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RESEARCH REPORT

Experimental evidence of the production of inflected infinitives by Brazilian Portuguese speakers

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ABSTRACT

The Minimalist Program launched by N. Chomsky (1995) inspired reductionist accounts of Control phenomena, which tried to eliminate 'PRO' from the theory of grammar, treating it as a trace (copy) of movement. Such movement theories of Control are directly challenged by the use of inflected infinitives in Brazilian Portuguese (BP), as shown in Modesto (2010). Many supporters of the movement theory, however, have denied the empirical argument, making the claim that inflected infinitives "are not natural in BP" (Rodrigues & Hornstein 2013: 307), not belonging to BP's "core grammar". This study, then, presents two experiments in which production of nonfinite inflection is implicitly elicited in a pseudoword oral completion task. Participants from different linguistic geographic varieties (the cities of Rio de Janeiro and São Paulo) heard the pseudoverb in its gerundive form and were then prompted to insert the pseudoverb in a sentence frame that would be compatible with both uninflected and inflected infinitive forms. Our results show 73.3% of participants inflected the infinitive to some degree when indirectly primed to do so, and that 40.9% did so, even when not primed. Results also show that while linearly distant plural markings (on the subject) did not influence behavior, adjacent

morphosyntactic plural markings (on secondary predicates, for instance) did slightly increase the probability of inflection. Both priming effects and sensitivity to morphosyntactic context seem to indicate that nonfinite inflection is a productive, albeit variable, feature of BP speakers' I-grammar.

RESUMO

O infinitivo flexionado (IF), como em "Ela deixou os alunos brincarem", raramente aparece entre as construções possíveis nas línguas naturais. O português brasileiro (PB) estaria entre as poucas línguas que admitem o IF, embora alguns linguistas acreditem que o PB contemporâneo já tenha perdido esta característica. Nessa visão, os infinitivos flexionados no PB seriam meramente fórmulas estilísticas, aprendidas na escola, e não fariam parte do conhecimento linguístico ativo e implícito de falantes nativos. No entanto, um estudo recente mostrou que as pessoas entendem com mais facilidade justamente as estruturas de IF que diferem daquelas prescritas pela gramática normativa. Isso sugere que o IF ainda persista como estrutura viva no uso espontâneo da língua. Para aprofundar esta investigaçao, implementamos um novo experimento em que fornecemos como estímulo auditivo um verbo inventado (pseudoverbo) e pedimos ao participante que preenchesse a lacuna de uma sentença escrita com aquele pseudoverbo. As sentenças apresentaram contextos estruturais nos quais o IF era opcional. Mesmo sem instrução prévia, os participantes, por conta própria, flexionaram os pseudo-infinitivos em várias sentenças. Isso indica que o IF é realmente um traço da gramática nativa representada na mente de parcela de falantes do PB.

KEYWORDS

Inflected infinitives. Brazilian Portuguese. Experimental syntax. Elicited production. Control theory.

PALAVRAS-CHAVE

Infinitivo flexionado. Português Brasileiro. Sintaxe experimental. Produção eliciada. Teoria de controle.

Introduction

The Minimalist Program launched by N. Chomsky (1995) inspired reductionist accounts of Control phenomena, which tried to eliminate 'PRO'[1] from the theory of grammar (Martin 1996, O'Neil 1997). In one of such analyses (Hornstein 1999, *et seq*.) Control is viewed as NP-movement, just like Raising, with the difference that the controller gets an additional theta-role on its way to a Case position. Just as in Raising, according to Hornstein, movement of the controller into the higher clause is made possible by the fact that infinitival clauses are not able to Case-mark the controller, which is then moved to the higher inflected clause (to get Case). Albeit making perfect theoretical sense in a Minimalist environment, Hornstein's analysis, to be successful, would have to explain all the data, collected over three decades, which indicated a systematic difference between Raising and Control (see Davies & Dubinsky 2004). Although Hornstein (and colleagues) have tried to do so (Boeckx & Horsntein 2003; 2004; Hornstein 2001; 2003; Hornstein & Kiguchi 2003), Landau (2007) still lists several pieces of data that seem to resist a movement analysis. Several other problems have appeared, like Cased PRO in Icelandic, to cite a famous dispute: Sigurðsson (1991), Landau (2003), Boeckx & Hornstein (2006), Bobaljik & Landau (2009).

Another argument against movement analyses of Control is given by Modesto (2010) involving the use of inflected infinitives in Control contexts in Brazilian Portuguese (BP)[2]. If Control is derived by movement to get Case, as in Hornstein (1999), one should not expect phi-features capable of Case-marking the subject in the controlled clause. However, that is exactly what happens in BP. According to Modesto, nonfinite inflection (NI) may be used in BP to create a Partial Control (PC) reading, as in (1a) below, to conform to an intended plurality as in (1b) and (1c), and even in exhaustive Control (EC) structures like (1d) and (1e).

(1) a. No final, o João convenceu ela a se casarem na igreja.
In.the end the João convinced her to SELF marry.INF.3PL in.the church
'In the end, João convinced her to get married in church.'

b. O casal decidiu comprarem a casa na hora que entraram.
the couple decided buy.INF.3PL the house in.the time that entered

[1] PRO is the phonologically null category assumed to occupy the subject position of nonfinite clauses within Generative Grammar. PRO itself, and the Theory of Control have received several analyses during different periods of Generative Grammar (Chomsky 1981; Manzini 1983; Lebeaux 1984; Hornstein 1999; Landau 2015; among many others).

[2] BP has long been noted as a language with inflected infinitives. See Maurer Jr. 1968; Lemle 1984; Ilari 1985; Negrão 1986; Lightfoot 1991; Perini 1995; Quicoli 1996; Miller 2002; Modesto 2010; and even Hornstein, Nunes and Grohmann 2005; Nunes 2008. Infinitives are inflected nowadays in Brazil only in the forms of the plural, so for the verb *amar* 'to love', the first-person plural form would be *amar**mos*** and the second- and third-persons plural form would be *amar**em***. Since the pronoun *nós* 'we' in BP competes with the form *a gente* (lit. 'the people') which takes third-person singular agreement, inflected infinitives like "amarmos" (love.INF.1PL) may not be frequently used, so we had no test sentences with first person.

'The couple decided to buy the house as soon as they entered it.'

c. O time resolveu deixarem as camisas no vestiário.
the team decided to.leave.INF.3PL the shirts in.the locker.room
'The team decided to leave their shirts in the locker room.'

d. Vocês tinham planejado ficarem quantos dias em Atenas?
you.pl had planned to.stay.INF.3PL how.may days in Athens
'You planned to stay how many days in Athens?'

e. A mãe convenceu as crianças a comerem sentadas.
the mother convinced the children to eat.INF.3PL sitting-down.MSC.PL
'Their mother convinced the children to eat sitting-down.'

All the sentences above are problematic to the MTC since inflection on the nonfinite verb is enough to Case-mark its subject (as seen in (2) below). In other words, not only (1a-c), the cases of PC, in which the controllee triggers plural agreement and the controller triggers singular agreement, are problematic to a movement analysis of Control, but also (1d-e), since nonfinite agreement should be able to Case mark the controllee position, making A-movement out of the nonfinite clause impossible.

(2) a. Eu comprei isso para os meninos lerem.
I bought that for the boys read.INF.3PL
'I bought it for the boys to read it.'

b. Crianças brincarem no parque é normal.
kids play.INF.PL in.the park is normal
'It is normal for kids to play in the park.'

We note that resorting to a big DP containing the controller and a null category, from which the controller moves (as in Rodrigues 2007), to explain the BP data in (1-2) would complicate a theory that was intended to be minimalist (see also Landau 2013; Modesto 2018 for several additional arguments against the big DP analysis).

Modesto's (2010) argument was rejected by Rodrigues & Hornstein (2013) based on their belief that NI is not a feature of BP as an internal object; that it does not belong to BP speaker's internalized grammar (anymore), because it is a product of schooling. The authors seem to follow the same line of reasoning as Kato (2005) and Kato, Cirino & Correa (2009), who argue that BP speakers have a "core grammar" and a "marked periphery" containing many things learned in school that are not relevant to any linguistics analysis. The latest of Kato's articles uses accusative clitics as an example: accusative clitics are used in EP and taught as "correct" Portuguese in Brazilian schools, but the

spoken norm in Brazil is to use nominative pronouns in accusative positions. Accusative clitics are seldom used by BP speakers, except for very formal speech or jokes. Rightfully, we believe, the authors argue that accusative clitics are not part of BP core grammar. The problem is that inflected infinitives, unlike accusative clitics, are used by many BP speakers in any social context, at home, so certainly also in front of their children.

