

# The Syntax-Semantics Interface in L2 Acquisition: Genericity and Inflected Infinitive Complements in Non-Native Portuguese

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## 1. Introduction

Contemporary acquisition theorizing and studies have argued and empirically supported the claim that interfaces of syntax and other linguistic modules are particularly vulnerable in L1, bilingual and especially L2 acquisition (Platzack, 2001, Montrul, 2004, Müller and Hulk, 2001, Sorace, 2000, 2003, 2004, 2005, Serratrice et al., 2004, Paradis and Navarro, 2003, Valenzuela, 2006 Zapata, Sánchez and Toribio, 2005). Stemming from seminal work by Sorace (2000, 2003, 2005), much contemporary research in generative SLA has focused on the acquisition of interface properties under the assumption that while the acquisition of the narrow syntax is straightforward for adults, post-critical period acquisition of interpretation and discourse usage seems to lag behind, often dramatically. For some researchers, interfaces are unavoidably a locus for non-convergence (e.g. Valenzuela, 2006), which is to say, there is a debate as to whether or not L2 learners can actually acquire interface-conditioned properties at all. Sorace and colleagues contend that interfaces (e.g. the syntax-semantics, syntax-pragmatics and the syntax lexical-semantics interfaces) are especially vulnerable for adults and therefore subject to greater difficulty, delays, and result in so-called *residual optionality* (e.g. Belletti and Leoni, 2004, Fruit, 2006, Papp, 2000, Sorace, 2004, Sorace and Filiaci, 2006, Tsimplici and Sorace, 2006, Unsworth, 2004, Valenzuela, 2006).

Recently, it has been argued that not all interfaces pose the same level of complexity/difficulty in adult acquisition, which is to say the syntax-pragmatics interface seems to be a source of greater L2 non-convergence as compared to the syntax-semantics interface (Tsimplici and Sorace, 2006, Valenzuela 2006). This is not necessarily unpredicted in light of observations from L1 and bilingual acquisition and the very nature of this particular interface, where syntax and discourse structure meet. Research has shown L1 developmental delays and adult variability for properties at the C-domain for monolinguals and demonstrates greater incidences of cross-linguistic interference, attrition (i.e., the erosion of pragmatic features) and variability at this interface for bilingual acquisition (Fruit 2006, Montrul, 2004, Müller and Hulk, 2001, Paradis and Navarro, 2003, Platzack, 2001, Serratrice et al., 2004, Tsimplici et al., 2004, Zapata et al., 2005).

Since semantic knowledge is mediated by the syntax, it is intuitive to predict that properties at the syntax-semantics interfaced would be easier to acquire than those at the syntax-pragmatics interface, but still harder than properties within the narrow syntax in light of an added layer of complexity. In the present study, we test advanced L2 learners' knowledge of inflected infinitives in L2 Portuguese in terms of properties of control (syntactic knowledge) and in terms of a genericity effect on inflected infinitive complements of epistemic predicates (syntax-semantics interface knowledge). The latter should be more difficult to acquire than the former, however, if the syntax-semantics interface is less problematic than the syntax-pragmatics interface then L2 learners could have sophisticated knowledge of both properties at advanced levels of proficiency. If the syntax-semantics interface, like the syntax-pragmatics interface (see Valenzuela 2006), is a locus for post-critical period fossilization then even advanced learners should display at best some "residual optionality" and at worst have completely indeterminate knowledge of the genericity effect only (assuming that new syntactic features can be acquired, an admittedly nontrivial assumption see White

2003 for debates). Nevertheless, our data demonstrate that advanced L2 Portuguese learners acquire native-like knowledge of both syntactic and syntax-semantics interfaced properties of inflected infinitives. In fact, somewhat surprisingly they show no *residual optionality* in the latter case. As we discuss, this suggests that the syntax-semantics interface is less challenging than other interfaces (cf. Tsimpli and Sorace 2006) and is not a predetermined locus for L2 fossilization.

This article is set up in the following manner. The next section presents a syntactic analysis of inflected infinitives in Portuguese, including knowledge of associated semantic entailments that involve the syntax/semantics interface. Next, we present a section on study design and methodology, which is followed by a results, a discussion and a conclusion section.

## 2. Infinitives in Portuguese

In this section, we describe Portuguese inflected infinitives. Although we describe the phenomenon of Brazilian Portuguese (BP) and European Portuguese (EP) inflected infinitives in terms of what they share in common, we acknowledge that there are distributional and possible syntactic differences (see Da Luz 1998; Galves 1991; Madeira 1995; Pires 2001, 2006; Salles 2003 for discussion), which, in consideration of space limitations, we will not discuss herein. Despite these differences, acquiring Agr-inflection with infinitival forms (i.e. inflected infinitives) is the same for language acquirers of both, children and adult alike.

### 2.1 *Inflected Infinitives and Their Distribution*

Although cross-linguistically rare, some languages such as Portuguese, Galician and some dialects of Sardinian allow for person/number agreement with infinitives. That is, these languages have two types of infinitives, both unspecified for tense yet distinguished from one another both distributionally as well as morphologically via a specification for person/number-Agr (inflected infinitives) or not (uninflected infinitives). In BP only plural forms have corresponding overt morphology for person/number, whereas in EP both the singular and plural 2<sup>nd</sup> persons (in bold) display overt morphology as well, as in (1)<sup>1</sup>.

