjunct clauses, it gives rise to an anteriority meaning that is usually translated as the conjunction ‘before.’ One may then wonder whether *-ki* is truly negation in these cases, or whether it could be some kind of tense marker—for instance, a past tense morpheme indicating something similar to Past Perfect in English (e.g., ‘I **had left** the house when she arrived.’). In this section, we present two pieces of evidence showing that this is not the case for *-ki*, namely: (i) Unlike *-ki*, tense markers are not allowed in embedded clauses; (ii) *-ki* imposes no restriction on adverbs of tense.

Regarding evidence (i), Karitiana embedded clauses do not allow tense morphology (STORTO, 1999). The future, for example, is marked with the suffix *-j* in matrix clauses as in (22); in embedded clauses, on the other hand, posteriority of events is indicated through the aspectual marker *pasangng* as example (23) shows (STORTO, 2012; ROCHA, 2016):

- (22) *Kinda osiito Ø-na-aka-j [kinda'o]-t.*
 flower 3-DECL-COP-FUT fruit-COP.AGR
 “The flower will be a fruit.” (STORTO, 2010)

- (23) *Yn ø-na-otet-ø [’ip ðwã ti-’y pasangã tyka].*
 I 3-DECL-cook-FUT fish child INV-eat POST IMPERF.MOT
 “I cooked the fish that the child is going to eat.” (ROCHA, 2016, adapted)

The fact that *pasangng* is truly an aspectual marker can be seen in the example below, in which it co-occurs with the assertive non-future tense *-dn* in a matrix clause:⁷

- (24) *ø-pyr-osedn pasangng tyka-dn Pedro.*
 3-ASS-be.happy POST IMPERF.MOT-NFUT Pedro
 “Pedro is becoming happy.”

The general picture can be summarized as follows: Even though tense markers are perfectly grammatical in matrix clauses, in embedded environments they are forbidden and aspect may cover the meanings of anteriority/futurity (STORTO, 2012; ROCHA, 2016; MÜLLER; HELENO, 2023). Nonetheless, *-ki* is completely acceptable in embedded clauses (see Section 2.2). Since *-ki* is grammatical in contexts where true tense is forbidden, this is an indication that it is not a tense marker, actually.

The second evidence that *-ki* does not convey tense is that it imposes no restriction on adverbs of tense. One can see that *koot* (‘yesterday’), *kiri* (‘today’) and *dibm* (‘tomorrow’) are all possible with *-ki* (if the matrix clause provides an appropriate context):

- (25) [*São Paulo pip koot ta-tat-a-ki*]-t Ø-na-amy-t
 São Paulo in yesterday 3ANAPH-go<EPEN>-NEG-ADVZ 3-DECL-buy-NFUT
gooj-o-ty João.
 car/canoo<EPEN>-OBL João
 “Before going to São Paulo yesterday, João bought a car.”

⁷ In matrix clauses, there is an allomorph of tense markers conditioned by the mood morphology: in the declarative mood, the non-future tense is *-t/Ø*; in the assertive mood, the non-future suffix is *-n* and other allomorphs. See Storto (2002) for more information on mood and tense marking.

- (26) [São Paulo pip *kiri* ta-tat-a-*ki*]-t, Ø-na-amy-t
 São Paulo in today 3ANAPH-go<EPEN>-NEG-ADVZ 3-DECL-buy-NFUT
gooj-o-ty *koot* João.
 car/canoo<EPEN>-OBL yesterday João
 “Before going to São Paulo today, João bought a car yesterday.”
- (27) [São Paulo pip *dibm* ta-tat-a-*ki*]-t Ø-na-amy-j
 São Paulo in tomorrow 3ANAPH-go<EPEN>-NEG-ADVZ 3-DECL-buy-fut
gooj-o-ty *kiri* João.
 car/canoo<EPEN>-OBL today João
 “Before going to São Paulo tomorrow, João will buy a car today.”

True tense markers, on the other hand, place important restrictions on adverbs. Müller e Heleno (2023) show that the non-future marker *-t* cannot co-occur with the adverb *dibm* (‘tomorrow’), whereas the future marker *-j* precludes the adverbs *ka’abm* (‘now’) and *koot* (‘yesterday’):

- (28) Sara Ø-na-aka-t akan i-aka-t ka’abm/koot/*dibm.
 Sara 3-DECL-cop-NFUT village PART-cop-COP.AGR. now/yesterday/tomorrow
 “Sara is in the village now.’/ ‘Sara was in the village yesterday.”
 ‘*Sara will be in the village tomorrow.’ (MÜLLER; HELENO, 2023)
- (29) Sara Ø-na-aka-j akan i-aka-t *ka’abm/*koot/dibm.
 Sara 3-DECL-cop-fut village PART-cop-COP.AGR now/yesterday/tomorrow
 “*Sara is in the village now.’/ *‘Sara was in the village yesterday.”
 ‘Sara will be in the village tomorrow.’ (MÜLLER; HELENO, 2023)

Thus, both the presence of *-ki* in embedded clauses and the lack of restrictions on adverbs are important differences between this suffix and other tense markers in the language. Our conclusion is then that *-ki* cannot be tense. In the next section, we explore the possibility of *-ki* being an aspectual marker.

