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Comparing heritage speakers and late L2-learners of European Portuguese: verb  
movement, VP ellipsis and adverb placement

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## **Abstract**

This study compares the performance of Portuguese-German heritage children and adult L2 speakers of European Portuguese whose L1 is German with respect to two aspects of grammar, adverb placement and VP-ellipsis, which depend on a core syntactic property of the language, verb movement. The results show that both groups have acquired V-to-I and adverb placement, showing no influence of a V2 grammar. Performance in the VP-ellipsis task is more complex: heritage children produce VP-ellipsis at the level of controls, as opposed to L2 speakers; however, both L2 and heritage speakers show that cross-linguistic influence may produce a preference for pronoun substitution over VP-ellipsis in a task asking for redundancy resolution. Nevertheless, given that overall results show that heritage children perform at the level of L1 children, we take our results to support approaches to heritage bilingualism which suggest the development of an intact grammar in childhood.

**Keywords:** Heritage speakers, L2, VP-ellipsis, verb movement, Portuguese, German

## **1. Introduction**

Studies on bilingual language acquisition have collected solid evidence showing that children acquiring two languages from very early on do not differ substantially from their respective monolingual counterparts in their language acquisition process (Meisel, 2011; Paradis & Genesee, 1996). Nonetheless, it has been also demonstrated that native-like acquisition of two or more languages is constrained by (at least) three main factors: age, type and amount of input and language dominance. Research on child second language (L2) acquisition has strengthened the claim that the age factor plays a major role in language acquisition, by showing that children who acquire their second language later than age four show differences in the course and the uniformity of acquisition of various grammatical areas (Meisel, 2008; Schwartz, 2004). Besides age, also type and frequency of exposure and language dominance has been shown to influence the process of bilingual language acquisition (Gathercole, 2002; Kupisch, 2007). Kupisch (2007), for instance, argues that language-internal factors alone cannot explain effects of crosslinguistic influence in bilingual language acquisition. Taking into account the stronger language of the bilingual child is, thus, imperative in order to understand bilingual acquisition. A bilingual population which sheds light on the importance of the variables input and language dominance are heritage speakers (HS).

HS are commonly defined as second generation immigrants, who were born in the host country or immigrated with their families in early childhood and grew up acquiring the language of their family, i.e. the heritage language (HL), and the language of the host country (Rothman, 2009a). Thus heritage speakers are simultaneous or early successive bilinguals, who acquire their languages in a specific sociolinguistic context which is characterized by unequal language exposure. In general, HS are exposed to

their parental language in early childhood, but the beginning of formal schooling in the majority language leads to a significant shift in input and, consequently, in language dominance. The decrease in exposure to the HL at an age in which the linguistic competence of the speaker is probably not yet fully developed nor stabilized may influence further development of this language. Many studies on heritage bilingualism have, in fact, shown that adult HS may not show the same type of linguistic ability as their monolingual counterparts (Au, Knightly, Jun & Oh, 2002; Keating, VanPatten & Jegerski, 2011; Montrul, 2008, 2010a, 2010b; Pires & Rothman, 2009; Polinsky, 2006, 2008; Rinke & Flores, 2014; Rothman, 2007).

Based on the assumption that impoverished input might have similar effects on acquisition as delayed age of onset of acquisition, some authors have suggested that HL and L2 acquisition might share some common characteristics, such as similar cross-linguistic influence errors (Montrul, 2011), although HS also show native-like acquisition of particular grammatical aspects.

The aim of this study is to test this claim by comparing the linguistic abilities of Austrian L2 learners of European Portuguese (EP) and Portuguese young heritage speakers who live in Germany and to further contrast them with native speakers of EP of the same ages. In particular, this study discusses the question of whether both types of speakers show similar patterns of cross-linguistic influence from their L1 (in the case of L2 learners) or from their dominant language (in the case of heritage speakers), by investigating adverb placement and VP-ellipsis, two grammatical properties dependent on verb movement.

In section 2, we describe the outcomes of some recent research centered on the comparison between L2 and HL acquisition and present the general hypotheses of this

study; section 3 first describes the syntax of adverb placement and VP-ellipsis both in EP and German and then revisits different types of cross-linguistic influence effects and some resulting research questions. Section 4 presents the participants and the three written tasks administered: one grammaticality judgment task, one sentence reordering task and one elicited production task. The results are presented in section 5, followed by a discussion of the main findings (section 6), which suggests that late L2 acquisition tends to be more prone to cross-linguistic influence effects than early language acquisition, even if the latter occurs in non-optimal conditions of language use.

## **2. Heritage language and L2 acquisition**

To date, different explanations have been proposed to account for the competence mismatch between heritage bilinguals and monolingual speakers. The first, and probably most influential, but also very controversial proposal suggests that HS acquire an incomplete grammar (see Benmamoun, Montrul & Polinsky, 2013; Montrul, 2008), i.e. they show deficiencies in their HL because they fail to fully acquire the target grammar. Additionally, some authors (e.g. Polinsky, 2011) have suggested that, in parallel to incomplete acquisition (or not), HS may (also) suffer from language attrition. This means that HS may acquire their home language in early childhood in the same way as native speakers but they start losing proficiency once they are less exposed to their HL. In both views, cross-linguistic influence may be one reason for the development of deviant competence (Montrul, 2010b). An alternative explanation states that the input available to HS may be different from the input that L1 speakers receive, due to language variation in the HL setting or due to the absence of certain standard

registers (Pascual y Cabo & Rothman, 2012; Pires & Rothman, 2009; Rinke & Flores, 2014). This view excludes the idea of the HL as resulting from *incomplete* acquisition. However, it does not exclude the assumption that HL grammars may be different from the monolingual counterparts due to a contact-induced change in their input: the differences in HL may be the result of differences in the language of environment, which is itself sometimes already affected by attrition (see discussion in Pires, 2011).

Some studies on heritage bilingualism have compared heritage speakers with late L2 learners (Au et al. 2002; Au, Knightly, Ju, Oh, & Romo, 2008; Keating et al. 2011; Knightly, Jun, Oh, & Au, 2003; Montrul, 2010a, 2010b, 2011; Montrul, Foote & Perpiñán, 2008; O'Grady, Lee, & Choo, 2001). The underlying assumption is that, although the mode of acquisition of both language types is very different, HL development might resemble L2 acquisition regarding some features of the acquisition process, such as the occurrence of similar errors. In both HL and L2 development, these errors may result from cross-linguistic influence.

In this study we discuss whether heritage bilinguals show instances of divergence in their HL when compared to monolingual counterparts, which could be analyzed as the outcome of a different acquisition process. This study is also concerned with possible sources for differences in performance between monolingual speakers and bilingual HS, including the attrition / incomplete acquisition debate. Both Polinsky (2011) and Pascual y Cabo and Rothman (2012) suggest that only by looking at child HSs can we evaluate acquisition independently of attrition effects - in this case, we are minimizing the time span needed for attrition effects to occur. Therefore, we look at child HS at an age in which it is likely that the relevant grammatical properties are

acquired (if we take into account previous work on monolingual acquisition), but time span for attrition effects is still reduced.