(1)		Singular		Plural
	eu	canta+r+Ø		nós
	<b>[tu</b>	<b>canta+r+es]</b>		<b>[vós</b>
	você			vocês
	ele	canta+r+Ø		elas
	ela			elas

‘I/you (EP) sg./you (BP) sg., he, she/we/you pl. (EP)/you pl. (BP)/they to sing+AGR’

Although the distribution of inflected and uninflected infinitives overlap in some environments (i.e., their use is optional), there are other environments in which the use of one or the other is restricted. On the one hand, inflected infinitives exhibit behavior similar to finite clauses in that they take lexical or null subjects, seen in (2), which is distinct from uninflected infinitives whose subject must be PRO (subject or object controlled). Although inflected infinitives are broadly used in native Portuguese, it

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<sup>1</sup> The reader should note that 2<sup>nd</sup> person forms are not used in standard Brazilian Portuguese, which is the dialect of Portuguese under investigation herein. An anonymous reviewer noted that this is important since the L2 learners need only acquire a partial paradigm, suggesting that the singular cases are “true uninflected infinitives”. However, despite the fact that the singular forms have no dedicated morpho-phonological forms they do have a zero morpheme that has agreement features without tense, explaining the differences in their syntactic distribution (and subsequent semantics) to true uninflected infinitives. Thus the L2 learners do need to learn a full morphological paradigm.

is important to point out the fact that they are never obligatory. That is, there is always an appropriate finite form that is equivalent in meaning, which can be used grammatically as an alternative, thus explaining why there is no difference in interpretation between (2a) and (2b). This, of course, has implications for L2 acquisition, which may reflect the avoidance of particular structures in production despite knowledge of their underlying morphosyntactic properties; a point to which we will return in the discussion section.

- (2) a. Nós lamentamos eles/*pro* não gostarem da comida.  
 b. Nós lamentamos que eles não gostem da comida.  
 c. \*Nós lamentamos eles não gostar da comida.  
 d. Nós lamentamos PRO não gostar da comida.  
 ‘I regret (*pro*)/they/ PRO not to like the food’

Inflected infinitives also exhibit behavior distinct from finite clauses, yet similar to uninflected infinitives in that they cannot take the complementizer *que*, as in (3a). Moreover, since they are only possible in embedded positions (licensed by the verbal predicate or a preposition) they cannot occur as the matrix verb (as in (3c)) or as independent clauses (as in (3e)):

- (3) a. \*É importante que eles gostarem da comida.  
 ‘Is important that they to like the food’  
 b. É importante que eles gostem da comida.  
 ‘Is important that they like the food’  
 c. \*Eles quererem gostar da comida.  
 ‘They to want to like the food’  
 d. Eles querem gostar da comida.  
 ‘They want to like the food’  
 e. \*Eles gostarem da comida.  
 ‘They to like the food’  
 f. Eles gostam da comida.  
 ‘They like the food’

Additionally, unlike uninflected infinitives and finite verbal forms, inflected infinitives are ungrammatical as relative clauses and embedded interrogatives, as in (4).

- (4) a. \*Não sabemos quem convidarmos á festa.  
 b. Não sabemos quem convidar á festa.  
 c. Não sabemos quem convidaremos á festa.  
 ‘We don’t know who(m) to invite (+AGR)/ we will invite to the party’

## 2.2 Differentiating Inflected vs. Uninflected Infinitives

Although both inflected and uninflected infinitives are infinitival forms, the fact that inflected infinitives take lexical or null subjects as opposed to PRO results in differences in behavior as it relates to control. As a result, inflected infinitives show characteristics of non-obligatory control (e.g. local c-commanding antecedents are not needed, they allow/require strict interpretations of the ellipsis site and they allow for split antecedent readings) while uninflected infinitives display properties of obligatory control (Pires 2001, 2006, following Hornstein 1999).

In this section, we describe two related differences that exist between inflected and uninflected infinitives, which we use in the empirical section to test for L2 knowledge of inflected infinitives: (a) sloppy vs. strict readings under ellipsis and (b) the impossibility vs. the possibility of split antecedents.

As it relates to possible readings under ellipsis, uninflected infinitives must take a sloppy reading whereas inflected infinitives can correspond to a strict interpretation of the ellipsis site; in fact they must in some cases (e.g., 1<sup>st</sup> person plural). Consider the following sentences in (5).

- (5) a. *O Roberto lamenta ter chegado tarde e a Maria também.*  
 Robert<sub>i</sub> regrets PRO<sub>i/\*j</sub> have-INF arrived late and Maria too.  
 ‘Robert regrets having arrived late and Maria does too.’
- b. *O Roberto lamenta termos chegado tarde e a Maria também.*  
 Robert<sub>i</sub> regrets *pro*<sub>j</sub> have-INF-1pl arrived late and Maria too.  
 ‘Robert regrets our having arrived late and Maria does too.’

The elided material under (5a) can only be interpreted with the sloppy reading of ‘Maria herself regrets her own late arrival’ as opposed to (5b) where the ellipsis material must be understood as the strict interpretation of the ellipsis site, which corresponds to ‘Maria regrets our arriving late’.