4 -KI IS NOT ASPECT

In the last section, we showed that *-ki* cannot be regarded as a tense marker. Nonetheless, there is another option which is a little bit more complex, though: *-Ki* could be some sort of aspectual marker, possibly of perfective or perfect aspect. This is the position explicitly taken by Rocha (2016) and Müller e Heleno (2023), even though their analyses seem to differ slightly.

The proposal of *-ki* as an aspectual marker is reinforced by the fact that, contrary to tense morphemes, aspectual markers are allowed in embedded clauses (STORTO, 1999; ROCHA, 2016). For example, the iterative aspectual marker *oko* is possible both in matrix clauses (STORTO, 2002) and in embedded clauses (ROCHA, 2016):

- (30) *Sypom otidna y-ta-yryt oko-j yn.*
 two moon 1s-DECL-arrive ITER-FUT I
 “In two months, I’m back again.” (STORTO, 2002)

- (31) [*boroja taso oky oko tykiri*] \emptyset -*naka-hyryp*- \emptyset *ōwã*.
 snake man kill ITER PERF 3-DECL-cry-NFUT child
 “When the man killed a snake again, the child cried.” (ROCHA, 2016)

Rocha (2016) and Müller e Heleno (2023) claim that *-ki*—in the same way as another aspectual marker, *-byyk* (‘after’), which also occurs in adverbial clauses—has some kind of aspectual component. As can be seen in the examples below, both *-ki* and *-byyk* occupy similar positions and are both offered temporal translations (as ‘before’ and ‘after’, respectively):

- (32) [*pikom-ty ōwã so’oot ki*]-*t* \emptyset -*na-oky-t* *him taso*
 monkey-OBL child see NEG-ADVZ 3-DECL-kill-NFUT prey man
 “Before the kid saw the monkey, the man killed the prey.” (ROCHA, 2016)

- (33) [*pikom-ty ōwã so’oot byyk*]- \emptyset \emptyset -*na-oky-t* *him taso*
 monkey-OBL child see PERF-ADVZ 3-DECL-kill-NFUT prey man
 “After the kid saw the monkey, the man killed the prey.” (ROCHA, 2016)

On the basis of this paradigm above, these authors considered *-ki* as encoding some sort of aspectual information. Rocha (2016) calls it a perfective of anteriority, while Müller e Heleno (2023) treat *-ki* as a negative perfect aspect. Nonetheless, we raise two difficulties in considering *-ki* as an aspectual marker, one regarding its distribution and the other related to its meaning. The details are described in subsections 4.1 and 4.2, respectively.

4.1 Distribution

In the last section, it was shown that other aspectual markers are allowed inside embedded clauses just like *-ki*, and this in turn points to the plausibility of considering it an aspectual marker as well. Nonetheless, *-ki* is different from other aspectual markers in that it cannot regularly be used in matrix clauses with an aspectual meaning.⁸ In matrix clauses, *-ki* is only allowed under the scope of another negative item in declarative sentences (*i.e.*, under the scope of the negative word *padni*) or in questions, which are all downward-entailing environments. This behavior resembles some negative polarity items (henceforth, NPIs) which are licensed, precisely, in downward-entailing contexts (see (CHIERCHIA, 2013)). Below, we flesh out the details.

Aspectual markers that occur in both matrix and aspectual embedded clauses preserve the same function and meaning in both environments. This was shown in

⁸One anonymous reviewer pointed out that not all aspectual markers are allowed in matrix clauses: *-byyk* (‘after’) and *tykiri* (‘when’) are restricted to embedded environments, as the following examples show:

- I. **Taso* \emptyset -*na-oky* *byyk him*
 man 3-DECL-kill PERF meat
- II. **Taso* \emptyset -*na-oky* *tykiri him*
 man 3-DECL-kill PERF meat

Indeed, it seems that not all aspectual markers occur in matrix clauses—even though it remains to be understood why. However, as we will see, *-ki* is very different from all aspectual markers in this respect, since its restriction of occurrence in matrix clauses depends on the presence of the matrix negation *padni*. By contrast, non-matrix aspectual markers *-byyk* and *tykiri* do not show this restriction too as they are not dependent on matrix negation in matrix clauses, but simply not allowed in such environments altogether.

examples (30)-(31) with iterative aspect *oko*, and below with aspectual marker of imperfective *tyka* (STORTO, 2002; ROCHA, 2016). Notice that, in the pair of examples below, the imperfective meaning induced by *tyka* is present in both cases, be they a monoclausal or a biclausal sentence:

(36) *ø-pyr-osedn pasang tyka-dn Pedro.*
 3-ASS-be.happy POST IMPERF.MOT-NFUT Pedro
 “Pedro is becoming happy.” (STORTO, 2012)

(37) *Y-py-so’oot-yn yn [Inácio ’ep opĩ tyka]-ty.*
 1-ass-ver-NFUT I Inácio tree cut IMPERF.MOT-OBL
 “I saw that Inácio was cutting the tree.” (STORTO, 2012)