Furthermore, we want to know if a possible performance mismatch is due to cross-linguistic influence. To achieve this goal we will not only compare heritage bilinguals with L1 speakers of the same age, but also with developing L2 learners. In particular, we discuss to what extent the areas that may be affected by the dominant language are the same in both cases and the type of effects found is similar. Since, among other issues, we intend to address the issue of selectivity in cross-linguistic influence, we focus on two apparently independent properties (the distribution of adverbs and VP-ellipsis) that are nonetheless dependent on a common syntactic property of languages: verb movement. We intend to use adverb placement to establish a baseline concerning acquisition of verb movement. We investigate the HL / L2 acquisition of verb movement in EP by speakers whose L1 or ambient language is German. Portuguese has generalized V-to-T movement, whereas German presents V-to-T-to-C in main clauses, thus the two languages necessarily impose different constraints on the distribution of adverbs. Additionally, we test the ability to use VP-ellipsis to evaluate speakers' knowledge of a property dependent on verb movement but which also heavily depends on the syntax-semantics-discourse interface (see Merchant, 2001).



### **3. Verb movement, VP-ellipsis and different types of possible cross-linguistic effects**

In this section, we lay down the relevant differences between EP and Standard German concerning adverb placement and VP-ellipsis. We show to what extent the acquisition of these properties may signal acquisition of a pure syntactic property, verb movement. We also show that VP-ellipsis is dependent both on syntactic and on semantic and discourse conditions and we establish the place of VP-ellipsis (not available in German) in a set of structures that are available in Portuguese and German to avoid redundancy in the VP. The use of VP-ellipsis or other types of anaphora (in a broad sense), namely other types of ellipsis, will thus be shown to result from the speaker's choice. From here, we discuss what type of transfer effects might be expected when the set of possibilities available to solve a discourse problem in one grammar partially overlap with the set of possibilities available in the other grammar. It has been suggested that "there has to be a certain overlap of the two systems at the surface level" for cross-linguistic influence to occur (Hulk & Müller, 2000: 229). Some studies in this domain suggest that bilingual children tend to overgeneralize precisely these overlapping structures (Döpke, 1998).

#### **3.1. Verb movement in EP and German and the distribution of adverbs**

The distribution of adverbs has been seen as a classical clue for the position of the verb (see Emonds, 1978; Pollock, 1989). It is well known that German word order is constrained by the effects of verb final and, particularly, of verb second phenomena in main clauses. Thus verb placement constrains the distribution of adverbs in German.

V2 prevents the occurrence of an adverb preceding (see 1a) or immediately following a preverbal subject (see 1b), two possibilities available in Portuguese (see 2a, b), a head-initial language not displaying V2 effects.

- (1) a. \*Leider            der Junge    hat    das Auto seiner Eltern    zerstört.  
unfortunately the boy    has the car    his<sup>[GEN]</sup> parents destroyed  
'Unfortunately the boy has destroyed his parents' car.'
- b. \*Ana gestern    hat neue Schuhe gekauft.  
Ana yesterday has new shoes    bought  
'Ana bought new shoes yesterday.'

- (2) a. Infelizmente, o rapaz destruiu o carro dos pais.  
unfortunately the boy destroyed the car of+the parents  
'Unfortunately the boy has destroyed his parents' car.'
- b. A Ana ontem    comprou sapatos novos.  
the Ana yesterday bought shoes new  
'Ana has bought new shoes.'

The base position of adverbs depends mainly on the semantics of the adverb, but we can identify general canonical adverb positions. In canonical, unmarked word order, high adverbs may occur in the following positions:

- (i) in the German pre-field, i.e. in the first position of V2 sentences (Spec, CP):

- (3) Leider            hat Pedro schlechte Noten    gehabt.  
unfortunately has Pedro bad            grades had  
'Unfortunately, Pedro had bad grades.'

(ii) in a high position within the middle-field:

(4) Pedro hat leider schlechte Noten gehabt.

Pedro has unfortunately bad grades had.

‘Unfortunately, Pedro has had bad grades.’

On the contrary, low adverbs appear in an adjacent position to VP, i.e. immediately preceding the object (see 5a) or between the object and the verb-final position (no matter if this position is occupied or not, as in example 5b).

(5) a. Das Baby isst gern Suppe.

the baby eats ADV soup

‘The Baby enjoys eating soup.’

b. Das Baby isst diese Suppe gern.

the baby eats this soup ADV

‘The Baby enjoys eating this soup.’

In Portuguese, the verb undergoes generalized verb-movement to T (not C), thus justifying the availability of ADV S V O and S ADV V O word orders as shown in (2 a,b) above.<sup>1</sup> These high positions are admitted only by certain adverbs, which also admit low (namely, V ADV O) positions, in certain cases with a particular prosody.

The position of other adverbs, a limited subset of low adverbs, has been shown to be relevant evidence for the position of the verb in this language. Costa (1998) argues that a limited subset of low VP-adverbs, such as *bem* ‘well’, is necessarily postverbal

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<sup>1</sup> European Portuguese has V-to-C restricted to wh- questions, but this structure is rare in adult speech (speakers prefer structures with C filled by the lexicalized expression *é que*) and is absent from child speech (see Soares, 2006, Santos et al. 2013). In this paper, we do not discuss word order in wh-questions.

and thus signals the edge of the VP, the verb having moved to T. The word order V ADV O is thus a relevant type of evidence for verb movement in Portuguese (see 6), contrasting with the distribution of adverbs in English, a language in which main verbs remain in the *v*P / VP domain (Emonds, 1978; Pollock, 1989). Adverbs easily admitting this position are *bem* ‘well’, *completamente* ‘completely’, *muito* ‘very much’. These adverbs are rejected in high positions (ADV S V O or S ADV V O) and, with the exception of *muito*, can also occur in sentence final position.

(6) a. A Sara pintou completamente a parede.

the Sara painted completely the wall

‘Sara painted completely the wall.’

b. \*A Sara completamente pintou a parede.

the Sara completely painted the wall

Adverb placement has been used to evaluate L2 acquisition of verb movement (Chu & Schwartz, 2005; Eubank, Bischof, Huffstutler, Leek & West, 1997; White, 1990, 1991, a.o.). When examining possible effects of cross-linguistic influence involving European Portuguese and German, the word orders V ADV O, S ADV V O and ADV S V O are of particular interest. If rejection of V ADV O may suggest resistance to verb movement not attributable to cross-linguistic effects but also not target-like, rejection of S ADV V O or ADV S V O could suggest transfer of V-to-T-to-C movement of the V2 type.

### **3.2. Avoiding redundancy in EP and German and the particular case of (VP-)ellipsis**

Another known manifestation of verb movement is VP-ellipsis. VP-ellipsis is restricted to contexts where a verb occupies a position c-commanding the elided VP (e.g. only auxiliaries and the copula license VP-ellipsis in English, whereas main verbs, which do not raise in English, do not license VP-ellipsis). This has been seen as a requirement of government of the null VP by a lexical head in I, assuming that the null VP obeys the Empty Category Principle (ECP) (Lobeck, 1995). If we adopt Merchant's (2001) view on ellipsis, we can assume that ellipsis is licensed in a configuration in which a feature E(ellipsis) triggers deletion (of the VP, in the case of VP-ellipsis) at PF; based on Merchant's (2001:60) formulation of the licensing conditions on sluicing, we can suggest that an E feature on T must enter an Agree relation with a verbal feature. According to Merchant's approach, the E feature in a node triggers deletion of its sister, in certain semantic conditions, i.e. if there is a proper antecedent for the elided material. Merchant obtains this effect by defining the semantics of E and suggesting that E imposes a Focus condition on deletion (see Merchant, 2001, pp. 26-29 and 60-1 for details). This formalizes the idea that ellipsis allows avoiding redundancy, i.e. repetition. Moreover, through feature E, Merchant (2001) links the licensing and the identification conditions on ellipsis. Since ellipsis implies a semantic relation between the elided material and an antecedent (which may be in the preceding discourse) and it implies determining the givenness status of the elided material, we will assume that knowledge of ellipsis implies syntactic, semantic and discourse knowledge.