As far as we can tell, Rodrigues & Hornstein assume two basic indicators that something is not in our "core grammar": it is not much used in normal speech, and it is absent from child speech (this is what Rodrigues and Hornstein have claimed about NI in BP: it is "scarcely" used by adults, and it is absent from child language). In what follows, we describe a series of production experiments, through which we have tried to check Hornstein and Rodrigues' affirmations.

The experimental data collected by us, discussed below, show that NI is spontaneously used by university students form the cities of Rio de Janeiro and São Paulo: 73.3% of the participants inflected a pseudo-infinitive, to varying degrees, when implicitly primed; and 40.91% of participants did so even when not primed. Although the frequency with which these participants inflected was not overwhelming (with averages varying around 30%), the fact remains that participants produced inflected infinitives even when the demands of the task minimized stylistic monitoring and when they were not explicitly elicited to do so. Such results do not seem compatible with the thesis that NI is scarcely used; nor with the idea that NI is not part of BP I-grammar. We argue here, basically, that a) the use of pronominal null subjects with independent reference (pro) in the subject of inflected infinitives is archaic in BP; it is the product of schooling and reading literature (which sometimes includes Portuguese literature) and does not belong to BP I-grammar; b) the use of NI in Control contexts is not the mere product of schooling and it does belong to BP I-grammar, despite being socio-linguistically variable in BP; c) the production of NI is sensitive to morphosyntactic context (i.e. the presence or absence of plurality in some constituent other than the verb); and d) such usage shows that movement theories of Control based on Case-assignment cannot be correct.

Modesto's (2010) claim that Brazilian speakers normally accept NI in control contexts was experimentally verified by Modesto & Maia (2017). M&M ran an eye-tracking experiment collecting online reading and offline comprehension measures. They found that Control sentences were read faster by Brazilians, with minimal processing cost, and minimal backward eye-movement, which seems to indicate plain grammaticality. Arbitrary, generic[3] and pronominal readings (cf. ex. (6a)) were also read and understood, but with much more processing cost, slower reading, and much more backward eye-movement, which might indicate access to the peripheric knowledge of school grammar, so the whole interpretation is slower and costlier.

We note that M&M's experiment could not measure (un)grammaticality, since all schooled Brazilians can read and understand non-Controlled sentences with inflected infinitives (cf. Rodrigues & Hornstein 2013). What the experiment showed is that BP speakers read the empty category in the

[3] In the sentence *Os jovens acreditam estarem tramando contra eles* (`The young ones believe they are being scammed.'), the inflected infinitive *estarem* refers to a generic or arbitrary `they`.

subject position of an inflected infinitive as PRO, triggering a minimal search for the controller. Only when the Control interpretation fails (for semantic reasons), do Brazilians use the archaic structures with *pro*, to get a semantically congruent reading; but that takes some processing time, as the experiment showed. If Brazilians naturally interpreted such empty categories as *pro*, we would expect sentences with pronominal readings (PRON; 6a) to be read unproblematically and fast, and sentences with exhaustive (EC; 6b) or partial control (PC; 6c) to use some accommodation process, being slower to read; so the costlier processing of (6a) verified by M&M cannot be explained away just by claiming that more distant referents cause more processing cost.[4]

(3) a. Só quando os bebês foram examinados, o cuidador percebeu (PRON)
only when the babies were examined the caretaker realized
terem sujado as fraldas.
have.INF.PL dirtied the diapers
'Only when the babies were examined, did the caretaker realize they had soiled their diapers.'

b. Como chegaram logo ao local da queda, os bombeiros julgaram (EC)
as arrived.3pl soon to.the place of crash the firefighters reckoned
terem salvo muitas vidas.
have.INF.PL saved many lives
'As they arrived at once in the crash area soon, the firefighters reckoned they have had saved many lives.'

c. Como chegaram logo ao local da queda, o bombeiro julgou (PC)
as arrived.3PL soon to.the place of.the crash the firefighter reckoned
terem salvo muitas vidas.
have.INF.PL saved many lives
'As they arrived at once in the crash area, the firefighter reckoned they had saved many lives.'

Offline comprehension questions, which asked participants whether a generic/arbitrary ('other people') or a referent presented in the previous sentence was likely to be the subject of the inflected infinitive, showed 30% of Control reading for non-control sentences - evidence for a preference for control readings in Brazilian speakers - furthermore confirming the claims in Modesto (2010) that the use of NI in Control contexts is productive in current BP. Other readings are not as productive, perhaps because they are only part of the grammar learned in school.

[4] Running M&M's experiment with EP speakers, who presumedly would interpret the empty category as *pro*, would be interesting to demonstrate the processing differences between these two populations.

To complement the work done on comprehension, this study looks at production. We wanted to see whether participants would produce inflected infinitives in an elicitation task with pseudoverbs in Control structures within nominal phrases. We chose to test only EC at this time, since PC needs a context to be fully interpreted (cf. Landau 2000), so experiments with EC are easier to construct. Also, compared to the study of production by means of corpus analysis, experimental elicitation has the advantage of making it possible to systematically study phenomena, such as inflected infinitive, that are relatively rare in spontaneous use. Given that task demands minimal stylistic monitoring and there was no explicit modeling of inflected infinitives, we assume that any semi-spontaneous use of NI by participants to reflect its status in BP I-grammar. University students from Rio de Janeiro and São Paulo participated in two experiments, in which we also intended to investigate what are, if any, the linguistic features that either favor or inhibit the use of NI.

Although NI is accepted by BP speakers in Control contexts, sentences such as the example in (7) might be perceived as less acceptable (compared to (1-4)) as speakers seem to avoid verbal morphological plurality from being "too" close to each other.

(7) Vocês planejam se casarem na igreja?
you-PL plan.PRES.2PL SELF marry.INF.PL in church.
'Do you plan on marrying in church?'

Examples like (8), which show an inflected non-finite complement under a desiderative verb like *preferir* ('to prefer') are not possible in European Portuguese (EP, cf. Raposo 1987), but found in BP, which suggests that there is innovative use of infinitive inflection as a result of core BP grammar, distinct from prescriptive grammar that is historically heavily informed by EP grammar:

(8) Eu prefiro vocês ficarem aí mesmo.
I prefer you.PL stay.INF-PL there right
'I'd rather you all stay right there.'

Despite examples (7) and (8) being perfectly grammatical and used by speakers (see Modesto 2010, 2018), we avoided a possible bias against such structures in our experiment by using another structure that is normally inflected and is not frowned upon by school grammar, such as Control in nominal structures (DPs) as in (9):

(9) Elas ficaram felizes de poder brincarem juntas.
They were happy.PL PREP can.INF play.INF.PL together.PL
'They were happy they were able to play together.'

According to prescriptive Portuguese grammar, these clausal contexts neither require nor reject the use of NI (cf. Cunha and Cintra 1985). Thus, when participants were prompted to use a

pseudoverb in similar sentential contexts, they were truly free to inflect pseudo-infinitives or not, which makes NI production as a result of mere stylistic monitoring (as opposed to a core grammatical feature) even less likely. We also contrasted inflection and non-inflection of the modal verb in the stimuli (*poder* (*brincar**em***) vs. *poder**em*** (*brincar**em***)), which enabled us to test whether double morphological plurality is in fact a factor in inhibiting infinitive inflection. Features that may favor infinitive inflection may be explicit plural morphology, such as present in subject DPs (ex. *the managers* vs. *the* company) or subject oriented predicatives (*brincar(em) junta**s***) ('play together.pl') vs. *brincar(em) no parque* ('play in the park')).

It is important to note that BP, due to historical reasons related to colonization and slavery (see Modesto 2017), went from a null subject grammar based on "rich" agreement to a partial null subject grammar, or a grammar in which null subjects do not rely on verbal agreement, like Chinese (c.f. Duarte 1995; Figueiredo Silva 1996; Modesto 2000, 2008; Rodrigues 2004; Ferreira 2004). It is probably because of such a change that nonfinite agreement started appearing in Control contexts, since agreement is not enough to license null referential subjects anymore. Also for the same reasons, Brazil has a number of speakers who have no NI inflection in their acquired systems. For those speakers, NI will be introduced with schooling.