That *-ki* is different from these aspectual markers is shown by its special behavior in matrix clauses. First, *-ki* is not possible in a simple matrix clause, a fact already noticed by Storto (2007) (see Section 2.2): Consequently, the sentence below can only be interpreted as a question as in (38). In other words, it is ungrammatical under the intended meaning of a negated matrix clause (example (39)), thus being unable to yield a negative statement:

(38) *I-amy-ki João carro-ty?*
 3-buy-NEG João car-OBL
 “[Why] Didn’t João buy the car?”
 (Context: He was expected to buy the car)

(39) **I-amy-ki João carro-ty.*
 3-buy-NEG João car-OBL
 (Intended: “João didn’t buy the car.”)

Nonetheless, when *-ki* is under the scope of the matrix negative particle *padni*, it becomes grammatical in matrix clauses.⁹

(40) *I-oky-ki padni João ombaky.*
 3-kill-NEG NEG João jaguar
 “João has to/must kill the jaguar.”
 (“It is not possible that João does not kill the jaguar.”)

This is not the typical behavior of aspect, though. No aspectual marker poses such a complex restriction on being able to occur in certain clause-types and not in others,¹⁰ being dependent on the negation in order to occur in a matrix clause. Besides, the meaning of aspectual markers remains somewhat stable across all clause types: With *oko* in examples (30) and (31), the meaning is always of iteration, and the same is found with the imperfective *tyka* in (36) and (37). This is not what happens with *-ki*: When present in matrix clauses (under very restricted circumstances) *-ki* does not give rise to the ‘before’

⁹ The example in (40) would also suggest that, in Karitiana, the combination of *-ki* and *padni* is a phenomenon of double negation, not of negative concord (ZEIJLSTRA, 2004), since the use of two negative particles produces an affirmative meaning. The meaning generated by the concomitant use of two negative particles is a reinforcement of the affirmative.

¹⁰ Although there may be restrictions of co-occurrence between the aspectual markers themselves due to meaning clashes (see ROCHA, 2016).

reading of adjunct clauses. Building on examples like (40), we propose that *-ki* is a sort of Negative Polarity Item.

NPIs are negative elements licensed under the scope of a negative particle or within a type of negative environment known in the literature as a downward-entailing, which reverses the entailment pattern found in affirmative statements. As for entailment, a sentence A entails a sentence B if whenever A is true, B is true as well—that is, in order for A to be true, B must also be true. In the pair of examples below, the truth of (41) requires the truth of (42). Therefore, one can say that (41) entails (42):

- (41) Cats like milk.
(42) → Small cats like milk.

Affirmative sentences are upward-entailing, in the sense that if a relation holds for some X, it also holds for a superset of X. This pattern can be seen with the affirmative sentence (43a), which entails a superset of {eating pizza}, e.g. {eating food}. Nevertheless, (43a) does not entail (43c), which contains a subset of {eating pizza}, namely {eating pineapple pizza}.

- (43) a. John ate a pizza.
b. → John ate food. (superset, upward-entailing)
c. ↗ John ate a pineapple pizza. (subset, downward-entailing)

Downward-entailing environments exhibit the opposite pattern: If a relation holds for some X, it will also hold for a subset of X (e.g. CHIERCHIA, 2013). Building on examples (43a-43c), we show below one example of a downward-entailing context. One can see that (44a) does not entail (44b), because, for example, John could have still eaten, such as a hamburger instead of a pizza. On the other hand, (44a) now entails (44c), which contains a subset of {eating pizza}:

- (44) a. John did not eat a pizza.
b. ↗ John did not eat food. (superset, upward-entailing)
c. → John did not eat a pineapple pizza. (subset, downward-entailing)

Crucially, the reversal of the entailment patterns in (44a-44c) is performed by the negation ‘not’, which creates a downward-entailment environment.

Downward-entailing contexts are the domains in which NPIs are typically found. In English, one instance of an NPI is *any*, which, for example, is able to occur in non-interrogative matrix sentences as long as the negative particle ‘not’ is present as in (45). On the other hand, it is not allowed in affirmative statements, which are upward-entailing (see 46):

- (45) John does not see any problem. (downward-entailing context)
(46) *John sees any problem. (upward-entailing context)

Furthermore, *any* is also licensed in interrogative environments, which are also downward-entailing even without the overt presence of negation, thus reminding us of the behavior of *-ki* in questions as in (38):

- (47) Does John have any problem?

In sum, all non-embedded contexts in which *-ki* may occur (namely, negative matrix clauses with *padni* and questions) are downward-entailing contexts. This strongly resembles the behavior of NPIs.¹¹ Therefore, *-ki* seems to be much closer to negative particles than to aspectual markers in terms of contexts of occurrence, since, as far as we know, no aspectual marker in Karitiana imposes a similar restriction on its contexts of occurrence.