Being a language with generalized verb movement and having the relevant feature in T, EP presents VP-ellipsis licensed both by auxiliaries (7a) and by main verbs (7b,c) (Matos, 1992; see also Raposo, 1986), differing in this point from other Romance languages (e.g. Spanish, French), which do not license VP ellipsis neither with a stranded auxiliary nor with a stranded main verb (see Goldberg, 2005; Santos, 2009a).

- (7) a. A Teresa tinha oferecido flores à mãe e a Ana também tinha.  
 the Teresa had offered flowers to+the mother and the Ana also had  
 ‘Teresa had offered flowers to her mother and Ana had too.’
- b. A Teresa ofereceu flores à mãe e a Ana também ofereceu.  
 the Teresa offered flowers to+the mother and the Ana also offered
- c. A Teresa tinha oferecido flores à mãe e a Ana também  
 the Teresa had offered flowers to+the mother and the Ana also  
 tinha oferecido.  
 had offered

The type of VP-ellipsis exemplified in (7b) and (7c), where a main verb (or a sequence of an auxiliary and a main verb) is stranded, corresponds to the type of VP-ellipsis which Goldberg (2005) calls V-stranding VP-ellipsis. This type of VP-ellipsis should be distinguished from other structures, namely (i) Null Complement Anaphora (NCA) or (ii) argument drop. NCA (see 8) corresponds to cases in which a sentential complement is omitted, it is restricted to the complement of a particular subset of modals and main verbs and occurs in languages that do not allow VP-ellipsis, such as Spanish (see Depiante, 2000 for Spanish; for complete discussion concerning EP, see Santos, 2009a).

(8) A sopa deve ser comida com azeite, mas a Teresa não pode [-]. (Santos, 2009a)

the soup must be eaten with olive oil but the Teresa neg can

‘The soup must be eaten with olive oil but Teresa cannot do it.’

[-] = comer a sopa com azeite

eat the soup with olive oil

VP-ellipsis should also be distinguished from null objects, i.e. null direct objects (Raposo, 1986), and general argument drop, i.e. omission of other internal arguments (Goldberg, 2005; Santos, 2009a). Whereas in the case of VP-ellipsis the entire material within the *vP* / *VP* is deleted and recovered as equivalent to a discourse antecedent (9a), in the case of a null object (9b) or general argument drop (9c) only one internal argument (a direct object in case of a null object) may be null and independently recovered. Raposo (1986) adds that null objects may have a pragmatically salient antecedent – whereas VP-ellipsis has its content necessarily determined by the precedent discourse. Crucially, when all the material in the *VP* is omitted (as in 9a), only a VP-ellipsis interpretation is possible.

(9) a. A Raquel não deu o livro à mãe no Natal.

the Raquel neg gave the book to+the mother in+the Christmas

Mas a Ana deu [-].

but the Ana gave

‘Raquel didn’t give the book to her mother at Christmas. But Ana did.’

[-] = [o livro à mãe no Natal]

the book to+the mother in+the Christmas (Santos, 2009a)

b. A Joana viu [-] na TV ontem.

the J. saw on+the TV yesterday

‘Joana saw it on TV yesterday.’

(Raposo, 1986)

c. Q: A Raquel deu o livro à mãe?

the Raquel gave the book to+the mother

‘Did Raquel give a book to her mother?’

A: Deu o jornal [-].

gave the newspaper

‘She gave her the newspaper.’

[-]= [à mãe]

(Santos, 2009a)

VP ellipsis is not available in German (see 10a). An alternative would be pronoun and / or adverb replacement as in (10b).

(10) a. Heute wird die Mutter das Auto nicht in die Garage bringen, \*aber

today will the mother the car not in the garage put but

der Vater wird (bringen).

the father will (put)

‘Today the mother won’t put the car in the garage, but the father will.’

b. Heute wird die Mutter das Auto nicht in die Garage bringen, aber der Vater

today will the mother the car not in the garage put but the father

wird es dorthin bringen.

will it there put.

‘Today the mother won’t put the car in the garage, but the father will put it there.’



Nevertheless, German has other VP-anaphora structures involving pronouns. López and Winkler (2000) mention the overt proform *es* selected by a modal verb in German as a type of VP-anaphora (11).

(11) Peter kann die Aufgabe nicht lösen, aber ich weiß, dass Jan es kann.

Peter can the task not solve but I know that Jan *es* can

López and Winkler (2000: 624)

Finally, Portuguese (as well as Spanish or Italian) presents another elliptical structure allowing to recover a predicate: pseudo-stripping (12a) (Depiante, 2000; López, 1999, 2000; Matos, 1992 – the term pseudo-stripping is from Depiante, 2000). Depiante (2000) convincingly argues that pseudo-stripping is IP ellipsis and thus different from VP-ellipsis. German presents a similar structure, which was analyzed by Konietzko and Winkler (2010) as a subtype of Contrastive Ellipsis (12b).

(12) a. O Pedro não acabou o artigo, mas a Maria sim. / mas a carta sim.

the Pedro not finish the paper but the Maria yes / but the letter yes.

‘Pedro did not finish the paper, but Maria did.’

b. Heute wird die Mutter das Auto nicht in die Garage bringen, aber

today will the mother the car not in the garage put but

der Vater ja.

the father yes.

‘Today the mother will not put the car in the garage, but the father will.’

Turning now to acquisition, VP-ellipsis has already been used as evidence for early L1 acquisition of verb movement and sensitivity to the semantic and discourse

constraints on ellipsis. Children acquiring EP produce adult-like VP-ellipsis in the context of answers to yes-no questions when their MLUw is around 2 or even below 2 (Santos, 2009a). This fact has been interpreted as showing that these children perform V-to-T movement and that they can deal with the aspects of the syntax-discourse interface relevant to the identification of the elided material (see Santos, 2009a,b).

Duffield and Matsuo (2009) have shown that there is sensitivity to a semantic parallelism condition on the antecedent of ellipsis in English L2. The ability to produce VP-ellipsis might therefore be a good clue to determine whether L2 adults and heritage speakers are able to perform V-to-T movement, but it may also provide good insight concerning acquisition of relevant aspects of the syntax–discourse interface.

### **3.3. Verb movement, VP-ellipsis and different types of cross-linguistic influence effects: some resulting research questions**

In this study we address the issue of cross-linguistic influence effects from the dominant language both in HS and in L2 speakers, assuming that language dominance plays a central role in predicting cross-linguistic influence (even though dominance alone cannot explain all manifestations of transfer, see Kupisch, 2007, a.o.).

Since HS are normally exposed to their HL from birth, the acquisition of a HL should resemble the acquisition of a native language; however, HS undergo a significant shift in input when early in life the majority language gains the status of dominant language. Therefore, both HS and L2 speakers may be affected by cross-linguistic influence from their dominant into their non-dominant language. The effects of the co-existence of another language may occur in two forms: either affecting the grammatical

representation of the L2 / HL or as mere influence at the level of processing, a possibility that will be discussed in this section.