Furthermore, inflected infinitives as compared to uninflected infinitives behave differently in terms of allowing (or not) split antecedents for embedded clause null subjects. Consider the following sentences in (6):

- (6) a. *Eu<sub>i</sub> convenci o João<sub>j</sub> PRO<sub>j/\*i+j</sub> a perdoar a Sara.*  
 I<sub>i</sub> convinced John<sub>j</sub> PRO<sub>j/\*i+j</sub> to forgive-INF Sara.  
 ‘I convinced John to forgive Sara.’
- b. *Eu<sub>i</sub> convenci o João<sub>j</sub> pro<sub>i+j</sub> a perdoarmos a Sara.*  
 I<sub>i</sub> convinced John<sub>j</sub> pro<sub>i+j</sub> to forgive-INF-1pl Sara.  
 ‘I convinced John that we should forgive Sara.’

In (6a) the subject PRO of the uninflected infinitive does not allow an interpretation where *eu* and João can form a set that serves as the subject antecedent. Conversely, in (6b), the embedded *pro* must be co-referential with a set of elements that includes *eu* and João, yet, in light of the plural Agr-morphology of the inflected infinitive, it may not be co-referential with João only.

We have seen that inflected infinitives and uninflected infinitives differ with respect to sloppy or strict readings of the ellipsis site and the possibility (or not) of split antecedents. A further difference between the two types of infinitives manifests in the form of a semantic entailment.

### 2.3 A Semantic Entailment: Generic vs. Single Event Readings

In this section, we discuss a semantic entailment that restricts the distribution of inflected infinitives, which we test for in Test 2. Unlike inflected/uninflected differences with respect to non-obligatory vs. obligatory control, which directly derive from the syntactic acquisition, this property sits at the syntax/semantics interface. In light of contemporary proposals (e.g. Sorace 2000, 2003, 2005), interface phenomena should be harder to learn than purely syntactic phenomena. Thus this semantic entailment is interesting to study, especially in comparison to control properties.

Although the use of inflected infinitives for lexical verbs like *comer* and *comprar* as complements of epistemic matrix verbs, as in (7), seems to be ungrammatical irrespective of the subject-verb order in certain contexts, they are completely grammatical in others contexts, as in (8) (Ambar 1998:12):

- (7) a. *\*Penso elas comerem a sopa.*  
 think-1sg they-fem eat-inf-Agr the soup

- b. *\*Penso comerem elas a sopa.*  
 think-1sg eat-inf-Agr they-fem the soup
- c. *\*Penso comerem pro a sopa.*  
 think-1sg *pro* eat-inf-Agr the soup  
 ‘I think they ate the soup.’
- (8) a. *As crianças, não comem bem. \*Penso eles comerem chocolates de mais.*  
 the kids not eat well. think-1sg the children eat-Agr too many chocolates.
- b. *As crianças, não comem bem. Penso comerem pro, chocolates de mais.*  
 the kids not eat well. think-1sg eat-Agr the children too many chocolates.
- c. *As crianças não comem bem. ?Penso comerem eles chocolates de mais.*  
 the kids not eat well. think-1sg eat-Agr the children too many chocolates.  
 ‘Kids don’t eat well. I think they eat too many chocolates.’

Sentences (7a) and (8a) are ungrammatical in both BP and EP as a result of word order violations (see Raposo 1987 for EP and Salles 2003 for BP). However, in light of the acceptability of (8b) in BP (8c is accepted by only some BP speakers) and (8b) and (8c) in EP, the unacceptability of (7b) and (7c) is not immediately clear. The difference, as per Ambar (1998), has to do with the implicit interpretability of the two sentences. Ambar argues that there is a genericity requirement imposed on inflected infinitive complements of epistemic verbs only. Sentences like (7a-c) are therefore unacceptable because, in light of the context, the temporal interpretation is only compatible with a single event reading; showing the intrinsic eventive properties of verbs like *comer*. In (8), however, a generic or characterizing reading is possible with a verb like *comer* via a necessary shifting of the original *Aktionsart* value of the eventive verb to that of a non-eventive one. The shifting of the *Aktionsart* value of a lexical verb like *comer* in contexts like (8) makes it compatible with a habitual or generic reading, thus explaining both its acceptability and the default stative-like reading the sentence necessarily takes.

## 2.4 Acquiring Inflected Infinitives

Within Minimalism, parameter values are located within the particular grammar (PG) functional lexicon (Chomsky 1995). PG lexicons vary in terms of which functional categories and features (as well as the type of feature; e.g., interpretable vs. uninterpretable) they instantiate. In other words, language-to-language differences in feature composition related to language-specific morphology and functional categories are assumed to be the locus of parametric difference. Of course, these differences have a number of syntactic consequences. One such consequence is the possibility or not of inflected infinitives.

Raposo (1987) and Quicoli (1988, 1996) demonstrated independently that the possibility of inflected infinitives is conditioned upon the interaction of a syntactic parameter (the [+ null-subject] of the Null-Subject Parameter) and the positive setting of a morphological parameter (the Infl-parameter). Both Raposo and Quicoli propose that the Infl structure is a morphological parameter of UG that contains values for Tense and Agr. In light of Portuguese facts, it is argued that finite Infl is specified for [+Tense] and an infinitival Infl is specified for [-Tense], independently of Agr. However, in many languages, such as English and Spanish, if Infl is finite it is necessarily specified for Agr and the converse also holds (i.e., when Infl is infinite it cannot be specified for Agr).