4.2 Meaning

At the beginning of this section, we presented analyses of *-ki* as being an aspectual marker, either a perfective of anteriority (ROCHA, 2016) or a negative perfect (MÜLLER; HELENO, 2023). In order to check these proposals with regard to the meaning of *-ki*, we start this discussion laying out some definitions of aspect to check whether they apply to Karitiana *-ki* or not. According to Comrie (1976), there is a lot of terminological profusion when it comes to aspect. Besides, the aforementioned literature on Karitiana does not deal with *-ki* only, but with the conjunct of aspectual markers as a whole, and the exact definition of what these terms are is sometimes mentioned briefly.

According to Comrie (1976), “aspects are different ways of viewing the internal temporal constituency of a situation.” Two major aspectual information can be identified as follows. In Comrie’s terms, one may either view the situation as an “unanalysable whole” or as having internal subparts. The former is called the **perfective**, and the latter the **imperfective**. One can see the difference in the Portuguese examples below:¹² In (48), the event of reading is viewed as a whole and complete, whereas the same event receives some focus on some of its subparts in (49) giving it a durative and ongoing effect and without focusing on the endpoint of the event, *i.e.* it does not necessarily express that João read the whole book:

- (48) João leu o livro. (perfective aspect)
 João read.PERF the book
 “João read the book.”
- (49) João lia o livro. (imperfective aspect)
 João read.IMP. the book
 “João was reading the book.”

If one takes *-ki* as having some sort of perfective information, one may consider that it could only signal a whole and unanalyzable event, which is the core of perfective aspect.¹³ For instance, it could be signaling the negation of the onset of an event (Meaning 1)¹⁴ or the negation of its completeness (Meaning 2), not to be confused with the negation of any of its subparts. See these two possibilities in the example below.

¹¹ More specifically, this is typical behavior of a subset of NPIs, namely the ones that are referred to in the literature as *weak NPIs*, because strong NPIs do require, instead, overt negation in the sentence. In other words, any downward-entailing environment is not enough for it to license a strong NPI. For further discussion on this and the behavior of weak vs. strong NPIs, see Chierchia (2013).

¹² As in other Romance languages, Portuguese combines perfective/imperfective aspect with past tense.

¹³ It is worth mentioning that a certain degree of impossibility between perfective aspect and negation has been observed in the literature. Nonetheless, see Miestamo and Auwera (2011) for a critical review of this observation.

¹⁴ Slavic languages that morphologically indicate perfective vs. imperfective aspect overtly can perfectivize a series of simple imperfective verbs by prefixation to make them telic (not durative) and emphasize the beginning-point of an event. These that receive a punctual and beginning-point reading are often referred

- (50) [São Paulo pip ta-tata-ki-t] Ø-na-amy-t João computador-ty.
 São Paulo in 3ANAPH-go-NEG-ADVZ 3-DECL-buy-NFUT João computer-OBL
 “Before going to São Paulo, João bought a computer.”
 (Meaning 1: “Before the instigation of the event of João going to São Paulo, João bought a computer.”)
 (Meaning 2: “Without the execution of the event of João going to São Paulo, João bought a computer.”)

One problem with this view is that the event under the scope of *-ki* may actually be referring to subparts of an analyzable event. For instance, consider the following habitual, and hence imperfective, readings formed by ‘every-day’ subparts that *-ki* may modify:

- (51) [Oto’oot ta-ti hyryã ki]-t i-kat<a> padni òwã
 every.day 3ANAPH-mother sing NEG-ADVZ 3-sleep<EPEN> NEG child
 “The child does not sleep without his mother singing every day.”
- (52) [Oto’oot gok<o> ‘y ki]-t i-boryt<y> padni João
 every.day yuca<EPEN> eat NEG-ADVZ 3-leave<EPEN> NEG João
 “João does not leave the house without eating yuca every day.”
- (53) [Ta-pa’ira ki]-t Ø-naka-m-keerep-Ø ta-’et òwa
 3ANAPH-get.angry NEG-ADVZ 3-DECL-CAUS-raise-NFUT 3ANAPH-daughter child
 Ti
 mother
 “The child’s mother raised her without getting angry”
 (Context: The child’s mother is a very calm person and never gets angry)

In the examples above, *-ki* is able to modify the sequence of everyday subevents of “(not) singing” in (51), of “(not) eating yuca” in (52), and “(not) getting angry” in (53), as well as the sum of all those subevents. Therefore, the use of *-ki* is not constrained only to single, completed, and unanalyzable events.