If we think of the properties and the set of languages targeted by this study, cross-linguistic influence from German may manifest itself if HS and L2 speakers reject the word orders S ADV V O or ADV S V O in Portuguese. This should be interpreted as a case of transfer of the German V2 syntax to Portuguese. Actually, the extent to which V2 syntax may transfer is a controversial research issue. Håkansson, Pienemann and Sayehli (2002), for instance, claim that V2 never transfers from the dominant to the weaker language (or from L1 to L2). Contradicting this idea, some authors (Bohnacker, 2006; Robertson & Sorace, 1999; Westergaard, 2003; a.o.) have provided evidence for the fact that V2 transfer effects might be indeed more pervasive than generally assumed.

In the case of VP-ellipsis, we should recall that the set of structures available in German to solve redundancy within the VP is a subset of the structures available in Portuguese. For instance, whereas both languages display pseudo-stripping, only Portuguese displays VP-ellipsis. Therefore, possible cross-linguistic influence effects in this domain go beyond simple transfer of a grammatical property. It is conceivable that structures that are derived from transferred properties or from properties available in the dominant language may be preferred even after VP-ellipsis was acquired. Indeed, preference for structures dependent on properties available in the L1 / dominant language may be a visible effect of processing routines of the dominant language that are recruited for the L2 / HL. The idea that processing routines of the L1 may be recruited by the L2 is developed by Hopp (2007) and applied to processing of morphosyntax. He suggests that analogy between the L1 and the target language may have a facilitator effect, which will be a case of specific L1 effect on L2 processing, as

opposed to general L1 effects (resulting from the extra processing load of maintaining two languages). Preference for a particular structure among a set of available structures may be observable when (i) there are several available syntactic structures for the same discourse context and (ii) the set of structures of the dominant language is (at least partially) a subset of the structures available in the weaker language. We suggest that choosing to project a particular syntactic structure among a set of different structures that would be adequate in the same context and would convey an equivalent meaning may be seen as the result of activating a processing routine coming from the dominant language. This type of effect is very likely to be conditioned by frequency or amount of exposure to the dominant and non-dominant language and thus it is reasonable to think that it will not only be found in late L2 speakers but also in early bilinguals.

Finally, we are interested in the possibility of selective non-target like behavior affecting VP-ellipsis (a structure activating the syntax-discourse interface) but not other phenomena dependent on verb movement. Recently, the idea has been developed that L2 or bilingual speakers may show more difficulties with linguistic phenomena involving interfaces, namely the syntax-discourse / pragmatics interface, in opposition to others. Thus, much work has been done with the goal of determining areas in which L2 or bilingual development shows a protracted instability if compared with L1 development. Sorace and colleagues (Sorace, 2004, 2011; Sorace & Serratrice, 2009; Tsimpli & Sorace, 2006) have put forward the idea that structures involving the interface between syntax and other cognitive subsystems are especially vulnerable in bilingual / L2 acquisition (the Interface Hypothesis – IH).<sup>2</sup> If this hypothesis is correct, we may expect non target-like behavior in VP-ellipsis production even when we can

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<sup>2</sup> This doesn't mean that L2 learners are not able to ultimately acquire structures involving this type of interface. Rothman (2009b) cautions that, even if posing more problems for L2 speakers, these properties may in fact be fully acquirable.

independently establish that V-to-T is acquired. We can thus evaluate whether phenomena at the syntax-discourse interface is selectively affected, equally in HS bilingualism and in L2 acquisition.

Pursuing this line of research, this paper intends to answer the following questions concerning acquisition of HL and L2 Portuguese:

I. Do HS and L2 speakers manifest knowledge of V-to-T in Portuguese?

- a) Do HS and L2 speakers show knowledge of V-to-T in Portuguese, by accepting and producing target word order in Portuguese, i.e. combining production and acceptance of V3 word orders (S ADV V O and ADV S V O) and V ADV O?
- b) Do the same speakers produce VP ellipsis?

II. Are there preferences for structures available in the dominant language, which may be interpreted as dominant language effects?

- a) Do child HS and adult L2 speakers produce VP-ellipsis, even though this redundancy-reduction strategy is not available in German?
- b) Do child HS and adult L2 speakers show preference for structures available in German (e.g. pseudo-stripping, the use of overt forms such as adverbs and pronouns) to solve redundancies within the VP domain?

## **4. Method**

### **4.1. Participants**

A total of 82 informants participated in the present study: 20 child heritage speakers of European Portuguese, 20 monolingual Portuguese children, 21 L2 learners and 21 adult native speakers of Portuguese.

The group of heritage speakers includes 20 children, between the ages of nine and eleven (mean ( $M$ ) = 9.8; standard deviation ( $SD$ ) = 0.62). All children come from Portuguese immigrant families who live in the North of Germany (Hamburg). Fifteen out of the 20 participants were born in the host country; four children immigrated to Germany with their parents before the age of three, one participant was five years old, when s/he left Portugal. The parents are originally from rural regions in northern Portugal.

Sociolinguistic information about language acquisition, language use and motivation was collected through a questionnaire, which was filled out by the child with the help of a teacher or a parent. In 17 cases, the native language of both parents is Portuguese, which is the main home language (but German is also used within the family). The other three children have a Portuguese mother or father who communicates with the child in Portuguese, but the other parent speaks only German. Children who do not speak Portuguese at home were excluded from this study. When asked about the language they feel more comfortable with, all 20 participants said that they speak better German than Portuguese. However, all children answered «yes» to the question «Do you like to speak Portuguese?». The Portuguese input is mainly (but not exclusively) on an oral basis. In addition to communication with their parents and their siblings, they also speak Portuguese with other family members (like grandparents, uncles, aunts and cousins). The children also have contact with Portuguese during the summer holidays annually spent in Portugal. The majority language is spoken at school, with friends and in other daily contexts outside home.

All 20 participants are enrolled in courses of formal instruction in Portuguese language, and thus can read and write in Portuguese. Thirteen children are attending the

Portuguese-German bilingual class of the Rudolf Ross Schule in Hamburg, where Portuguese is taught approximately seven hours per week. The other 7 participants attend a special program of instruction for heritage children, which comprises approximately three hours of instruction per week.

The child control group is made up of 20 monolingual children; 19 participants are nine and one is eight years old ( $M = 8.95$ ;  $SD = 0.22$ ). Children in the control group attend a public school in a rural region in the north of Portugal, and both their families and the families of the heritage children are from close regions and have very similar social backgrounds. Even though the mean age of the child control group is slightly lower than the heritage speaker group, all children are attending the 4th grade of schooling in Germany/Portugal. The monolingual children learn English as a foreign language at school, but no child had acquired another language or had lived in another country.

The 21 adult L2 learners are all native speakers of German, who are learning Portuguese as Foreign Language in an intermediate Portuguese language course in Austria (University of Vienna).<sup>3</sup> All informants started learning Portuguese as adults and they are studying the language for not more than two years, but were classified by their teachers as intermediate learners. The main learning context is formal classroom instruction, even though some learners have spent some short periods of time in a Portuguese-speaking country. According to teachers' reports, neither VP-ellipsis nor the distribution of adverbs are systematically taught in the classroom. The teachers are native speakers of Portuguese.

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<sup>3</sup> There are some differences between Austrian German and Standard German, especially in the lexical domain and in phonetics. However, we checked the German sentences (with pseudo-stripping, adverbs, *es*-anaphora and also ungrammatical sentences corresponding to EP VP ellipsis structures) with two Austrian native speakers. Their intuitions are the same as the intuitions of native speakers from Northern Germany, so we assumed that the varieties do not differ in this domain.