So, as laid out, we expected to see semi-spontaneous infinitive inflection as influenced by features inherent to the core native grammar (*phi-features*) as well as internalized rules that differ from prescriptive grammar in subtle ways.

1. Elicited production experiment: hypotheses and expectations

In constructing the experiments, we were firstly interested in capturing 'semi-spontaneous' use of NI, by presenting the expressed purpose of the experiment (reproducing a heard pseudoverb in a sentential context) to participants to whom the implicit purpose (verifying NI) was unknown, and stylistic monitoring was kept minimal (by steering attention to pseudoverbs and their reproduction, and away from 'correct' language usage).

Furthermore, we aimed to investigate what other linguistic features may influence the use of NI. For instance, some speakers seem unsure or uncomfortable when presented with two inflected consecutive nonfinite verbs. Modesto (2010) considers that such uneasiness is the product of schooling, and that, normally, Brazilian speakers do inflect consecutive nonfinite verbs and, indeed, several examples can be easily collected by a simple Google search.[5] On the other hand, inflecting speakers

[5] For example, a google search for the frase '*acreditam estarem*' (they believe to be.INF.PL) yielded a variety of examples such as: Os *cientistas acreditam estarem perto da cura do cancer* (Scientist believe to be (INF.PL) close to the cure of cancer); (...) *informações que os especialistas acreditam estarem gravadas na caixa preta* ((...)information that the specialists believe to be (INF.PL) stored in the black box).

often express much more willingness to use NI in some contexts, as opposed to others. Such contexts usually involve the presence or absence of plurality in some constituent other than the verb.

Since Control contexts seem to be a productive context of NI in BP today (as discussed in the preceding section), but trying to avoid complement Control, in which NI may be sociolinguistically disfavored by appearing right after a finite inflected verb, we decide to elicit NI in nominal control contexts like 'They were happy to work together' (*Elas estavam felizes de trabalhar juntas*). In both experiments, we presented participants with the task of repeating a pseudoverb in a preceding prompt, thus not explicitly eliciting NI. In experiment 1, we intended to test the influence of a preceding modal in infinitive form (either inflected or not) on a following nonfinite verb regarding the use of NI in the second verb (i.e., the stylistic 'uneasiness' with regards to doubly inflect verbs). The experimental variable was the presence or absence of inflection on the first infinitive (*poder* vs. *poder*EM + PSEUDOVERB). We expected two types of behavior: (i) categorical non-inflection (e.g., *poder membar*); (ii) inflection of three possible kinds when the subject is plural (e.g., *poder membarem; poderem mebar*; *poderem membarem*). Thus, we expected participants to produce inflected pseudoword infinitives for both inflected and uninflected modals as attested in naturalistic language data but expected stylistic monitoring to yield relatively lower inflection percentages for double infinitive marking as well as longer reaction times (RTs).

To examine whether participants would also produce NI without the possible *priming* effects due to the presence of inflected infinitives in the presented stimuli, as in experiment 1, we set up a second experiment in which inflected infinitives were eliminated from the stimuli. We also tested whether plurality on other constituents (the subject and on secondary predicates) would affect the production of NI, as shown in question-answer pairs such as (10) and (11).

(10) Os gerentes/a loja estão/está galbendo a nota fiscal?
The managers[+PL]/ the store[-PL] are/ is [PSEUDOVERB].GER the receipt
'Are the managers / Is the store galbing the receipt?'

(11) Sim, mas eles estão zangados de [PSEUDOVERB] monitorados/ sem garantia.
Yes, but they are angry.[PL] for [PSEUDOVERB].INF.PL monitered.PL/without guarantee
'Yes, but they are angry for galbing while being monitored / without guarantee.

We expected a higher inflection percentage for sentences with marked plurality immediately following the pseudoverb (on the final word of the secondary predicate, ex. *monitorado-s*) due to linear and structural adjacency of the final word to the pseudoverb. We also expected longer RTs for conditions in which participants inflected more: there is a relatively higher cost associated to the inflection computation related to the secondary predicate (compared to the processing cost of an adverbial adjunct) (Wagers, Lau & Phillips 2009; Marcilese *et al.* 2017).

2. The production experiments: Experiments 1 and 2

2.1 Experiment 1

2.1.1 Participants

Prior to running the test, experimenters applied a socioeconomic questionnaire to gain insight into participants' reading habits and socio-economic status (Cf. Table S1). We tested 30 right-handed undergraduate college students (8 men) from USP (University of São Paulo), mean age 22.9 (SD 6.72) with normal or corrected to normal vision. All participants were given time to read and eventually sign a written informed consent form[6]

2.1.2 Procedure

In Experiment 1, stimuli were presented on a laptop with a 17" screen using E-Prime® 2.0 SP2, which also recorded participants' audio answers and reaction times.

The presentation protocol consisted of the presentation of a fixation cross for 1000ms, a written pseudword for 500ms, followed by an auditory presentation of the interrogative setence in which the same pseudoword was used in the gerund form. Finally, a sentence frame appeared, which participants were expected to complete with some suitable form of the pseudoword (Cf. chronology in Fig. 1). After responding, the participant was to press the space bar to move to the next trial.

It should be noted that the participant was merely instructed to use the pseudoword in the sentence, without explicitly being told it was a *verb*. So, it was up to the participant to inflect the pseudoverb most suitably, using the invariable infinitive or the inflected one (*memb**ar*** or *memb**arem***). The duration of the experiment was approximately 15 minutes.

[6] Project submitted to the national Ethics Committee platform, CAAE: 60579722.7.0000.5286.

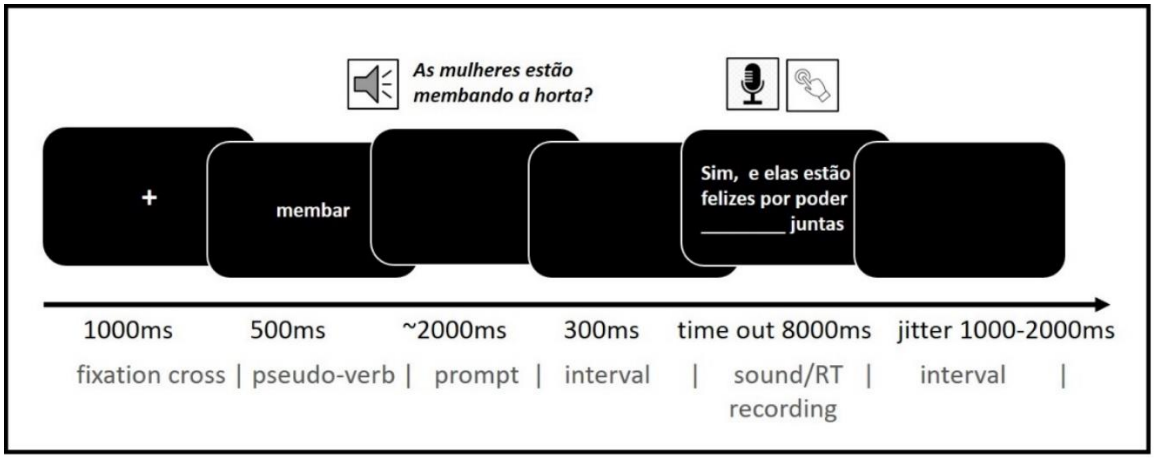

FIGURE 1 – Presentation protocol for experiments 1 and 2 with the pseudoword 'membar', the interrogative 'The women are membing the vege table garden', and the prompt 'Yes, they are happy to be able to _____together'.

Source: produced by authors.

2.1.3 Experimental Design and Materials

The question-answer stimuli were varied according to the inflection of the preceding modal verb (eg. *poder* vs *poderem*). Sentence frames would present a modal verb in the infinitive form that was either (i) inflected (e.g. *Sim, eles estão felizes por poderem (membar x membarem)* juntas), or (ii) uninflected (e.g. *Sim, eles estão felizes por poder (membar x membarem)* juntas). Stimulus sentences were controlled for the number of words and presented an equal number of modal types (*poder* (can), *dever* (must), or *ter que* (have to)). Pseudoverbs were controlled for number of syllables (two) and for the thematic vowel of the conjugation (either ending in "ar" or "er").