In addition to those habitual imperfective readings, it is important to note that the use of *-ki* in the subordinate clause does not necessarily introduce a relation of temporal ordering of any kind in relation to a reference time, so its use does not obligatorily instigate the anteriority effect as clearly as mentioned in the prior literature. A good example against the analysis of *-ki* as a marker of perfectivity of anteriority is the one below:

- (54) *Portugues-ty ta-pypydna-ki-t, naka-tat João Porto Velho-pip*
 Portuguese-OBL 3ANAPH-know-NEG-ADVZ 3-DECL-go-NFUT João Porto Velho-in
 “Not knowing Portuguese, João went to Porto Velho.”
 (Context: João went to Porto Velho and left without ever learning Portuguese because he does not like it)

In (54), the whole and completed event of not knowing Portuguese does not necessarily take place before the event of coming to Porto Velho—one subpart of the former is, in

to as inceptive/ingressive verbs by slavic linguists: e.g., *zapet’-perf* (‘start to sing’) and *zasmajat’sja-perf* (‘start to laugh’) in Russian. Please see Nossalik (2007) for further discussion on this.

fact, concomitant to the occurrence of the latter. Besides, the event of not knowing Portuguese may even continue after the arrival in Porto Velho according to the context provided. Hence, one cannot say that the event of not knowing Portuguese rigorously antecedes the matrix event.

Additionally, the event of the embedded clause is presented in its durative facet, with some of its subparts spanning over the matrix event of arriving. If one would be to classify it in terms of aspect, perhaps the best classification would also be here of imperfective, not perfective.¹⁵ Therefore, examples like this show that anteriority, as well as perfectivity, are not mandatory features for *ki*-.

In sum, we believe that *-ki* could not be considered a perfective of anteriority because it does not necessarily refer to an event considered in its entirety, and its contexts of use may actually receive habitual and imperfective interpretations, and thus describe eventualities that contain analyzable subcomponents. Furthermore, its use does not have to indicate anteriority only, that is, the event it modifies does not have to happen solely and entirely prior to the event denoted by the matrix clause. It could be, as example (54) illustrates, an event whose subparts partially overlap with the matrix event and whose subparts continue to extend after the matrix event is completed.

At this point, it is worth considering the other analysis of *-ki* put forth by Müller e Heleno (2023), which is to analyze it as some kind of perfect aspectual marker. The authors propose that “anteriority/simultaneity/posteriority of the subordinate eventuality time relative to the matrix eventuality time is generated by the perfect/progressive/prospective aspect [...]” They subsume *-ki* under this definition and propose that this suffix be a negative perfect aspect, which would place “the matrix event time after subordinate event time” (even it being a negated eventuality). The following example is introduced in Müller e Heleno (2023) to illustrate this characterization:

- (55) [Ta-man gooj pimbik ki]-ty Ø-nakoro 'op hadna-t Edelaine
 3ANAPH-husband canoe push NEG -OBL 3-think-NFUT Edelaine
 “Edelaine believes her husband not to have pushed the canoe.” (ROCHA s/d apud Müller e Heleno (2023))

One important point about Müller and Heleno’s definition, shown by the example above, is that the event under the scope of *-ki* does not have to have occurred. We will discuss this further in Section 6, where the occurrence of the event under the scope of *ki* does not need to occur, not even at a later time of the embedded event time w.r.t. the matrix event time. Seemingly, the act of pushing the canoe in (55) does not need to have happened (even though this is not clearly demonstrated for this particular example). Therefore, *-ki* would only place the subordinate negated event (the reason why they call it a “negative perfect”) before the matrix event in the timeline without explicitly committing to its actual later occurrence.

It is important to add that the meaning of *-ki* in their proposal does not contradict our analysis of *-ki* since this interpretation of anteriority of *-ki* can be achieved through the simple meaning of *-ki* as a mere negative particle, as we detail in Section 6. What is even more important to distinguish here is that our proposal can reach other potential uses and interpretations of *-ki* (such as the imperfective/durative/stative use of *-ki* and the simple use of *-ki* as privative negation already shown above) that are otherwise excluded

¹⁵ We specifically elicited this data point with the verb *know*, in the sense of *knowing something* since it is considered atelic in nature. In other words, it is said to be a state verb (also referred to as ‘unbounded’, durative, imperfective, and non-conclusive), with no specific endpoint as it will not terminate unless something happens to change it (see COMRIE, 1976 and DECLERCK, 1979).

from the denotation of *-ki* as a negative perfect aspect.¹⁶ All this considered, we further specify below the challenges with their proposal that our analysis of *-ki* as simple negation does not face.

Firstly, it is not clear that *-ki* adheres to the requirements to be classified as perfect, at least in terms of the definition adopted in this paper. In Comrie's (1976) work on aspect, perfective and perfect are different categories: While the former signals a whole and unanalyzable event, the latter "relates two time-points."¹⁷ Consider the pair of English examples below:

- (56) I have lost my penknife. (COMRIE, 1976)
 (57) I lost my penknife. (COMRIE, 1976)

The verbal form in (56) is in the Perfect (the so-called "Present Perfect"). One can see that, in this example, there is an implication that the penknife is still lost in relation to now or the speech time; example (57), on the other hand, does not carry the same implication. Therefore, the Perfect signals some kind of relevance of one event to another event. In (56), for instance, it indicates that the losing of one's penknife still has implications at the utterance time—the moment of speech or the "now": The penknife is still lost.

It is not clear how *-ki* would establish such a relation between two time-points. It could just be that the simple succession of events generates an implicature of relevance (following Grice's (1975) Maxim of Relevance) between them. This is the position taken in our analysis, in which the meaning of precedence (the 'before' interpretation) arises pragmatically (see Section 6).