The adult L1 group comprises 21 undergraduate students at the University of Lisbon. All controls are native speakers of Portuguese, who learned other languages as foreign languages; no one was raised bilingually or lived outside Portugal for an extended period of time.

## 4.2. Procedure and tasks

Three tasks were used: a sentence reordering task centered on adverb placement; a grammaticality judgment task centered on the distribution of the same adverbs; a task eliciting the production of VP-ellipsis.

### 4.2.1. Sentence reordering task

In the sentence reordering task, subjects were asked to rewrite a sentence in as many ways as possible with a given word (examples of test items are presented in 13). There was no time limit for the task and all the items were presented at once in a single piece of paper. Two types of adverbs were presented: adverbs occurring in low positions, but not admitting high positions (*bem* ‘well’, *completamente* ‘completely’, *muito* ‘very much’) and adverbs admitting high positions, namely *ontem* ‘yesterday’ *infelizmente* ‘unfortunately’ and *francamente* ‘honestly’. The test, which could not be long given the fact that it was applied not only to adults but also to children, included two items per adverb (12 test items) and four distractors (with possessive or demonstrative determinants or a *wh*-word). Items in this task (as in all others) were randomized and all the participants answered to the test in the same randomized order.

(13) a. A cozinheira faz pizza. (*bem*)

the cooker makes pizza. (*well*)

‘The cooker makes pizza. (*well*)’



b. A professora distribuiu os testes. (ontem)

the teacher handed out the tests. (yesterday)

‘The teacher handed out the tests. (yesterday)’

#### 4.2.2. Grammaticality judgment task

The grammaticality judgment task was presented after the sentence reordering task. It was a written task and sentences were not contextualized. Participants were asked to signal the sentences that they feel are incorrect in Portuguese. Items in this task contained the same adverbs as in the sentence reordering task. Adverbs were presented in the four possible word orders: ADV S V O, S ADV V O, S V ADV O and S V O ADV. This resulted in a task with 24 test items (6 adverbs X 4 word orders) and 9 distractors. Following a suggestion in Chu and Schwartz (2005), test items appear individually and not in minimal pairs – items were therefore randomized individually. A test item is presented in (14).

(14) A Teresa, francamente, gosta de sapatos feios. (expected acceptance)

the Teresa honestly likes PREP shoes ugly

‘Honestly, Teresa likes ugly shoes.’

#### 4.2.3. Elicited production task

The elicited production task centered on VP-ellipsis is built upon the idea that ellipsis is “parasitic on redundancy”, i.e. permits “economy of expression” (Merchant, 2001: 1). The speakers were presented with texts (see 15) which presented too many repetitions and needed to be revised; they were therefore asked to eliminate the

unnecessary repetitions. Production of VP ellipsis was thus contextualized. Instructions were written (and also explained orally) in Portuguese. An oral translation to German was also provided. An example was included with a possible solution, which presented redundancies that could not be solved through the use of VP-ellipsis (those involved subject DPs and were solved with null subjects or the use of pronouns). As we can see in example (15), the texts presenting test items also included other types of redundancy, e.g. affecting the subject, which were intended to function as distractors. For presentation in this paper only, redundant material which could be replaced by VP ellipsis is shadowed in the example.

(15) A Marta e a Margarida gostam muito de ir a parques. Este Verão, a Marta não tem feito muitos piqueniques no Parque das Conchas mas a Margarida tem feito muitos piqueniques no Parque das Conchas. A Marta e a Margarida têm ido mais vezes juntas ao Parque das Nações, porque a Marta e a Margarida gostam muito de ver o rio.

(Marta and Margarida love going to parks. This summer, Marta has not had many picnics at Parque das Conchas, but Margarida has had many picnics at Parque das Conchas. Marta and Margarida have gone more often together to Parque das Nações, because Marta and Margarida love looking at the river.)

VP-ellipsis with stranded auxiliary:

... mas a Margarida tem.

but the Margarida has

VP-ellipsis with stranded main verb

... mas a Margarida tem feito.

but the Margarida has had

Since European Portuguese presents both VP-ellipsis licensed by a main verb and by an auxiliary (see section 3.2), the test contained 4 items with a main verb and 4 items with an auxiliary verb (two with the auxiliary *ter* ‘have’ and two with the future semi-auxiliary *ir* ‘go’). The main verbs included in the task were the ditransitive verbs *dar* ‘give’ and *oferecer* ‘offer’ with realized direct and indirect objects, the verbs *pôr* ‘put’ with two realized internal arguments (a DP and a PP) and the verb *fazer* ‘do’ followed by a DP argument and a PP modifier in the VP. This choice of main verbs guarantees that only a VP-ellipsis structure can be assumed if the speaker deletes all the redundant material internal to the VP and presents a stranded main verb. In this case, it is not possible to take the structure as a case of null object or argument drop, for instance (see discussion in section 3.2). In the auxiliary condition, the same main verbs with the same type of VP internal structure were presented (see 15). In this case, since both a VP-ellipsis with a stranded auxiliary and a VP-ellipsis with a stranded main verb were possible, this also allowed avoiding ambiguity in the interpretation of results.

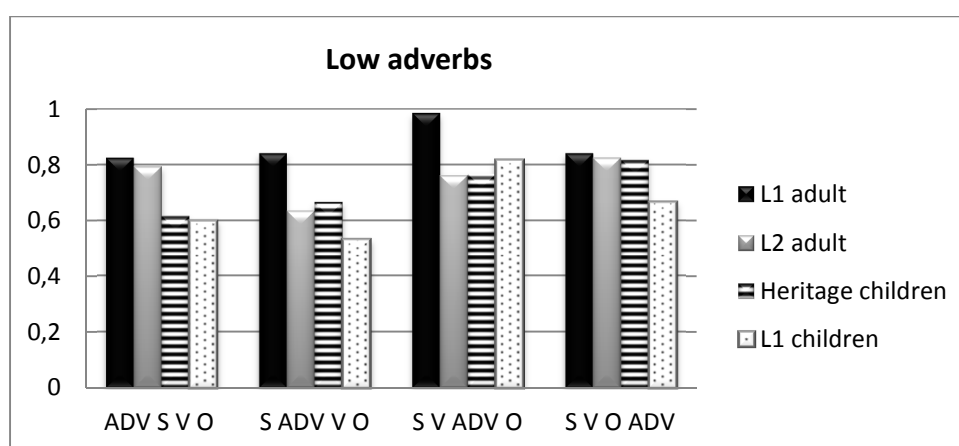
## **5. Results**

### **5.1. Distribution of adverbs**

#### **5.1.1. Grammaticality judgment task**

First we present the results obtained by the different groups in the grammaticality judgment task. Figures 1 and 2 show the mean value of expected answers per group in

the four positions ADV S V O, S ADV V O, S V ADV O and S V O ADV. Since the adverbs admitting high and low positions do not have the same distribution, we separately present the results with the two types of adverbs. Figure 1 represents the results obtained with low adverbs. In this case, the expected (target-like) answers were rejection of ADV S V O and S ADV V O and acceptance of S V ADV O; in the case of S V O ADV, acceptance is expected with *completamente* and *bem* and rejection with *muito*.