There were 54 stimuli for the inflected condition and 54 for the uninflected. Considering the equal distribution of modal type verbs, six lists were compiled and distributed among participants, following a Latin-square, within-subject distribution, such that each participant saw 9 inflected and 9 uninflected experimental stimuli. We also had 18 distractor sentences that were pseudo-randomized together with the experimental stimuli. Table 1 shows an example of this distribution.

Independent variable	**Condition**	**Pseudo-word**	**Prompt question**	**Modal verb**	**Sentence frame**
Inflected modal	PIF	nozer	Os cientistas estão *nozendo* a nave? (*Are the scientists "nozing" the ship?*)	poder (*can*)	Sim, mas eles estão cansados por poderem_____abaixados. (n=18) *Yes but they are tired for can-INF-PL__squatted-PL* *Yes, but they are tired for being able to _____squatted down.*
	DIF			dever (*must*)	Sim, mas eles estão cansados por deverem_____abaixados. (n=18) *Yes but they are tired for must-INF-PL squatted-PL* *Yes, but they are tired for having to _____squatted down*
	TIF			ter que (*have to*)	Sim, mas eles estão cansados por terem que_____abaixados. (n=18) *Yes but they are tired for have to-INF-PL squatted-PL* *Yes, but they are tired for having to _____squatted down*
Uninflected modal	PIN	nozer	Os cientistas estão *nozendo* a nave? (*Are the scientists "nozing" the ship?*)	poder (*can*)	Sim, mas eles estão cansados por poder_____abaixados. (n=18) *Yes but they are tired for can-INF__squatted-PL* *Yes, but they are tired for being able to _____squatted down.*
	DIN			dever (*must*)	Sim, mas eles estão cansados por dever_____abaixados. (n=18) *Yes but they are tired for must-INF__squatted-PL* *Yes, but they are tired for having to _____squatted down*
	TIN			ter que (*have to*)	Sim, mas eles estão cansados por ter que_____abaixados. (n=18) *Yes but they are tired for have to-INF squatted-PL* *Yes, but they are tired for having to _____squatted down*
Fillers	DIS	vatar	Meus amigos andam *vatando* o almoço? (*Have my friends been "vating" lunch?*)	-	Sim, e eles fizeram questão de_____o jantar (n=18) (*Yes, and they insisted on _____dinner*)

TABLE 1 – Experimental conditions and sample stimuli for Experiment 1

Source: produced by authors.

Two dependent measures were collected: the use of NI (inflection vs. no inflection), as registered in the audio, and the latency between the onset of the sentence frame and the moment the participant pressed the space bar indicating the end of his/her answer (Reaction Time (RT)).

2.1.4 Analysis

We established a 90% accuracy cut-off for the repetition task (i.e., correctly repeating and using the pseudoverb frame in the sentence). None of the participants performed below this cut off, leaving a total of 30 samples

To analyze the effect of experimental variables on participants' type of response (inflection vs. no inflection of the pseudoverb) a binomial mixed-effects regression model was used applying the

glmer() function with the *lme*4 package (Bates *et al*. 2015) in R (R Core Team, 2013). For the analyses of reaction times, mixed-effects logistic regression models were adjusted using the *lmer*() function with the *lme*4 package to test the effect of experimental variables. The mixed models were used to allow for the inclusion of participant and item variability as random effects within a single model (Baayen, Davidson & Bates 2008). RT values were inspected for outliers and removed from the dataset upon visual inspection. To achieve normality, lambda transformations were performed on the RT values applying the *BoxCox* function of the *fpp* package (Hyndman & Khandakar 2008). Jarque-Bera tests were applied to check for normality. To facilitate understanding, mean RTs are reported in original millisecond values. The significance of each term in the models was assessed by comparing nested models, and p-values of fitted models were adjusted using the *lmerTest* package (Kuznetsova *et al.* 2017). To facilitate the interpretation of main effects and interactions, fixed effects were sum coded as -1 and 1. For post-hoc pairwise comparisons Tukey's HSD tests were conducted using the *lsmeans* package (Lenth 2015). Error bars on graphs show confidence of interval (for α=0.05).

2.1.5 Results

On average, participants were unable to answer in only 2.58% of all trials. In 6.39% of all trials, participants mispronounced the root of the pseudoverb (ex. *gerder* for *gerber*), and in 3.5% of all trials, participants mixed conjugation classes (ex. instead of *gerber*, which is a pseudoverb from the second conjugation class, with thematic vowel "e", they used *gerbear* which is a pseudoverb from the first conjugation class, with thematic vowel "a"). This indicates that participants were engaged in the task, and successful at it.

2.1.5.1 Inflection

Twenty-two of the 30 participants inflected to some degree. Based on this distinction we categorized each participant as either inflecting (having inflected at least once) or not.

To investigate if the presence of an inflected modal predicted inflection of the pseudoverb of those participants that did inflect (22 of the 30 participants), we fitted a model excluding non-inflecting participants, with modal inflection (inflected x uninflected) as a predictor variable and inflection behavior on the pseudo-infinitive (inflection x no inflection) as the response variable. A comparison with nested models showed that the presence of an inflected modal was a predictor of infinitive inflection for these participants (χ^2= 26.41, p<.001) (Cf. Table S2). In Figure 2, percentages of inflection on the pseudo-infinitive are presented for each condition (with preceding *un*inflected modal x with preceding inflected modal). For conditions in which the preceding modal was uninflected (ex. *poder* _____), the proportion of infinitive inflections was 28.72%, compared to 8.43% for when preceding modals were inflected (ex. *poderEM* _____). That is, in the condition with

uninflected modals, participants were more than three times as likely to inflect the pseudo-infinitive than for conditions in which the preceding modal verb was already inflected. The fitted model revealed these to be significantly different odds ratios (β = 1.59, SE=0.34, z-value=4.76, p<.001).[7]

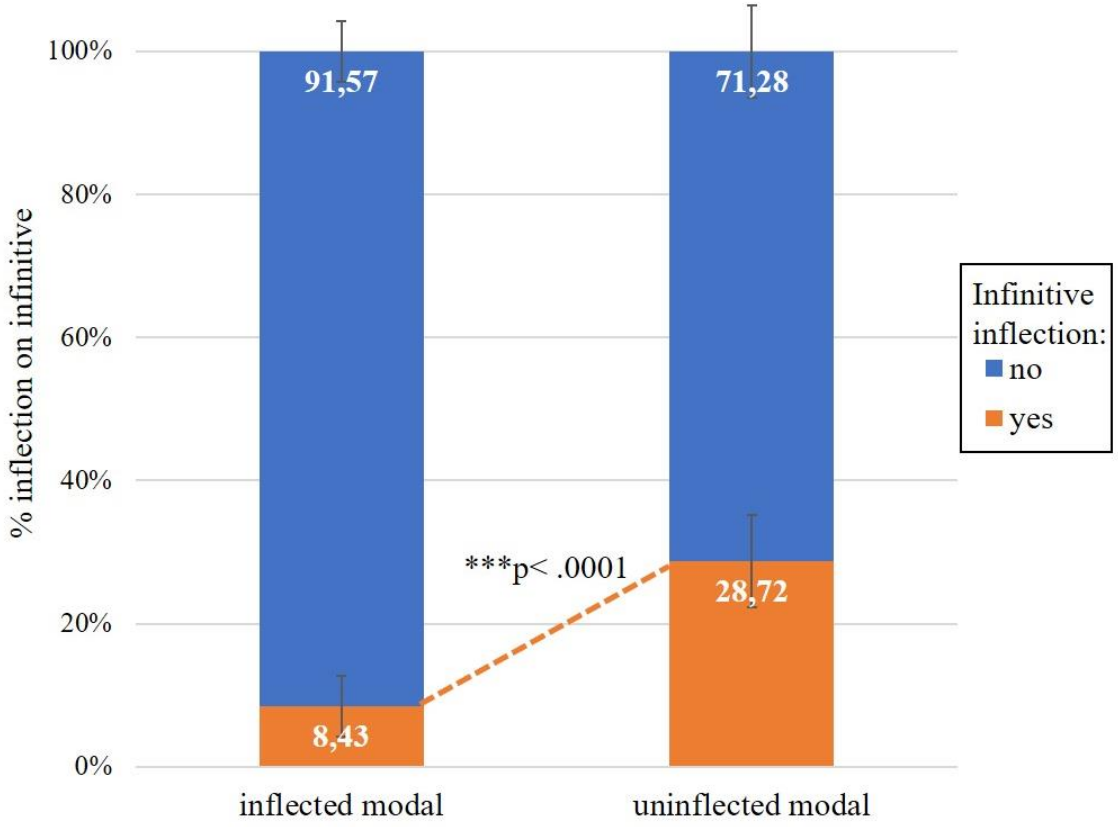

FIGURE 2 – Percentage of Inflection: for the infinitive pseudoverb for inflected and non-inflected modal conditions (inflecting participants only) for Experiment 1. The p-value is the result of post-hoc pairwise comparison.