Raposo proposed that the positive value of the Infl-parameter in Portuguese allows for a free choice of [ $\pm$  Tense] in an Infl with interpretable Agr-features. Inflected infinitives, therefore, obtain from the possibility of having [[- Tense] +Agr]. In the absence of [+Tense], Infl (or Agr in Infl)

assigns nominative case to its subject if it itself is specified for case (Raposo 1987: 92)<sup>2</sup>. Verbal Agr is a set of interpretable  $\Phi$ -features for number, person, and optionally case, mapped to a morpho-phonological form in null-subject languages only (Alexiadou and Anagnostopoulou 1998; Chomsky 1981). It follows then that a language with inflected infinitives taking nominative lexical subjects must be a null-subject language and that the choice of [ $\pm$ Tense] is free of the choice Agr [ $\pm$  case]. In light of current L2 acquisition proposals differentiating between the adult acquisition of interpretable and uninterpretable features (Hawkins 2005, Hawkins and Hattori 2006, Tsimpli and Dimitrakopoulou 2007), it is not necessarily surprising that the NSP would be reset by these L2 learners under the assumptions we take above. However, in order to converge on a grammar with inflected infinitives the I-parameter needs to be reset as well and this involves the acquisition of uninterpretable features.

Pires (2001, 2006) updates Quicoli and Raposo's versions of the I-parameter in minimalist terms following Lightfoot's cue-scanning approach to language acquisition (Lightfoot 1999). However, Pires' discussion does not entail an explanation of inflected versus uninflected infinitives in terms of the interpretability of features. The distinction between interpretable and uninterpretable features relates to how these features interact to trigger different operations in the narrow syntax. Under the recent Probe-Goal/Agree approach to feature checking/valuation, only uninterpretable/unvalued features meet the dual activation condition for Agree to apply. In order to understand the possibility of inflected infinitives in terms of feature interpretability and in light of the recent L2 approaches claiming that only uninterpretable features are not acquirable after the so-called critical period, it is important to show how the resetting of this parameter involves the adult acquisition of uninterpretable features. We propose that only inflected infinitives (as compared to uninflected infinitives) involve uninterpretable phi-features on T that have to be checked/valued in the course of the derivation<sup>3</sup>. One will note that such an analysis is directly compatible with the [+AGR] setting of Quicoli's (1988, 1996) and Raposo's (1987) versions of the Inflection Parameter and is an alternative to Pires' (2001, 2006) approach in terms of a full set of phi-features on T of an inflected infinitive. Given any of these specifications, only inflected infinitive will trigger Case checking/valuation on a full DP or null pro in BP (and in EP, although the issue of inversion yields further complications here), as the result of Agree and valuation of uninterpretable phi/Case on T/DP respectively. And so, in order for adult L2 learners to acquire inflected infinitives, there cannot be a post-critical period failure of uninterpretable features that are not acquired in the L1.

### 3. The Study

In this section, we describe the design and methodology of the present study in accord with the theoretical background presented above. We use two different tasks to test for native-like competence of inflected infinitives. Both tasks are designed to test the semantic restrictions discussed in the above sections. The first test is an interpretation task that tests for knowledge of inflected vs. uninflected infinitive interpretative differences in readings under ellipsis and (im)possibility of split antecedent interpretations of embedded null subjects. The second test is a truth-value context matching task designed to test the associated semantic entailments pointed out by Ambar (1998) and discussed above.

In both tests, both target items and distracters were used and were randomized. Participants were provided with instructions and an example at the start of each test. Additionally, the sentences

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<sup>2</sup> This claim is motivated by facts of obligatory subject verb inversion in EP (see Raposo 1987), although it should be noted that there are criticisms to some of the details of his proposal and that the word order restrictions are not the same in BP (see 1998; Galves 1991; Madeira 1995, Pires 2001).

<sup>3</sup> Regarding uninflected infinitives, the question then is how to translate their [-AGR] specification (corresponding to a defective set of phi-features in Pires 2001, 2006). One alternative is to simply take non-inflected infinitives to lack the phi-features necessary to trigger checking/valuation with a DP, which explains why they can't check Case on a full DP or null pro.

used in the test employed inflected infinitives in both the 1<sup>st</sup> and 3<sup>rd</sup> person plural forms to ensure that the learners' were sensitive to both forms; the singular inflected infinitive forms were not used since they are orthographically identical to the uninflected forms. Every effort was made to prevent confounded testing effects.

### 3.1 Participants

We report data from 17 English learners of L2 Portuguese. At the time of data collection, these students were studying Portuguese in Salvador, Brazil. The participants were chosen for the study if they tested at an advanced level of Portuguese. The non-native Portuguese level was assessed via a compilation of grammar, vocabulary and writing tasks harmonized with an oral interview conducted by native Brazilian Portuguese language instructors<sup>4</sup>. Additionally, we report data from a control group of native Brazilian Portuguese speakers (n=19).