**Figure 1.** Grammaticality judgment task: low adverbs

(group means of individual proportions of target-like answers)

In this paper, we are not concerned with the acquisition of the particular syntax of each adverb, we are looking instead at word orders signaling verb movement. Therefore, in the particular case of low adverbs, we are especially concerned with acceptance of S V ADV O (all low adverbs were expected to be accepted in this position). In this case, only the L1 adult group performs at ceiling ( $M = 0.98$ ,  $SD = 0.07$ ), differently from the other groups. A Kruskal-Wallis test confirms a general difference between the groups ( $H(3) = 14.450$ ,  $p = 0.002$ ). We have also conducted two Mann-Whitney tests to determine differences between the L2 group and the two control groups (a Bonferroni correction was applied, therefore results are reported at a .025 level of significance). L2

adults significantly differ from the L1 control group ( $U=104$ ,  $p < 0.001$ ). However, given the fact that L2 results in this case do not differ from the results presented by L1 children ( $U= 182.5$ ,  $p = 0.427$ ), L2 results may not signal a specificity of the L2 acquisition path attributable to cross-linguistic influence. The two child groups perform at similar levels, although not at ceiling (Loureiro, 2008 has already shown that these word order contrasts are difficult for pre-school children). In general, we can say that there is a tendency for accepting this target-like word order in all four groups since the mean rate of acceptance is higher than 0.75 in all groups.

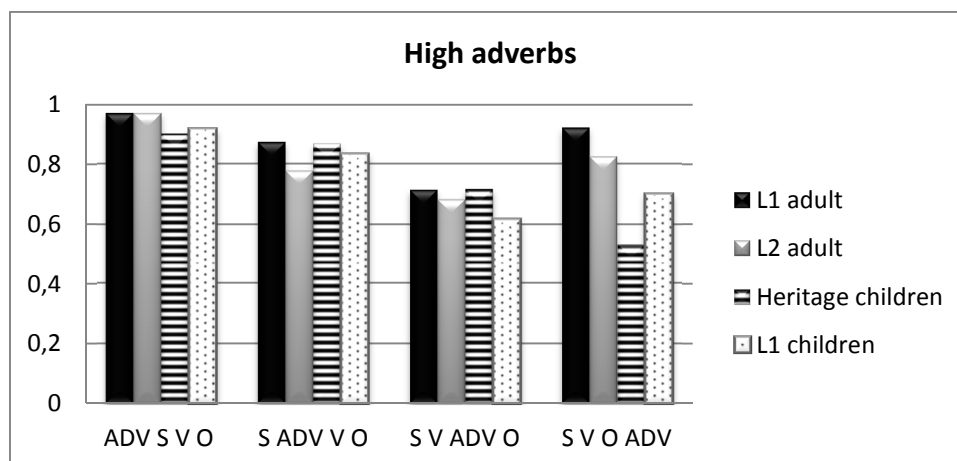
In the case of the ungrammatical ADV S V O and S ADV V O positions, rejection was the expected answer. However, an observation has to be made concerning the occurrence of low adverbs in high positions. Low adverbs such as  *muito*  ('very much') or  *bem*  ('well') may occur in higher positions (see 16) in utterances with emphatic interpretations and a particular intonation. It may therefore also be the case that in certain contexts some informants overaccept this condition by assuming such reading.<sup>4</sup>

- (16) *Muito*            *ele gosta de*    *dançar!*  
           very much     he likes PREP dance  
           'The way he likes to dance!'

Figure 2 presents the results obtained with adverbs generally allowing high positions, independently of their semantic type (these are called "high adverbs" here). In this case, we expected acceptance in all positions.

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<sup>4</sup> Low adverbs in this position license proclisis in EP, a language generally displaying enclisis and with a restricted distribution of proclisis, and it may be the case that the adverb is in this case a constituent fronted in a Focus position (Spec, FP) (see Martins, 1994, Barbosa, 2000).



**Figure 2.** Grammaticality judgment task: high adverbs

(group means of individual proportions of target-like answers).

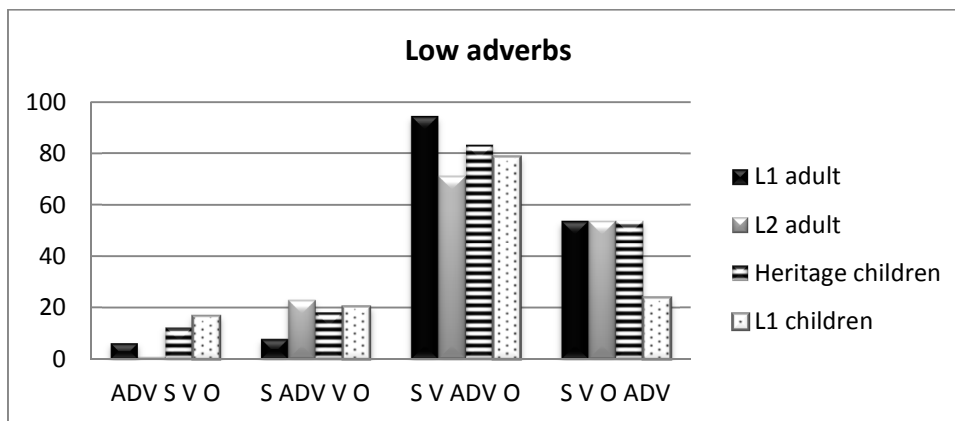
High positions (ADV S V O and S ADV V O) are particularly relevant for this study. Rejection of ADV S V O and S ADV V O patterns could signal possible influence of the V2 German syntax. The results show that L2 adults accept ADV S V O word order with high adverbs at the same rate as L1 adult controls. Even though the child groups present slightly lower results, the difference between the four groups is not significant, as shown by a Kruskal-Wallis test ( $H(3) = 4.541, p = 0.209$ ). As for the rate of acceptance of S ADV V O, it is slightly lower among L2 learners, but the difference between the four groups in this condition is again not significant ( $H(3) = 3.485, p = 0.323$ ). In general, we can say that all the groups accept ADV S V O and S ADV V O orders.

The results also show that both L1 adults and L1 children tend to reject more high adverbs in S V ADV O position than expected (heritage children and L2 adults perform at a level similar to L1 adults). One fact that might contribute to this result is the fact that a particular prosody must occur when some of these adverbs occur in low positions.

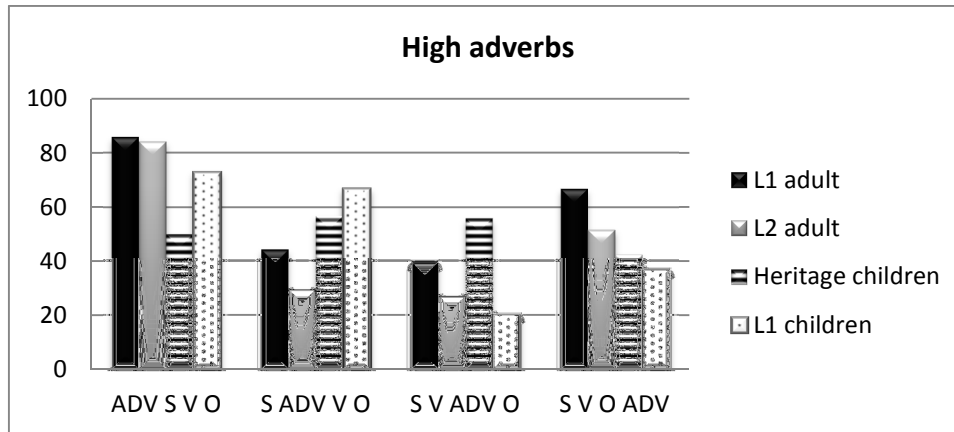
### 5.1.2. Sentence reordering task

In the case of the sentence reordering task, each given item could have more than one answer – in the particular case of items with adverbs admitting high positions, all the positions were possible, so the subject could produce four sentences for the same item. In some cases, the subjects produced all the expected possibilities; in other cases they only produced one. The results in this task thus allow us to identify tendencies and may confirm what was observed in the grammaticality judgment task. Since the groups do not have the same exact number of participants (and additionally one of the children in the child control group did not answer this task), we present group percentages of each utterance type. Each set of bars for a particular adverb position should be read as representing the percentage of production of adverbs in this position calculated upon the number of opportunities to produce it (i.e. test items x number of participants).