Source: produced by authors.

An interesting pattern we encountered for the condition with the uninflected modals was that, on average, in 43.51% of all inflected trials, participants inflected the modal verb instead of the pseudoverb. In doing so, participants modified the sentence frame written on the screen. They would produce, for example, *Sim, mas eles estão felizes por poderEM nozer juntos*[8]. So even when in the sentence frame on the screen (ex. "*Sim, mas eles estão felizes por poder* _____ *juntos*") the

[7] We also adjusted more complex models to examine whether controlled characteristics of the stimuli influenced the fixed effect, such as the type of modal verb (poder, dever, ter que), and/or the conjugation class (-er x -ar), but comparisons with nested models showed that models with these factors as fixed effects were not significant (type of modal verb: $\chi 2$ =1.51, p=0.47; conjugation: $\chi 2$ =0.007, p=0.93). More complex models that include both these factors and the experimental variables were significant but showed no interaction between planned conditions (modal inflection) and these factors. (See Table S2 and Table S3).

[8] Translation: "Yes, but they are happy about being able to nezzle together."

modal verb was presented in its non-inflected form, they would inflect it, leaving the pseudoverb in its uninflected infinitive form (ex. *poderem nozer*).

2.1.5.2 Reaction times

In this experiment, reaction times (RTs) were captured after participants' reading of the prompt and verbal production of the pseudoverb. As such, RTs only reflect the process of inflection computation indirectly, and may conflate with processing cost related a range of processes involved in the task, ranging from verb recall to stylistic monitoring. Therefore, we present a brief summary of the analyses (for more details on the statistical analysis see: Supplementary Materials). Modal inflection did not affect RTs (χ^2= 0.85, p=0.36) when considering all participants, nor when considering only inflecting participants (χ^2= 0.85, p=0.36), nor did inflecting participants take longer overall (χ^2=0.67, p=0.41), nor did they take longer on their inflecting responses than on their non-inflecting responses (χ^2= 0.099, p= 0.75).

However, if we observe mean RTs for inflecting participants per condition, we see that RTs are longest for the condition in which inflection is, in fact, unexpected (i.e. when the preceding modal is already inflected *Sim e elas estão felizes por poderEM* _____ *juntas*). In this case, mean RT is 6161ms (SD: 1072ms), compared to 5390ms (SD: 1227) for no inflection, and 5312ms (SD: 1277ms) for inflection, and 5293ms (SD: 1063ms) for no inflection on the condition where the modal is uninflected. This seems to suggest that it is not the inflecting of the infinitive in itself that increases processing time, but that this longer duration might indicate stylistic monitoring associated to hypercorrection.

2.1.6 Interim Conclusions for Experiment 1

We see that the majority of the participants inflected infinitives to some degree (22 out of 30). Nonetheless, not all participants are equally consistent: 14 participants inflected from 11.11% up to 80% of all trials if an uninflected modal verb preceded the pseudo-infinitive, while 6 participants inflected less than 11.11% in the same experimental condition (see Figure 3). For trials with preceding inflected modals, all participants inflected much less: 15 participants inflected 11.1% or less, and only 5 participants from 12.5% up to 62.5%.

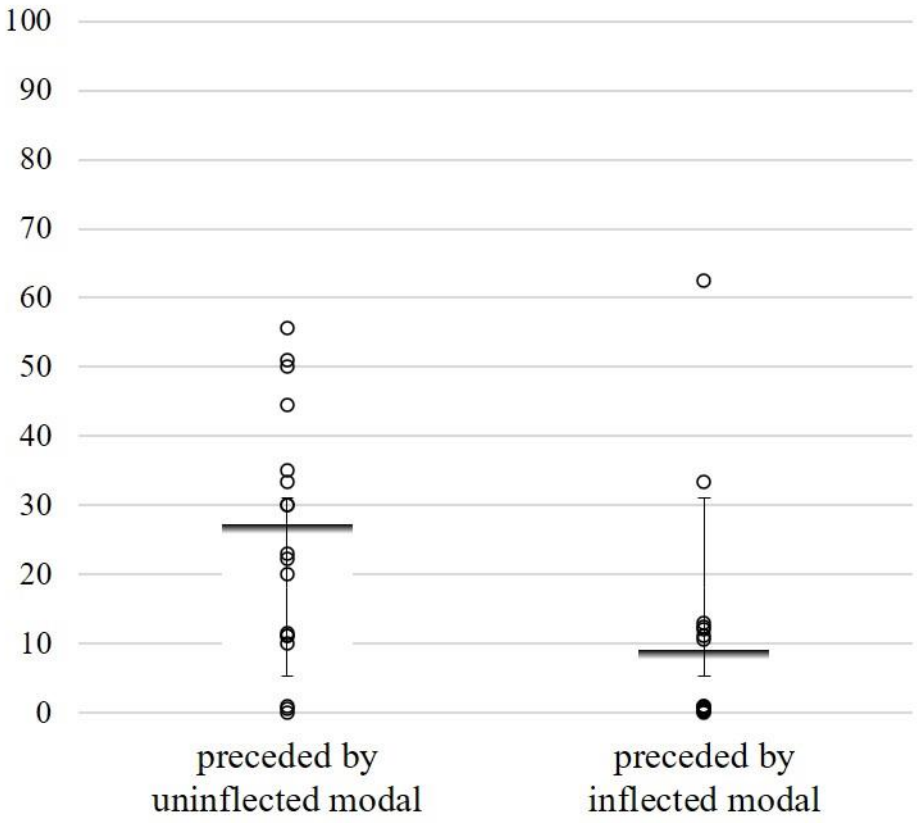

FIGURE 3 – the distribution of mean inflection percentages per participant in Exp.1 for the experimental conditions with preceding inflected and uninflected modals (each dot represents a participant's mean per condition; group average is indicated by horizontal dash)..

Source: produced by authors.

Participants inflected more in the sentences where preceding modal verbs were not inflected, and in more than half of these cases, participants preferred to inflect the first (modal) verb instead of the pseudoverb (ex. *poder**em** membar*), even if that meant altering the given sentence frame. This may indicate that, in a complex verb construction, speakers prefer to inflect the first verb (modal or auxiliary) and that inflection carries on, covertly, to the second verb. That double inflection for infinitives (ex. *poder**em** membar**em***) is avoided also becomes clear from the fact that, for the uninflected modal verb condition, inflection of both modal and pseudoverb infinitives was only observed in two trials.

The fact that participants preferred inflecting the modal infinitive rather than the pseudoverb infinitive may also mean that, partly, sentences of the inflected modal condition primed participants' behavior toward the production of inflected modals in the uninflected modal condition. To examine this hypothesis of possible priming by inflected infinitives in the stimuli, we set up a second experiment in which no inflected (modal) infinitives were presented in the prompts.

RTs were overall not affected by experimental conditions, which suggest that possible additional processing cost related to the inflection of infinitives was not evident from end of task RT measures. The few cases in which participants inflected a pseudoverb after an inflected modal (ex. *poder**em** membar**em***) seemed to drive reaction times up, possibly reflecting participants' monitoring and hesitance when in doubt about the perceived ungrammaticality of double infinitive inflection. This might mean that some speakers would normally inflect the verb in that context but prune the NI before externalization due to the social awareness of the stylistic rejection of such a structure.

Beside removing a possible priming effect by inflected infinitives in Experiment 2, we also aimed to investigate whether there were differences in inflection conditioned by geographic linguistic varieties. To that end, we also included a second participant group from Rio de Janeiro to compare with participants from São Paulo.