### 3.2 Task 1: Context/Sentence Matching

The first task is a context/sentence-matching task. We test for knowledge of obligatory sloppy vs. strict readings under ellipsis and the possibility (or not) of split antecedent interpretations of subjects of inflected versus uninflected infinitives. A context is provided followed by two sentences: (a) one that has an inflected infinitive and (b) one that has an uninflected infinitive. The participants were asked to circle the sentences that logically corresponded to the context. If they believed that both sentences were possible given the context they were instructed to circle both. There were four types of context/sentence pairs, as in (13).

#### (9) a. Sloppy reading context (n=10)

*Quando o nosso pai morreu a minha irmã chorou em frente de todos. Por isso, ela se sentia um pouco envergonhada. Mais tarde, ela me disse que estava muito orgulhosa de mim porque pensou que eu era muito forte. Ela nunca soube que eu tinha chorado também porque ninguém me viu chorar.*

“When our father died my sister cried in front of everyone. Because of this, she felt a bit ashamed. Later, she told me that she was very proud of me because she thought I was very strong. She never knew that I had cried too because no one saw me cry.”

Which sentence(s) is (are) logical given the context?

- i. *Eu lamento ter chorado e a minha irmã também.*
- ii. *Eu lamento termos chorado e a minha irmã também.*

- i. **I regret having cried and my sister does too.**
- ii. I regret us having cried and my sister does too.

#### b. Strict reading context (n=10)

*Ontem era o dia da partida de futebol mais importante do ano. Eu pensei que fôssemos ganhar, mas a gente perdeu. Agora estou muito triste e não quero sair. Realmente, eu não posso acreditar que não ganhamos. A minha namorada está muito triste também porque agora eu não quero sair de casa.*

“Yesterday was the day of the most important soccer game of the year. I thought that we would win, but we lost. Now I’m very sad and don’t want to go out. I can’t believe that we didn’t win. My girlfriend is very sad as well because now I don’t want to leave the house.”

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<sup>4</sup> Testing was administered by the study abroad program, and for privacy reasons the researchers had no access to raw placement test data, only the levels into which the participants were placed and the tests themselves.

Which sentence(s) is (are) logical given the context?

- i. *Eu lamento ter perdido e a minha namorada também.*
- ii. ***Eu lamento termos perdido e a minha namorada também.***

- i. I regret having lost and my girlfriend does too.
- ii. **I regret us having lost and my girlfriend does too.**

**c. Split antecedent w/ PRO? (n=10)**

*A Marta e o Roberto eram namorados por 3 anos. Os dois são bons amigos meus. A semana passada, A Marta soube que o Roberto tinha beijado outra mulher durante a primeira semana da sua relação. Obviamente a Marta estava muito triste e ela jurou que nunca mais falaria com ele. Eu não queria que a Marta odiasse o Roberto por isso falei com ela.*

“Marta and Roberto were dating for 3 years. They are both very good friends of mine. Last week, Marta found out that Roberto had kissed another woman during the first week of their relationship. Obviously Marta was very sad and she swore that she would never talk with him again. I don’t want Marta to hate Roberto and therefore talked with her.”

Which sentence(s) is (are) logical given the context?

- i. ***Eu convenci a Marta a perdoar o Roberto***
- ii. *Eu convenci a Marta a perdoarmos o Roberto.*

- i. **I convinced Marta to forgive Roberto.**
- ii. I convinced Marta that we should forgive Roberto.

**d. Split antecedent w/ pro? (n=10)**

*A minha melhor amiga, a Joana, não tem muito dinheiro mas precisa mudar fora da casa dos pais dela. Ela declara que ainda mora com eles para conservar dinheiro. Mas tem 28 anos e ela precisa ter mais liberdade e independência. Felizmente depois de dois anos de tentar convencê-la, ela aceitou a minha oferta de alugar um apartamento comigo.*

“My best friend, Joana, doesn’t have much money but needs to move out of her parents’ house. She says that still living with them would save money. However, she is 28 years old and needs to have more liberty and independence. After two years of trying to convince her, she accepted my offer of renting an apartment with me.”

Which sentence(s) is (are) logical given the context?

- i. *Eu convenci a Joana a alugar um apartamento.*
- ii. ***Eu convenci a Joana a alugarmos um apartamento.***

- i. I convinced Joana to rent and apartment.
- ii. **I convinced Joana that we should rent an apartment.**

An uninflected infinitive is expected in (9a) and (9c) since the contexts present a sloppy reading under ellipsis and an environment that precludes a set reading that includes the matrix subject and object as an antecedent respectively. Conversely, the inflected infinitive sentences are expected for (9b) and (9d) since the contexts present a strict reading of the ellipsis site and a set reading that includes the matrix subject and object as an antecedent respectively.

### 3.3 Task 2: Truth Value Context Matching Task

Using the [ $\pm$  generic] restrictions observed by Ambar (1998) in the domain of inflected infinitives, we test for such knowledge via the learners' truth value judgments of relevant sentences in line with contexts that present [+ generic] and [+specific] readings. There are two types of sentences ( $n=5$ ), both of which have epistemic matrix verbs with eventive verbal complements as in (10) and (11). Madeira (1995) and Salles (2003) argue for a correlation between obligatory subject-verb inversion to epistemic modality. Since VS order is not permitted with inflected infinitive complements in BP, Salles (2003) maintains lexical subjects are not possible at all for inflected infinitive complements of epistemic matrix predicates<sup>5</sup>. As a result, the task sentences employ null subjects for inflected infinitives with corresponding plural Agr-morphology. The participants were asked to fix the sentences they deemed semantically anomalous such that it would fit its context.