Since different adverbs have different distributions, Figure 3 refers to low adverbs and Figure 4 to adverbs admitting high positions.



**Figure 3.** Sentence reordering task: % production of low adverbs in different positions.



**Figure 4.** Sentence reordering task: % production of high adverbs in different positions.

The results confirm the main relevant results obtained with the grammaticality judgment task. First, both the experimental and the control groups produce ADV S V O and S ADV V O (Figure 4). This confirms the idea that the experimental groups produce V3 word orders, not allowed in German. Secondly, all the groups prefer to produce low adverbs in S V ADV O position, a relevant fact since V ADV O is a clear indication of verb movement.

## 5.2. Production of VP-ellipsis

The first fact to note in the task involving production of ellipsis is the number of items that remained unanswered revealing inability to solve the task (these are the unsolved items in Table 1). As shown in Table 1, the best results are obtained by the L1 adult group, with only 2.5% unsolved items.<sup>5</sup> Not unexpectedly, the child groups present the highest rates of unsolved items, a fact possibly due in part to their still underdeveloped

<sup>5</sup> One of the subjects in the control group did not answer the second part of the questionnaire, but this should not be read as inability to solve the task (therefore, these unanswered cases did not enter into the analysis). This explains the unexpected total number of answers taken into account for the analysis of the L1 adult group in this task (n =163).



metalinguistic awareness abilities. Nevertheless, age is not the only factor determining ability to solve this task: heritage children leave more items unsolved than L1 children, and L2 adults also show worse performance than L1 adults.<sup>6</sup>

**Table 1.** Unsolved items in the task involving production of ellipsis.

Group	Unsolved items
L1 adult	2.5% (4/163)
L2 adult	13.1% (22/168)
Heritage children	32.5% (52 /160)
L1 children	23.8% (38/160)

In Tables 2 and 3 we present the distribution of answers per structure in this task, excluding all the unanswered items. The VP-ellipsis production task contained 4 items with a main verb and 4 items with an auxiliary followed by main verb; in the former case, if the speaker uses VP-ellipsis to avoid redundancy, he can only produce VP-ellipsis with a stranded main verb, whereas in the latter case the speaker may either produce VP-ellipsis with a stranded auxiliary or VP-ellipsis with a stranded main verb. Therefore, we present the results obtained in the two conditions in two separate tables: Table 2, where there was no auxiliary in the stimulus, and Table 3, where the auxiliary was present in the stimulus.

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<sup>6</sup> Unsolved items cannot be taken to signal subjects who did not understand the task. All the subjects solved several items, showing that they understood what was requested. However, we cannot exclude that a certain level of metalinguistic awareness is needed to identify redundancies, which may explain the fact that some of them were not identified (especially) by younger subjects.

**Table 2.** Answer types, no auxiliary in the stimulus.

Group	VPE (main)	Pseudo- stripping	Pronouns Adverbs	Argument drop	Noun ellipsis	Total answers
L1 adult	60 75%	11 13.8%	8 10%	0 0%	1 1.3%	80
L2 adult	26 33.8%	23 29.9%	28 36.4%	0 0%	0 0%	77
Heritage children	27 52.9%	0 0%	12 23.5%	11 21.6%	1 2%	51
L1 children	35 60.3%	0 0%	4 6.9%	18 31%	1 1.7%	58

**Table 3.** Answer types, auxiliary in the stimulus.

Group	VPE (auxV)	VPE (main V)	Pseudo- stripping	Pronouns Adverbs	Argument drop	Noun ellipsis	Total answers
L1 adult	44 55.7%	12 15.2%	15 19%	7 8.9%	0 0%	1 1.3%	79
L2 adult	18 26.1%	8 11.6%	22 31.9%	21 30.4%	0 0%	0 0%	69
Heritage children	14 24.6%	18 31.6%	0 0%	17 29.8%	7 12.3%	1 1.8%	57
L1 children	15 23.4%	31 48.4%	0 0%	4 6.3%	14 21.9%	0 0%	64

Answer types found in the data include not only VP-ellipsis with a stranded main verb (17a,b) or with a stranded auxiliary (17c) but also pseudo-stripping (17d), the use of pronouns or anaphoric adverbs (17e), argument (or adjunct) drop<sup>7</sup> (17f) and some residual cases of nominal ellipsis (17g).

(17) a. *VP-ellipsis with stranded main verb*

O Rodrigo não deu um anel à namorada, mas o Daniel deu.

the Rodrigo not gave a ring to girlfriend but the Daniel gave

‘Rodrigo didn’t give a ring to his girlfriend, but Daniel did.’

b. *VP-ellipsis with stranded main verb in a verbal complex (auxiliary + main verb)*

A Marta não tem feito muitos piqueniques no Parque das Conchas,

the Marta not has had many picnics at.the Parque das Conchas

mas a Margarida tem feito.

but the Margarida has had

‘Marta hasn’t had many picnics at Parque das Conchas, but Margarida has had.’

c. *VP-ellipsis with stranded auxiliary*

A Marta não tem feito muitos piqueniques no Parque das Conchas,

the Marta not has had many picnics at.the Parque das Conchas

mas a Margarida tem.

but the Margarida has

‘Marta hasn’t had many picnics at Parque das Conchas, but Margarida has.’

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<sup>7</sup> Null objects (i.e. dropped direct objects) were also included in this category for the purpose of analysis.

d. *Pseudo-stripping*

O Rodrigo não deu um anel à namorada, mas o Daniel sim.

the Rodrigo not gave a ring to girlfriend but the Daniel yes

‘Rodrigo didn’t give a ring to her girlfriend, but Daniel did.’

e. *Use of pronouns*<sup>8</sup>

O Rodrigo não deu um anel à namorada, mas o Daniel deu-lhe.

the Rodrigo not gave a ring to girlfriend but the Daniel gave-her

‘Rodrigo didn’t give a ring to her girlfriend, but Daniel did.’

f. *Argument drop*

O Rodrigo não deu um anel à namorada, mas o Daniel deu Ø à namorada.

the Rodrigo not gave a ring to girlfriend but the Daniel give to girlfriend

‘Rodrigo didn’t give a ring to her girlfriend, but Daniel did.’

g. *Nominal ellipsis*

O Rodrigo não deu um anel à namorada, mas o Daniel deu um Ø à namorada.

the Rodrigo not gave a ring to girlfriend but the Daniel give one to girlfriend

‘Rodrigo didn’t give a ring to his girlfriend, but Daniel did.’

The analysis of these answer patterns aims at determining whether (i) L2 speakers produce VP-ellipsis and whether heritage children have a behavior comparable to monolingual children, who have been argued to acquire VP-ellipsis in their early years; (ii) speakers’ preferences suggest cross-linguistic influence.