We opt to analyze this interpretation of anteriority pragmatically and not as part of the denotation of *-ki* since *-ki* may lose the meaning associated with a type of perfect or the indication of a still 'relevant anterior' event and hence be interpreted as simple negation when used in other contexts such as in (13), repeated below as in (58):

- (58) *him hip<i>-ki*
 game cook-NEG
 'raw meat' (literally: "Uncooked meat") (STORTO, 2007)

Nonetheless, we believe that the component of anteriority in Müller and Heleno's analysis, just like the proposal of *-ki* as a perfective of anteriority proposed by Rocha (2016), could be questioned in light of data such as (54) with an unbounded event. As seen before, the event under the scope of *-ki* may span over and beyond the event denoted by the matrix clause, which ultimately means that anteriority is not a requirement of *-ki*. This was shown in (54) and can also be observed in the following examples:

- (59) [*Ta-py'ēja ki*]-*t* \emptyset -*naka-kokot* *João prova-ty*
 3ANAPH NEG-EPEN 3-DECL-pass João test-OBL
 "Without studying, João passes tests."

¹⁶ In order to capture other meanings via the negative perfect analysis, one could stipulate or resort to some sort of lexical ambiguity. Nonetheless, our analysis does not suffer from this drawback, as the core meaning of negation is already able to generate all interpretations found with *-ki*.

¹⁷ Since the definition of perfect considerably diverges from perfective/imperfective aspect, one may wonder whether it could be considered aspect at all (see COMRIE, 1976 for a discussion).

- (60) *Opok*<*o*> *hadna-ty* *jonso* *hadna ki-ty* \emptyset -*naka-sooj*- \emptyset
 non-indigenous<EPEN> language-OBL woman speak NEG-OBL 3-DECL-marry-NFUT
João.
 João
 “João married the woman who does not know the language of the non-indigenous people.”

Summing up, the analysis of *-ki* as a negative perfect whose main and solely function is to place the time of occurrence of the negative event of the embedded clause prior to the time of occurrence of the event of the matrix clause may not hold water, as it faces its own challenges when it comes to accounting for all uses of *-ki*.

4.3 In sum

Altogether, *-ki* does not behave like other aspectual markers in terms of its distribution patterns and of the interpretations it generates. This suffix is therefore more compatible with an analysis of a sort of negative particle without explicitly and lexically adding any aspectual component to it so that we can then pragmatically capture all of its temporal/aspectual uses as well as its habitual/durative and simple negative uses.

5. INTERIM SUMMARY: PROPERTIES OF *-KI*

This paper intends to explain the temporal meaning that arises when the negative suffix *-ki* occurs in an adjunct clause. In the past sections, two possible analyses of *-ki* were explored: It could either be a tense or an aspectual marker. Regarding the first case, we argued that *-ki* is not a tense marker because (i) it is allowed in embedded clauses, in which tense suffixes are impossible; and (ii) it places no restriction on adverbs as tense markers do. Alternatively, it is not an aspectual marker either because its presence in matrix clauses is very restricted, being entirely dependent on the matrix negation *padni* or on downward-entailment (e.g. non-assertive sentences such as questions). No aspectual marker exhibits such a restriction, but, cross-linguistically, this is typical of NPIs. Furthermore, its meaning is not restricted to one particular kind of aspect and/or anterior temporal meaning, say the perfective aspect or a type of negative perfect, since it can also make reference to imperfective (habitual/durative) readings.

In sum, *-ki* cannot be regarded as a tense or aspectual marker. However, the temporal readings that arise with adjunct clauses still have to be explained. This is the focus of Section 6.

6. DERIVING THE TEMPORAL MEANING FROM NEGATION

In this paper, we defend the idea that *-ki* in adjunct clauses is truly a negative particle, and that any other semantic interpretations that may arise in this context are epiphenomenal. Namely, we propose that *-ki* itself does not encode any temporal and/or aspectual meaning, and that the temporal meanings frequently translated as ‘before’ arise pragmatically. The proposal is that an implicature is generated by its negative meaning component and by the contribution of an adverbializing suffix. In conjunction, these give rise to this pragmatically-generated temporal interpretation translatable as ‘before.’

To start fleshing out the details of this proposal, we explore the first component mentioned above, the implicature. The particle *-ki* triggers an implicature of expectation: The event denoted by the embedded clause is expected, but the later occurrence of the event is cancellable (in a Gricean (1975) sense). In the sentence below, there is an implicature that João’s trip to São Paulo indeed occurred, but this can be cancelled as any other implicature:

- (61) [*São Paulo pip ta-tata-ki-t*] \emptyset -*na-amy-t* *João computador-ty*.
 São Paulo in 3ANAPH-go-NEG-ADVZ 3-DECL-buy-NFUT João computer-OBL
 “Before going to São Paulo/Not having gone to São Paulo, João bought a computer.”
 (True even if João does not go to São Paulo after buying the computer)

The possibility of cancellation is even more visible in the example below, in which the context provided strongly induces its cancellation. In this story, the person trying to cross the avenue gave it up due to heavy traffic, so the event of crossing never took place:

- (62) [*Syypomp hora-t* *Sete de setembro ta-na-pypĩ ki]-t*
 two hour-ADVZ Sete de Setembro 3ANAPH-?-cross NEG-ADVZ
 \emptyset -*naka-kak- \emptyset* *mototaxi*.
 3-DECL-get-NFUT motorcycle.taxi
 “Not having crossed the Sete de Setembro (avenue) for two hours, he caught a Motorcycle taxi.”
 (Context: He wanted to cross the Sete de Setembro avenue, but the traffic was too heavy. He couldn’t cross it. After two hours of waiting, he finally got tired and caught a Motorcycle taxi. In the end, he didn’t cross the avenue.)

Crucially, examples like (62) are not translated as ‘before’, even though *-ki* is still present.¹⁸

The meaning of precedence similar to ‘before’ simply arises from the fact that the event denoted by the embedded clause has not (yet) occurred. It would be roughly equivalent to saying ‘not/without having gone to São Paulo, João bought a computer.’ The expectation that João might end up going to São Paulo after the occurrence of the event of the matrix clause is pragmatically implied from the simple fact of having contextually added such a piece of information. However, the occurrence of such an event denoted by the embedded clause may actually never occur.

Importantly, this is a key difference between *-ki* and temporal conjunctions like English ‘before’: Contrary to the former, the latter generally implicates the occurrence of the event denoted by the embedded clause (when the matrix verb is inflected for simple past) in its default reading:¹⁹

¹⁸ Moreover, we also think that the best translation for a sentence like (61) should be ‘not having gone to São Paulo...’, in case the event expressed by the embedded clause did not occur, hence reinforcing our hypothesis.

¹⁹ Please see Beaver e Condoravdi (2003) for a full discussion on the three types of readings of English ‘before’ with regard to veridicality, that is, in terms of whether the truth of the event denoted by the embedded clause is entailed, *i.e.* in terms of whether the ‘before’-event must logically follow and hence end up occurring. The default type is a veridical interpretation of English ‘before’ where the proposition denoted by the temporal clause is implied to be true. In the cases when English ‘before’ acquires a non-veridical reading, these are either counterfactual or non-committal uses of ‘before.’ For the purposes of the discussion here and for comparative and simplification purposes, what this means is that the temporal clause must still be implied to be true in some other world or highly-likely alternative. For instance, in the example

- (63) Before going to São Paulo, João bought a computer. #But he never ended up going to São Paulo.

In the sentence above, the default and strong interpretation is that the event of João going to São Paulo has to take place (and so does the event of him buying the computer). The event of João going to São Paulo is not as easily cancellable as it is in Karitiana.

The second ingredient to the temporal meaning of *-ki* is the adverbializing suffix *-t*.²⁰ This morpheme marks all adjuncts in the language, be they clausal or not (see Sanchez-Mendes (2009)).²¹ In (64), this suffix attaches to the base *kama-* to form the adverb ‘now’; in (65), the same *-t* transforms the whole clause into an adjunct:

- (64) *João i-otam-∅ kama-t*
 João PART-arrive-COP.AGR now-ADVZ
 “John arrived now.” (SANCHEZ-MENDES, 2009)
- (65) *João ∅-na-aka-t i-osedna-t [carro-ty Maria amy ki]-t*
 João 3-DECL-cop-NFUT PART-happy-COP.AGR car-OBL Maria buy NEG-ADVZ
 “João was happy [before Maria bought the car].”

That this suffix *-t* is somewhat tied to the temporal reading under consideration is shown by the data below. When *-t* is not present, as in argumental embedded clauses, the temporal meaning does not arise (or is not as ostensive as with the adverbializing *-t*). This is the case of relative clauses, which do not allow the adverbializing suffix as a consequence of sitting in argumental positions:

- (66) [*Jonso ti 'y 'y-ki*] *i-engy padni*
 woman food eat-NEG 3-vomit NEG
 “The woman who didn’t eat the food didn’t vomit.” (STORTO, 2007)

Therefore, *-ki* alone is not sufficient to generate the ‘before’ meaning: It needs the adverbializing suffix and the implicature of precedence to give rise to such a reading. Whenever one of these ingredients is absent, as in relative clauses, this temporal reading is not found.

In sum, the negative particle *-ki* pragmatically generates a temporal interpretation of precedence through the interaction of the following three ingredients: (i) The suffix *-ki* negates the propositional content of the embedded clause (*i.e.*, behaves as a counterpart to *padni* in matrix clauses); (ii) an implicature that the event of the embedded clause will follow the occurrence of the event denoted by the main clause is generated by the contrast of negating the former and by the juxtaposition of the two contextually salient events; and (iii) the adverbial suffix *-t* strengthens the temporal adverbial meaning by connecting both clauses (suggesting a meaning, similar to ‘when’, that links the two clauses together).