**(10) Inflected Infinitive complement of epistemic matrix predicate [+generic]**

*A Cristina e a Maria são melhores amigas. As duas têm tido os mesmos problemas com os namorados delas. As duas estão muito tristes e passam o dia na casa sozinhas. Também parecem estar ficando mais magras.*

*Por isso, eu penso não comerem como devem.*

*A sentença dada corresponde ao contexto da frase que a precede? **Sim** **Não***

Cristina and Maria are best friends. The two have had the same problem with their boyfriends. The two are very sad and spend the day alone in their homes. They also seem to be skinnier.

Therefore, I think that they didn't eat like they should.

Does the given sentence correspond to the context of the story that precedes it? **Yes**  
No

**(11) Inflected Infinitive complement of epistemic matrix predicate [+specific]**

*Amanhã é o aniversário da Joana. Ela vai cumprir oito anos. Ontem ela disse para os pais dela que quer roupa nova e uma Barbie. A Joana sabe que os pais dela estão agora mesmo no centro comercial.*

*A Joana pensa comprarem as coisas que ela lhes tinha pedido para o seu aniversário.*

*A sentença dada corresponde ao contexto da frase que a precede? **Sim** **Não***

Tomorrow is Joana's birthday. She will be eight. Yesterday she said to her parents that she wanted new clothes and a Barbie. Joana knows that her parents are at the mall right now.

So, Joana thinks they're buying her the things she had requested for her birthday.

Does the given sentence correspond to the context of the story that precedes it? **Yes** **No**

It is expected that sentences using the present perfect should be felicitous with [+generic] contexts only, those employing a periphrastic inflected infinitive complement to an epistemic verb

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<sup>5</sup> This is Salles (2003) claim, although in another test not reported here we found different results for BP speakers, at least as far as sentence judgments. That is, many allowed lexical subjects with some epistemic verbs (but never with verb *achar*), but only if they were post verbal.

should be felicitous with [+specific] contexts only, and those with a non-periphrastic inflected infinitive should be felicitous with [+generic] contexts only.

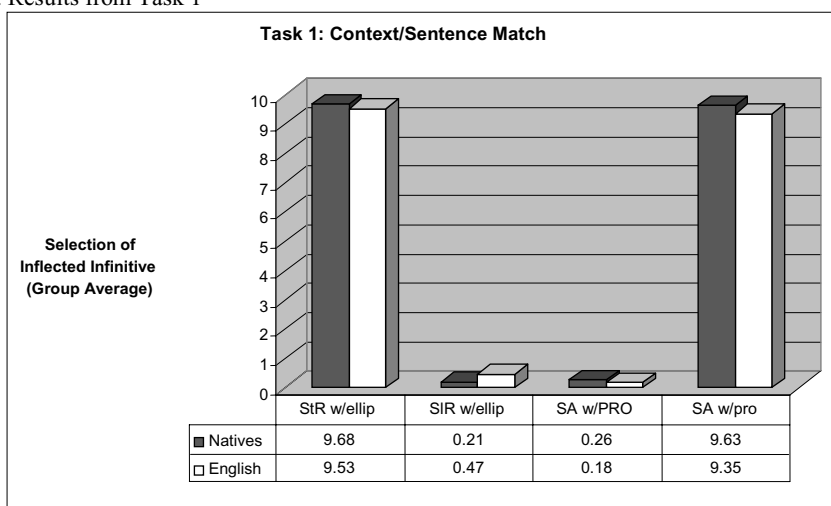
## 4. Results

This section is divided into two parts, which correspond to the two empirical tests. Each of these sections is subdivided into two components: (i) a descriptive analysis of the results and (ii) a quantitative statistical analysis of the group data, which compares the mean score performance the L2 learners against the native speaker control. We employ two-sample t-tests as a measure of inferential statistics. As is standard, the alpha was set at (0.05) for a 95% confidence level. The statistics were conducted using the mean number correct for each group. An answer was deemed correct if it was in accord with the theoretical analysis presented above, which was confirmed by the native control.

### 4.1 Task 1

*Descriptive Analysis:* This task sought to test for knowledge of obligatory sloppy readings under ellipsis with uninflected infinitives, obligatory strict readings of the ellipsis site with inflected infinitives, as well as the (im)possibility of split antecedents for null subjects of embedded uninflected (PRO) and inflected (*pro*) infinitives. Since each sentence type only allows one interpretation (e.g. uninflected infinitives only correspond to sloppy readings under ellipsis while inflected infinitives (with 1pl morphology) must correspond to a strict reading) and each context clearly corresponded to one interpretation, answers were deemed incorrect if either the sentence chosen to match the context did not correspond to the structure that yielded the proper reading or the participant circled both sentences.