2.2 Experiment 2

2.2.1 Participants

In Experiment 2, we tested two groups of participants: one from São Paulo and the other from Rio de Janeiro. In São Paulo there were 34 right-handed undergraduate college students (20 men) from USP (University of São Paulo), mean age 24.1 (SD 6.81) with normal or corrected to normal vision. In Rio there were 32 right-handed undergraduate college students (13 men) from UERJ (State University of Rio de Janeiro) mean age 22.5 (SD: 6.41) with normal or corrected to normal vision. We did not expect behavior to vary due to geographic factors in university students, but we included location as a factor in our analysis to control for any unforeseen differences. All participants signed a written informed consent form (WICF) similarly to what was described for Experiment 1. We also applied a similar socioeconomic questionnaire verifying reading habits and socio-economic status (Cf. Table S1).

2.2.2 Materials and Procedure

The procedures for Experiment 2 were the same as those for Experiment 1, as were the dependent variables (inflection and RT), but new experimental stimuli and conditions were tested. There were no modal verbs in the sentences, and to exclude possible priming effects, there were no stimuli presenting inflected infinitives. Two independent variables were introduced to investigate if specific morphosyntactic contexts affected the probability of infinitive inflection. The question-answer stimuli were varied according to two independent variables: (i) type of subject in the prompt question, collective vs. plural; (ii) final word variance of sentence adjunct in the sentence frame of the answer, variant (when marked for plural) vs. invariant (when unmarked for plural or singular). This resulted in 4 conditions in total: COI (collective subject / invariant ending); PLI (plural subject / invariant ending); COV (collective subject / variant ending); PLV (plural subject / variant ending) (see Table 2 for examples). There were 18 items for each condition. Since conjugation class (-ar/-er) was found to not be an influential factor in Experiment 1, an equal

number of pseudoverbs for each class was used. Four lists were compiled and distributed among participants, following a Latin-square, within-subject distribution, such that each participant saw 4 to 5 items for each condition. We also had 18 distractor sentences that were pseudo-randomized together with the experimental stimuli. Table 2 shows an example of this distribution. The duration of the experiment was 10 to 15 minutes.

Independent variables		**Pseudo-verb**	**Prompt question**	**Sentence frame**
Subject type	**Ending**			
collective	invariant	nozer	A loja está *galbendo* a nota fiscal? (*The store is "galbing" the receipt?*)	Sim, mas eles estão zangados de_____sem garantia. (n=18) (*Yes but they are angry for_____without guarantee.*)
	variant			Sim, mas eles estão zangados de _____monitorados. (n=18) (*Yes but they angry for_____(while being) monitored-PL.*)
Plural	invariant	nozer	Os gerentes estão *galbendo* a nota fiscal? (*The managers are "galbing" the receipt?*)	Sim, mas eles estão zangados de _____sem garantia. (n=18) (*Yes but they are angry for_____without guarantee.*)
	variant			Sim, mas eles estão zangados de _____monitorados. (n=18) (*Yes but they angry for_____(while being) monitored-PL.*)
Filler	-	vatar	Meus amigos andam *vatando* o almoço? (*My friends have been "vating" lunch?*)	Sim, e eles fizeram questão de____o jantar (n=18) (*Yes, and they insisted on_____dinner*)

TABLE 2 – Experimental conditions and sample stimuli for Experiment 2

Source: produced by authors.

2.2.3 Analysis

The dependent measures that were collected (inflection and RT) were the same as in Exp1, as were exclusion criteria for behavioral measures (> 90% accuracy) and outliers. None of the participants were excluded, leaving a total of 36 samples. Statistical models and criteria were the same as in Experiment 1. RTs were transformed applying a λ parameter using the BoxCox. Statistical analyses are reported based on transformed measures, but to facilitate understanding mean RT values are presented in original ms values.

2.2.4 Results

On average, participants were unable to answer in 3.11% of all trials. In 7.29% of all trials, participants mispronounced the root of the pseudoverb, and in 3.13% of all trials, participants mixed conjugation classes. These percentages are very similar to those found in Experiment 1, which indicates that participants were similarly engaged in the task, without much difficulty.

2.2.4.1 Percentage of Inflection

In São Paulo, of the 34 participants, 14 participants inflected to some degree. In Rio de Janeiro, of the 32 participants, 13 participants inflected to some degree. To see whether this distribution was influenced by subject type, final word variance, and/or location (between-subject factor), we fitted a model with these three factors as predictor variables and inflection behavior (profiling each participant as either inflecting or not) as the response variable, with random intercepts by item and participant. A comparison with nested models showed that neither one of the factors, nor their interaction, was a predictor for whether or not a participant would inflect ($\chi2$= 4.37, p=0.63). A model considering only location as a factor, was also not significant ($\chi2$= 0.0002, p=0.99). From this we can surmise that in both locations, the same proportion of participants inflected in similar patterns, and that experimental variables did not influence this distribution.

To investigate if behavior of the subset of inflecting participants (27 out of 66) was influenced by the location of the participants, and/or the experimental variables, we fitted a three-way model for the subset of inflecting participants, with response type (inflection vs. no inflection on each trial) as the response variable and subject type, final word variance, and location as predictor variables with random intercepts by item and participant. A comparison with nested models showed that the three-way model was not significant compared to a null model (χ^2= 10.83, p=0.15). A fitted model with subject type and final word variance as fixed effect was significant (χ^2=7.89, p=0.048), and a fitted model with final word variance and location (χ^2= 7.76, p=0.051) nearly achieved significance, but the best model included only final word variance as a fixed effect (χ^2=5.11, p=0.024) (see Table S6 for all model comparisons). These analyses reflect that subject type, nor location alone, was relevant in explaining the pattern of infinitive inflection that was observed; however, final word variance did affect the proportion of inflection vs. no inflection significantly (β=0.54, SE=0.24, z-value=2.30, p=0.021).

In Figure 4, inflection percentages for the final word variance are compared. Sentence frames in which the gap is followed by a word with plural marking (ex. *Sim, mas eles estão zangados de* _____*monitorado***s**, 'Yes, but they are angry for _____(while being) monitored[+PL]') yielded significantly higher inflection percentages, with 31.4%, compared to 23.36% for sentence frames with unmarked final word ending (*Sim, mas eles estão zangados de* _____*sem garantia*, 'Yes, but they are angry for _____without guarantee'). This difference indicates that plural markings that are co-referenced to (covert/controlled) subjects of infinitives can trigger inflection.