‘Mozart died before he finished the Requiem’, there must exist a world in which it is true that Mozart would have finished the Requiem had he not died. Likewise, in the example ‘Before getting wet, John put on his raincoat’, John would have certainly gotten wet, had he not put on his raincoat.’ We would like to thank Steve Wechsler for pointing out this latter example to us.

²⁰ This suffix has an allomorph *-∅*.

²¹ There seem to be two exceptions, though. The adverb *mynda* (‘slowly’) sometimes has no *-t*, and the temporal adverb ‘today’, *kiri*, bears no adverbializing suffix.

7. FINAL REMARKS

In this paper, we defended the idea that all instances of *-ki*, be they in the matrix or embedded clauses, share the same core meaning of negation. All other interpretations, such as the temporal reading encoded in the translations as ‘before’, derive pragmatically from the interaction of *-ki* with other factors. This will allow to maintain a uniform analysis of the suffix *-ki* across its adjectival and clausal uses.

Therefore, there is no need to build a temporal or an aspectual meaning into the particle itself—and, in fact, we tried to demonstrate that there are several problems in doing so, a case in point being that *-ki* does not exhibit the same distribution as and behavior of tense and aspectual markers in the language.

ACKNOWLEDGMENTS

This research was funded by a Wellesley College Faculty Research Award (Grant number: FF24403). We would also like to thank our Karitiana consultants for teaching us so much about their language and for sharing all this valuable knowledge with us. Our paper also largely benefited from the helpful comments of two anonymous reviewers, to whom we are extremely grateful, and the audience of *Logic and Grammar and Meaning—The (pipe) line connecting 50 years of semantics* (workshop in honor of Gennaro Chierchia) at University of Milano-Bicocca, where a former version of this research was presented. All remaining errors are our own.

REFERÊNCIAS

- BEAVER, David; CONDORAVDI, Cleo. A uniform analysis of ‘before’ and ‘after’. *Semantics and Linguistic Theory*, v. 13, 2003.
- CHIERCHIA, Gennaro. *Logic in grammar: Polarity, free choice, and intervention*. Oxford: Oxford University Press, 2013.
- COMRIE, Bernard. *Aspect: An introduction to the study of verbal aspect and related problems*. Cambridge: Cambridge University Press, 1976.
- DECLERCK, Renaat. Aspect and the bounded/unbounded (telic/atelic) distinction. *Linguistics*, Walter de Gruyter, Berlin/New York Berlin, New York, v. 17, p. 761–794, 1979.
- GRICE, Herbert P. Logic and conversation. In: Cole, P.; Morgan, J. *Syntax and Semantics 3: Speech acts*. New York: Academic Press, 1975.
- LANDIN, David. An outline of the syntactic structure of Karitiana sentences. *Estudos sobre línguas Tupi do Brasil*, 1984.
- MIESTAMO, Matti; AUWERA, Johan van der. Negation and perfective vs. imperfective aspect. *Cahiers Chronos*, v. 22, 2011.
- MÜLLER, Ana; HELENO, Vinicius. *Temporal reference in Karitiana subordinate clauses*. [S.l.: s.n.], 2023. Manuscript.
- NOSSALIK, Larissa. Slavic perfective prefixes: Are they telicity markers? *Proceedings of the 2007 Annual Conference of the Canadian Linguistic Association*, 2007.

- ROCHA, Ivan. *Não-finitude em Karitiana: subordinação versus nominalização*. Tese (Doutorado) – Universidade de São Paulo, São Paulo, 2016.
- SANCHEZ-MENDES, Luciana. *A quantificação adverbial em Karitiana*. Tese (Doutorado) – Universidade de São Paulo, 2009.
- STORTO, Luciana. Algumas categorias funcionais em Karitiana. *Atas do I Encontro Internacional de Grupos de Trabalho sobre Línguas Indígenas da ANPOLL*. Línguas indígenas brasileiras: fonologia, gramática e história. [S.l.: s.n.], 2002.
- STORTO, Luciana. *Aspects of a Karitiana grammar*. Tese (Doutorado) – Massachusetts Institute of Technology, Cambridge, EUA, 1999.
- STORTO, Luciana. *Anáfora ta- em Karitiana*. [S.l.: s.n.], 2007. Manuscript.
- STORTO, Luciana. Copular Constructions in Karitiana: A case against case movement. *University of Massachusetts Occasional Papers*, v. 41, 2010.
- STORTO, Luciana. Subordination in Karitiana. *Ameríndia 35: La Structure des Langues Amazoniennes*, v.35, 2012.
- STORTO, Luciana; ROCHA, Ivan. *Inventário sociolinguístico da Língua Karitiana*. [S.l.: s.n.], INDL (Inventário Nacional da Diversidade Linguística), IPHAN-MPEG, 2018. Manuscrito.
- VIVANCO, Karin. *Orações relativas em karitiana: um estudo experimental*. Diss. (Mestrado) – Universidade de São Paulo, São Paulo, 2014.
- ZEIJLSTRA, Hedde. *Sentential negation and negative concord*. Amsterdam: LOT, 2004.

Recebido: 30/5/2023
Aceito: 3/7/2023
Publicado: 8/11/2023