Figure 1.0: Results from Task 1\*



\*StR w/ellip = strict reading of the ellipsis site; SIR w/ellip = sloppy reading of the ellipsis site; SA w/PRO = split antecedent with PRO; SA w/pro = split antecedent with *pro*

Figure 1 shows the average selection of only sentences with the inflected infinitive in each context (strict reading of the ellipsis site, sloppy reading of the ellipsis site, split antecedent with PRO and split antecedent with *pro* (n=10)). As can be seen in Figure 1, the native and L2 behavior appears strikingly similar. The relevant comparisons made for this test were inter-group comparisons for each context, comparing the native group performance to the L2 group performance. Both groups performed in accord with the theoretical analysis presented above. That is, they correlated sloppy readings under

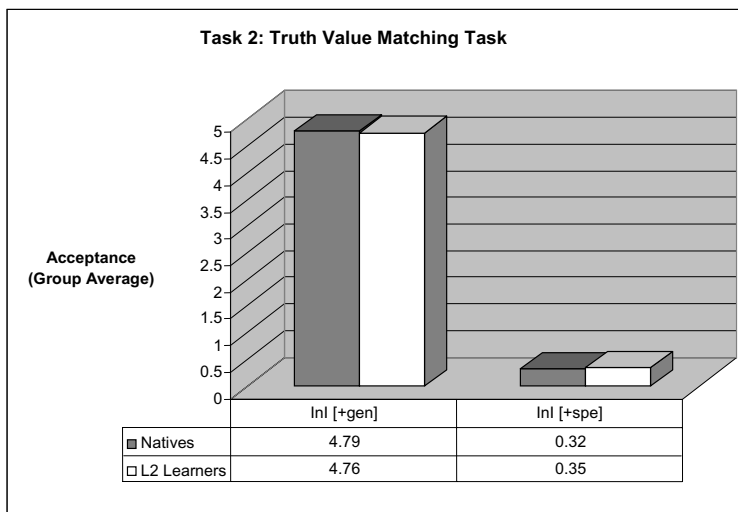
ellipsis with uninflected infinitives, and did not permit the split antecedent interpretations for PRO. Conversely, they derive a strict reading of the ellipsis site and allow set interpretations for *pro*'s antecedent with inflected infinitives.

*Statistical Analysis:* Two-sample t-tests were used to quantify the group data. Statistical analysis of all contexts revealed no significant differences in native vs. non-native group performance: Ellipsis contexts (Uninflected (Unin):  $t = 0.75$ ,  $p = 0.458$ ; Inflected (InI):  $t = 1.31$ ,  $p = 0.202$ ); Split antecedent contexts (w/ PRO:  $t = 0.62$ ,  $p = 0.543$ ; w/*pro*:  $t = 1.05$ ,  $p = 0.301$ ).

#### 4.2 Task 2

*Descriptive Analysis:* As can be seen in figure 2 below, L2 learners perform almost exactly like native speakers in Task 2, which tests for obligatory [+ specific] or [+ generic] readings of eventive verb complements of epistemic predicates with inflected infinitives (InI).

Figure 2.0: Results from Task 2\*



\* InI [+gen] = Inflected Infinitives in a generic/characterizing context; InI [+spe] = Inflected Infinitives in a specific context

Figure 2 shows the average group acceptance of a given sentence in the context indicated. The L2 group performed in a native-like manner, judging the truth value of the sentences in accord with the restrictions observed by Ambar (1998) and discussed above.

*Statistical Analysis:* Again, two-sample t-tests were used to quantify the group data. Statistical analyses revealed no significant differences in group performance: InI contexts ([+generic]:  $t = 0.17$ ,  $p = 0.864$ ; [+ specific]:  $t = 0.23$ ,  $p = 0.820$ ). This confirms that the L2 learners did not deviate from native-like behavior in accepting or rejecting sentences using the inflected infinitive in the contexts presented.

## 5. Discussion

In this section, we bring together the results of both tests in light of the goals of this research. As discussed in section 1, there is a debate about the possibility of acquiring interface-conditioned properties. Currently, the debate is not about whether or not interfaces are more difficult, since mere observation confirms this, but where this difficulty stems from in adult L2 acquisition. On the one hand, it could result from a post critical period inability to acquire new features interpreted at

interfaces (in the sense of Franceschina 2001, Hawkins and Chan 1997 in general, or perhaps only [-interpretable] ones in the sense of Hawkins 2005; Hawkins and Hattori, 2006, Tsimpli and Dimitrakopoulou 2007). In such a case, delays in acquiring interfaced-conditioned properties should never be overcome (at least at the representational level) and while seemingly native-like performance is argued to be possible via domain-general learning strategies, *residual optionality* should continue even at advanced stages. Conversely, if interface difficulties are merely delays due to L1 interference and/or the increased complexity of interfaces as compared to properties that fall neatly within a single domain then two things should be possible: (a) at least some L2 learners should be able to eventually overcome these delays and (b) there could be asymmetric patterns of acquisition between different interfaces on a continuum of relative complexity whereby syntax-semantic interface properties would be acquired before syntax-pragmatic interface properties (see Tsimpli and Sorace 2006).

Research has clearly demonstrated that properties at the syntax-pragmatics interface remain target-deviant even through high competence levels (see Valenzuela 2006). Recent research has demonstrated that syntax-semantics interface properties are quite challenging and despite the fact that advanced learners show sensitivity to these properties, suggesting that these interface phenomena can be acquired, *residual optionality* seems to be pervasive (Guijarro-Fuentes and Marinis 2007). On the contrary, the data presented in this article suggest otherwise in the latter case, which is to say, that at least some syntax-semantics interfaced phenomena can be acquired and performance of these properties are not always fated to *residual optionality*.