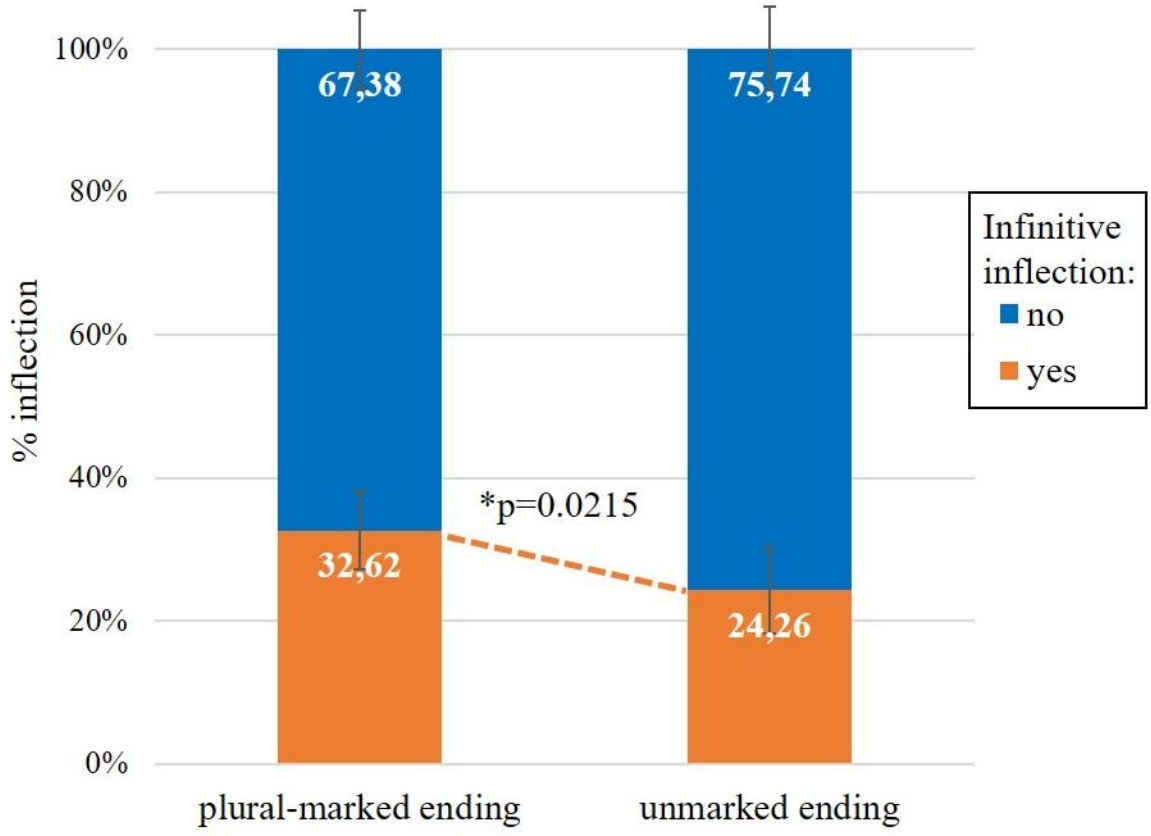

FIGURE 4 - Inflection for marked and unmarked endings (for plural) in Exp.2 Only for inflecting participants.

Source: produced by authors.

All adjusted models that included final word variance among the fixed effects were significant or nearly significant in comparison to the null model (final word variance*subject type: χ^2= 7.89, p=0.048; final word variance*location: χ^2= 7.76, p=0.051). We can infer that these models are marginally significant due to the inclusion of the final word variance as an influential factor in both cases. In the subject type vs. final word ending model, subject type did not significantly affect mean inflection when final word endings were plural (β=0.57, SE=0.35, z-value=1.63, p=0.10), nor was the interaction between factors significant (β=-0.44, SE= 0.47, z-value=-0.93, p=0.35). For the final word variance vs. location model, odds ratios between inflection and no inflection were not significantly different between locations (β=0.44, SE=0.62, z-value=0.72, p=0.47), nor was there any interaction (β=-0.78, SE=0.47, z-value=-1.65, p=0.099). Although not statistically significant, we may note that differences between inflection percentages for sentence frames with final words marked for plural compared to invariant final words was relatively greater for speakers from Rio de Janeiro. They showed higher percentages for sentences with final words marked for plural (35.04%), than for sentences with invariant final words (20.51%). Speakers from São Paulo did not show a similar difference (for variant compared (30.17%) to invariant endings (27.97%)). See Table 3, for all percentage values for all conditions (see Table S7 for post-hoc pairwise comparisons).

Location	Subject type	Final word variance	Pseudoverb inflection (margin of error)	Pairwise comparison	
				z-ratio	p-value
RJ	collective	invariant	17.24% (4.96%)	-2.191	0.3571
		variant	33.90% (6.16%)		
	plural	invariant	23.73% (5.54%)	-1.766	0.6432
		variant	36.21% (6.31%)		
SP	collective	invariant	23.73% (5.54%)	-0.968	0.9789
		variant	30.51% (5.99%)		
	plural	invariant	32.23% (6.08%)	0.331	1
		variant	29.82% (6.06%)		

TABLE 3 – Percentage values for each experimental condition for inflecting participants for Experiment 2

Source: produced by authors.

2.2.4.2 Reaction Times

We present a brief summary of our findings from RT analyses (for more details on the statistical analyses see Supplementary Materials). Location influenced RTs in a general manner, with overall faster RTs for participants in São Paulo, with 4708ms(SD:1329ms), compared to participants in Rio de Janeiro, with 5330ms(SD:1637ms) (see Table 4 for RTs means per condition per location), but this difference was not influenced specifically by any experimental variable (χ^2 =8.53, p=0.29, comparison values of all models involving location, see Table S8).

Although inflecting participants were overall slower than non-inflecting participants, with 5357ms(SD:1710ms) compared to 4769ms(SD:1319ms), this difference was not statistically significant.

We also fitted models for each group (i.e. location) of frequent inflectors (≥3, above the median value) separately. Only the model with final word ending variance was significant for Rio de Janeiro (χ^2 = 4.26, p=0.039), while none of the models for São Paulo were significant (see Table S9 for all nested comparisons).

In Table 4, mean RTs are presented to illustrate effects for final word variance. Mean RTs for variant word ending (marked for plural) were higher overall: 5227ms (SD:1440ms) compared to 5071ms(SD:1659ms) for São Paulo and 6415ms(SD:1906ms) compared to 5959ms(SD:1885ms) for Rio de Janeiro. But differences were only significant for participants from Rio de Janeiro (RJ: β<.00, SE<.00, t-value=2.12, p=0.038; SP: β<.00, SE<.00, t-value=1.20, p=0.23).

These analyses indicate that experimental variables had no generalized effect on RTs, but that a tendency for longer RTs for sentence frames with plural marking on word endings, significant for 'frequent' inflectors from Rio de Janeiro, mirrored the result of higher inflection percentages for that experimental condition.

	Rio de Janeiro											
inflection profile	**Frequent**				**Infrequent**				**Zero**			
subject type	**Collective**		**Plural**		**Collective**		**Plural**		**Collective**		**Plural**	
Final word variance	Invar.	Variant	Invar.	Variant	Invar.	Variant	Invar.	Variant	Invar.	Variant	Invar.	Variant
RT (mean)	5826ms	6477ms	6078ms	6345ms	5358ms	4924ms	4672ms	4662ms	5046ms	5091ms	4962ms	5045ms
RT (SD)	1618ms	2019ms	2109ms	1796ms	1937ms	1494ms	975.ms	1026ms	1511ms	1460ms	1363ms	1235ms
	São Paulo											
inflection profile	**Frequent**				**Infrequent**				**Zero**			
subject type	**Collective**		**Plural**		**Collective**		**Plural**		**Collective**		**Plural**	
Final word variance	Invar.	Variant	Invar.	Variant	Invar.	Variant	Invar.	Variant	Invar.	Variant	Invar.	Variant
RT (mean)	5314ms	5022ms	4805ms	5455ms	4595ms	4563ms	4633ms	4994ms	4668ms	4488ms	4416ms	4600ms
RT (SD)	1680ms	1223ms	1619ms	1636ms	1368ms	1087ms	968.ms	1601ms	1320ms	1107ms	1123ms	1286ms

TABLE 4 – Mean reaction times for inflection profile, subject type and final word variance separated by location for Experiment 2.
Source: produced by authors.

We also fitted models for each group (i.e. location) of frequent inflectors (≥3, above the median value) separately. Only the model with final word ending variance was significant for Rio de Janeiro (χ^2 = 4.26, p=0.039), while none of the models for São Paulo were significant (see Table S9 for all nested comparisons).

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These analyses indicate that experimental variables had no generalized effect on RTs, but that a tendency for longer RTs for sentence frames with plural marking on word endings, significant for 'frequent' inflectors from Rio de Janeiro, mirrored the result of higher inflection percentages for that experimental condition.

2.2.5 Interim Conclusions for Experiment 2

The proportion of inflecting participants is similar for participants from SP and RJ (41.17% and 40.63%, respectively). Qualitatively, we see there are some SP participants that inflect a little more: in SP, of the 34 participants, 6 inflected on 16.6% or less of all experimental trials (16.6% is the median of all collected data), and 7 inflected from 36.11% up to 72.22% of all experimental trials. In Rio de Janeiro, of the 32 participants, 8 inflected on 16.6% or less of all experimental trials and 5 inflected from 33.3% to 61.11% of all experimental trials (see Figure 5). However, given the overall distribution of inflection percentages this difference was not statistically relevant.

When the blank spaces in the sentence prompts ended with linguistic material that was marked for plural (e.g., *Sim, mas eles estão zangados de* _____ ***monitorados***), the percentage of inflection increased presenting 32.62% compared to 24.26% for sentences ending in invariant linguistic material. This shows that morphological marking for plural primed inflecting behavior indirectly, indicating that adjacent nominal plurality may facilitate the spelling out of NI on the infinitive.