Task 1 tested for L2 acquisition of inflected infinitives looking at how Portuguese infinitives behave with respect to control. We found that advanced L2 learners of Portuguese demonstrated native-like knowledge that Portuguese inflected infinitives behave differently than uninflected infinitives with respect to control. The L2 learners consistently interpreted the ellipsis material with uninflected infinitives with a sloppy reading whereas they derived a strict reading of the ellipsis site with inflected infinitives. Additionally, as it relates to possible set interpretations of embedded null-subjects of inflected and uninflected infinitives respectfully, the L2 learners, like the natives, reliably permitted split antecedents for *pro* while they did not allow split antecedent interpretations of PRO. Taken together, this native-like L2 knowledge demonstrates that these learners know the obligatory/non-obligatory control properties that demarcate uninflected and inflected infinitives.

Task 2 tested for L2 knowledge of genericity restrictions that pertain to eventive inflected infinitive complements of epistemic predicates. Ambar (1998) demonstrated that lexical verbs such as *comer* and *comprar* are always illicit as complements of epistemic verbs if their contextual reading is only consistent with their intrinsic eventive *Aktionsart* value, which defaults to a single-event reading. However, when the context permits a shifting of the original *Aktionsart* value of the verb to a stative-like value the sentences meet the genericity requirement, and are thus possible. The L2 learners performed like native speakers with respect to knowledge of the genericity effect imposed on inflected infinitive complements of epistemic verbs. Since this phenomenon involves the syntax/semantics interface, these results demonstrate that at advanced levels syntax-semantics interface-conditioned knowledge can be fully acquired and *residual optionality* is not a forgone conclusion of all L2 interface phenomena.

Coupling the results of Task 1 and Task 2 provide strong evidence in favor of parameter resetting (both for the NSP and the I-parameter). Moreover, the fact that there is no difference between the L2 performances across tasks despite the fact that there is a difference in relative complexity between the properties being tested provides evidence against the notion that interfaced-conditioned properties are entirely unacquirable. Nevertheless, the coupled results are neutral with respect to the question of whether or not syntax-semantic interface-conditioned properties of inflected infinitives are acquired later than the purely syntactic ones. This, however, has to do with competence level of the group under investigation. Since we only provide data from advanced learners who happened to have acquired both relevant types of knowledge at the time of testing, we are unable to comment on the chronological order of the acquisition of these properties (i.e. were they acquired simultaneously or non-concurrently?). Had we provided data from a cross-section of proficiency levels we might have been able to provide such evidence. However, it is worth mentioning that we did

test intermediate learners, although we did not have enough participants to do meaningful (statistical) comparisons. Descriptively, however, we can report that these learners performed in a target-deviant manner on both tasks, suggesting that either they had not acquired even the purely syntactic properties of inflected infinitives at that point, or there was something particular to the test methodology that rendered them inappropriate for the intermediate level. Future research will benefit from a design and methodology that tests several levels of proficiency. In any case, the most interesting aspect of the present data is the fact that it reveals that L2 learners can come to fully acquire syntax-semantics interface properties and that their performances are not fated to show residual optionality, which in turn suggests that in addition to L1 interference at interfaces in L2 acquisition, interfaces themselves are simply more complex (see Sorace 2004).

We end with one last comment about the current methodology. The fact that we have no production data to support our conclusion was by design. While production data which include copious amounts of (grammatical) inflected infinitive use by non-natives would be strong support for our overall argument, inflected infinitives are always optional insofar as there is always an equivalent finite construction that can be employed to express the same meaning. As such, an L2 lack of production of inflected infinitives could just be an optional avoidance of the structure in discourse; therefore production data, with the possible absence of inflected infinitives, would only highlight the preference for finite constructions and not shed any real light on the acquisition of inflected infinitives *per se*. As such, we decided to test interpretative properties only, which enabled us to look more precisely at the domains in which we were interested. However, future research would likely benefit from production data, whatever they might reveal.

## 6. Conclusion

The present study confirmed the possibility of adult L2 parameter resetting (Schwartz and Sprouse 1996, White 1989, 2003). In line with other research that demonstrates the acquisition of syntax-semantics interface properties (e.g. Dekydtspotter, Sprouse and Anderson 1997; Dekydtspotter and Sprouse 2001; Montrul and Slabakova 2003; Slabakova 2006), we demonstrated that L2 learners of Portuguese have acquired associated semantic restrictions with inflected infinitives. Furthermore, we provided data that they appropriately and reliably differentiate inflected vs. uninflected infinitives with respect to properties of control, in line with native speaker performance. As a result, we conclude that the data reported herein provide robust support of full access approaches to UG. In fact, since the acquisition of inflected infinitives involves the acquisition of uninterpretable features, our data also provides evidence against the most recent versions of failed features approaches (Hawkins 2005, Hawkins and Hattori 2006, Tsimpili and Dimitrakopoulou 2007) to L2 acquisition, although significant (and in light of space limitations) a full discussion of this remains outside the scope of the present analysis. Importantly, however, the data presented support the notion that interfaces, at least the syntax-semantics interface, are not doomed to fossilization.

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