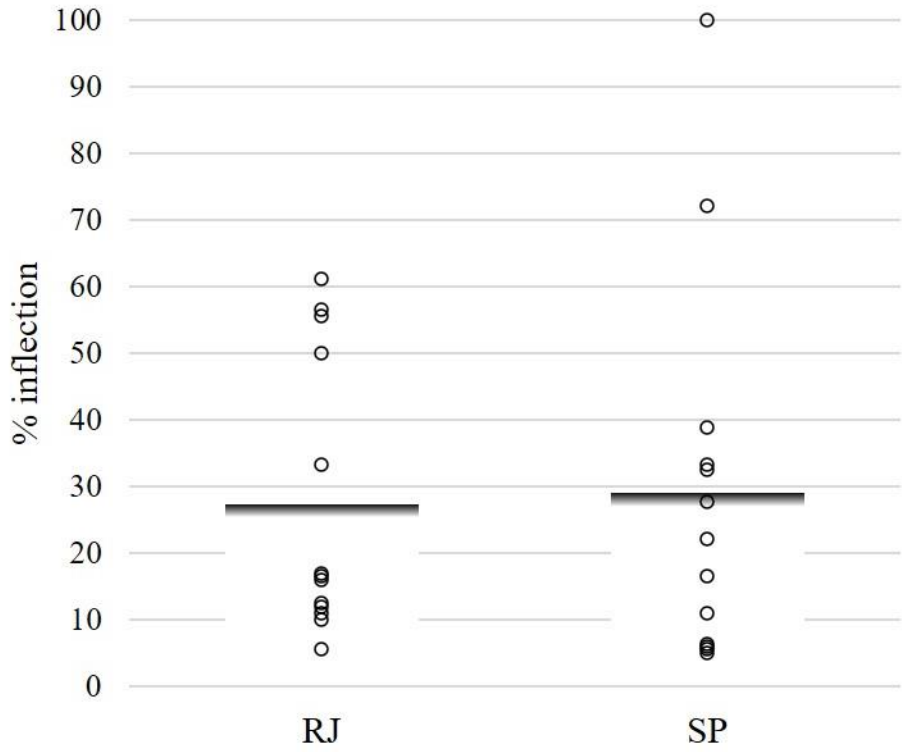

FIGURE 5 – Mean inflection percentages per inflecting participant per location. Each dot represents the mean for a participant for Exp. 2.
Source: produced by authors.

Subject type (collective vs plural) did not alter inflection percentages nor reaction times significantly. This might be because the manipulation of the subject type was only present in the question prompt, whereas in the sentence frame, subject references were always plural, and it may well be

that participants guided their usage of the pseudoverb on the most local features. Whether this was an effect of heuristics or reflecting any underlying structural representation is not clear from the presented data.

Overall RTs were slower for participants from Rio de Janeiro; however, given that these differences did not depend on a difference in the experimental variables under investigation in this study, we do not attempt to offer any explanation for this variation at the moment. In this experiment, we controlled for level of education, and varied location. In future studies, possible interference of other sociolinguistic variables could be investigated.

2.2.5 Conclusions

As we have been discussing in previous sections, Rodrigues & Hornstein (2013) claimed that NI is not part of spoken BP anymore and, therefore, is not part of the core grammatical knowledge of such speakers, having a residual use in formal and literary language maintained by formal schooling. However, such way to describe the facts forces one to take BP to be equivalent to what many call "Popular BP" (or what Modesto (2018) called the non-inflecting variant of BP), effectively ostracizing the grammatical knowledge of many educated speakers into a poorly explained peripheric knowledge. We are not denying that there is peripheric knowledge that BP speakers build from schooling and reading; we just question whether NI should be so characterized, since a) even less frequent data need to be accounted for, and b) innovative uses described above show that speakers produce internally generated structures with NI.

At least the first affirmation in the rationale we just described, i.e., that NI is absent from spoken BP, is proven wrong by the experimental results we just presented: even without the explicit presence of inflected infinitives in the stimuli (nor in the task instructions), i.e., without being prompted, across experiments, an average of 40% of participants inflected infinitives in a context where prescriptive grammar does not require NI. However, inflection was not categorical, and only half of those participants inflected infinitives more than the median (more than 3 instances). It is of course possible that even though NI was not an implicit goal of the experiment, some participants may have been led to use it due to stylistic monitoring. However, two aspects speak against that hypothesis. Firstly, if participants had monitored their production consciously, it stands to reason that in following a prescriptive rule, they would have inflected more consistently. Rather, the inflectional behavior seemed to reflect optional marking, as licensed by their core grammar. Secondly, participants used NI in a context where NI is not required by prescriptive grammar; it is likely that they would inflect a lot more in contexts where both social norms and prescriptive grammar require inflection, i.e., in the presence of an overt subject. It is also highly likely that those speakers will generally inflect infinitives in those contexts, even at home, speaking colloquially to their kids. Those kids will, then, be in contact with NI long before they enter school.

The second question (whether the use of NI is residual and exclusive of schooled speakers) is harder to answer. What we can say for sure based on the data we collected is that some educated BP speakers use NI a lot, some use it more moderately, and some never do. How to reconcile these data with the rationale above is a mystery. Although it is possible that the speakers in this study vary in their educational history up to university, or that some are more concerned with socially monitoring their speech, there is consistency in the data from two distinct geographical groups, both urban and enrolled in higher education. Therefore, it cannot be ruled out that the very similar variability in the inflectional behavior in both groups is the result of NI as a variable feature of BP core grammar.

It is possible that the participants who did *not* produce NI in the covert setting of the experiment, may do so in a monitored context, for example, as a stylistic resource in writing, as a result of their cultural knowledge of prescriptive grammar. Such stylistic use of NI may coexist with I-grammar generated use of NI, found in our study.

In fact, inflecting speakers of BP seem to have intuitions about where and when to use and when to suppress NI, as our discussion in the section above indicated. In short, in complex verb phrases, inflection preferably occurs on the first verb (modal auxiliary). This tendency was perhaps modeled (i.e., primed) by our stimuli or was something intuitive to the participants. Also, the presence of morphosyntactic plural markings on secondary predicates increased the probability of NI. This suggests that although inflection on infinitives may be optional, phi-features for plural marking are latent on infinitives in these structures, and that externalization of number morphemes may depend on context.

Additionally, since Experiment 1 yielded more inflection than Experiment 2, it seems that NI can be primed to a certain extent. Psycholinguistic studies have amply proven that priming effects only occur when some representational element is shared between the prime and the target that is produced or comprehended (Traxler *et al.* 2000; Ledoux *et al.* 2007; Hasting *et al.* 2007). Therefore, it seems reasonable to take priming as a reflection of grammatical knowledge.

In section 1, we mentioned that a few uses of NI (the PRON and ARB uses) are in fact rare in normal speech because those uses are not part of BP I-grammar (though educated speakers have to deal with those uses when reading literature). We also suggested that the use of NI in Control contexts is frequent, and though some BP speakers do not produce NI in their speech, the innovative use of NI shows that NI is still part of BP I-grammar. Our results, on top of those gathered by Modesto & Maia (2017), show that, although containing inflection, the structures are still interpreted as Control, which poses serious problems for the MTC. These claims were then corroborated by experimental data: we confirmed that NI is still used by a large portion of the speakers and that those speakers seem to have intuitions on its use.

Of course, one may still believe that all the use of NI we experimentally attested is the product of schooling, but to those people we would ask why the PRON and ARB uses have become archaic if they are taught as possible uses of NI in schools? And how is the use of NI in Control contexts so disseminated when they are not prescribed by school grammar? We aim to answer these questions

in future studies that will address whether BP has indeed changed from a pro-drop grammar with rich agreement to another grammar, with weak agreement, in which the licensing of null subjects that does not rely on agreement, thus making it possible for NI to start appearing in Control contexts. This would imply that NI is indeed a feature of BP I-grammar.

Additional information

Evaluation and authors' response

Evaluation: https://doi.org/10.25189/rabralin.v21i1.2065.A
Authors' response: https://doi.org/10.25189/rabralin.v21i1.2065.R

Data Availability/Supplementary Files

Supplementary Files are available at:
https://osf.io/68bzs/?view_only=ed5386d166794d709d37df83d09cf54d

Conflict of Interest

All authors declare that they have no conflicts of interest

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