The group analysis suggests that L2 speakers are able to use VP-ellipsis to solve redundancy in the VP. However, L2 adults do not use VP-ellipsis at the same rate as L1

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<sup>8</sup> In this example, the use of a pronoun is accompanied by dropping an argument (in this case, the direct object).

adults and not even at the rates observed for both heritage and monolingual children (who show lower rates of VP-ellipsis than L1 adults). In order to confirm these results, we used the ratios of production of VP-ellipsis to perform statistical analysis. In Figure 5 we present the means of production of VP-ellipsis for each group, combining here both VP-ellipsis with a stranded main verb and with a stranded auxiliary.



**Figure 5.** Group means of individual proportions of VP-ellipsis.

A Kruskal-Wallis test shows that the ratio of production of ellipsis in the different groups is significantly different ( $H(3) = 11.377, p = .010$ ). Two follow-up Mann-Whitney tests were conducted to evaluate the differences between the two experimental groups and their respective control groups. A Bonferroni correction was applied and therefore all effects are reported at a .025 level of significance. The L2 group ( $M = 0.34, SD = 0.39, Mdn = 0.25$ ) significantly differs from the adult control group ( $M = 0.7, SD = 0.41, Mdn = 1$ ) (Mann-Whitney,  $U = 107.5, p = .003$ ); however, heritage children ( $M = 0.54, SD = 0.35, Mdn = 0.63$ ) do not significantly differ from the child control group ( $M = 0.63, SD = 0.26, Mdn = 0.63$ ) (Mann-Whitney,  $U = 176.5, p = .523$ ).

An individual analysis completes this discussion. Eleven L2-speakers out of 21 (52%) produce VP-ellipsis. These results contrast with the results in the other groups: 86% of the L1 adults, 80% of the HS and 95% of the monolingual children use VP-ellipsis. To this extent, heritage children and L2 speakers differ, with heritage children performing like L1 adults and monolingual children. This individual analysis may also provide additional evidence suggesting more similarity between the heritage group and the other child control groups than between the heritage group and any other group. Indeed, if we consider only ellipsis with a stranded auxiliary, only 5 L1 adults never produce it; on the contrary, 11 heritage children and 10 monolingual children do not produce it. Given the results reported for the different groups, the particular results of the L2 group should be carefully considered: on the one hand, they may signal that half of the L2 speakers do not use VP-ellipsis because they have not acquired the structure; on the other hand, it may be possible that they know this particular structure but show a preference for other structures. What is relevant for us is that both possibilities signal differences between this group and the other three ones, be it because of different preference patterns or due to an (yet) incomplete acquisition process.

Apart from commenting on strictly VP-ellipsis, it is interesting to note that preferences for other structures allowing redundancy resolution may also define differences between the groups. First, both child groups use argument drop (including null object), contrary to what happens with the adult groups, and do not use pseudo-stripping, also differing from the adult groups.<sup>9</sup> Another interesting finding is the higher proportion of production of pseudo-stripping in the L2 group when compared with the L1 group (see Table 3). However, when we compare the individual ratios of pseudo-

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<sup>9</sup> It is possible that pseudo-stripping involves movement to a position in the left periphery related to (contrastive) focalization. This movement may be avoided by children.

stripping in the L1 ( $M = 0.18$ ,  $SD = 0.34$ ;  $Mdn = 0$ ) and in the L2 group ( $M = 0.28$ ,  $SD = 0.38$ ,  $Mdn = 0$ ), the difference does not reach significance (Mann-Whitney,  $U = 179.5$ ,  $p = 0.237$ ). Here again we should return to the results showing that only about half of the L2 learners used VP-ellipsis. In Table 4, we present the distribution of answer types in two sub-groups of L2 speakers, the sub-group who did not produce a single VP-ellipsis answer ('no\_VPE group') and the sub-group who produced at least one VP-ellipsis answer ('VPE group'). Again, unsolved items were excluded and, in this case, we have combined the results of items with an auxiliary and without an auxiliary in the stimulus.

**Table 4.** Answer types in two subgroups of L2 speakers.

Group	VPE (auxV)	VPE (main V)	Pseudo- stripping	Pronouns Adverbs	Argument drop	Noun ellipsis	Total answers
no_VPE	0	0	49.2%	50.8%	0	0	65
VPE	22.2%	42%	16%	19.8%	0	0	81

The results in Table 4 show that the speakers who do not use VP-ellipsis present very high rates of pseudo-stripping and of pronoun or adverb substitution; on the contrary, the speakers who use VP-ellipsis present rates of pseudo-stripping which are within the values presented by L1 speakers. But again special care is needed when interpreting this table: since also not all L1 adult speakers used VP-ellipsis, we cannot be sure that absence of production among some L2 speakers should be interpreted as a clear indication that these speakers did not acquire it, it may instead indeed signal preference. We will return to this issue in section 6.

A further observation concerns the use of pronouns or adverbs, since this is the only case in which the heritage children perform more like the L2 learners and differ

from the L1 speakers. After performing a Kruskal-Wallis test, which showed a significant difference between the groups ( $H(3) = 15.253, p = .002$ ), we applied three follow-up Mann-Whitney tests to compare the two experimental groups with their respective control group and to compare the two experimental groups. A Bonferroni correction was assumed and all effects are reported at a .017 level of significance. The comparison between the two adult groups shows a significant difference between the L1 ( $M = 0.11, SD = 0.2, Mdn = 0$ ) and the L2 subjects ( $M = 0.38, SD = 0.39, Mdn = 0.25$ ) (Mann-Whitney,  $U = 111, p = .004$ ). The comparison between the heritage ( $M = 0.32, SD = 0.37, Mdn = 0.21$ ) and the monolingual children ( $M = 0.1, SD = 0.25, Mdn = 0$ ) also shows a significant difference (Mann-Whitney,  $U = 119.5, p = .014$ ). However, heritage children do not significantly differ from L2 adults (Mann-Whitney,  $U = 188.5, p = .566$ ). In this case, L2 speakers consistently present higher rates of pronoun / adverb substitution than L1 speakers, even when we take into account only those L2 speakers who produce VP-ellipsis (see Table 4). Actually, even if we compare the group of heritage children with only the L2 subgroup who uses VP-ellipsis, there is no significant difference in the rates of pronoun / adverb substitution between the two groups (Mann-Whitney,  $U = 101.5, p = .720$ ).

## 6. Discussion

We first discuss acquisition of verb movement signaled by the distribution of adverbs (research question Ia., section 3.3). Both the L2 learners and HS accept target word orders in Portuguese. The results obtained also show no evidence of influence of the German V2 grammar on Portuguese: the experimental groups do not present significantly higher rates of rejection of V3 word orders when compared to the



monolingual controls and they also produce the same word orders. Håkansson et al. (2002) conclude that the syntactic property of V2 hardly transfers to SVO languages. Our results are in line with these observations.

We further compared the results of the tasks on adverb distribution with results obtained in production of VP-ellipsis. VP-ellipsis is dependent on verb movement but it also implies acquisition of a particular feature (Merchant, 2001). Moreover, given the type of task and our goals here, we must distinguish two issues: (i) acquisition of an ellipsis feature associated with a particular syntactic node and (ii) activation of the structure in a particular task when other competing structures are also available.

Our most important result is the fact that HS perform at the monolingual level when producing VP-ellipsis. The target-like behavior of heritage children is confirmed by an individual analysis, which showed that 80% of the subjects used VP-ellipsis (in the adult control group, 86% of the subjects produced VP-ellipsis). The fact that heritage children did not significantly differ from L1 monolingual children suggests that at least in this case there is no evidence of incomplete development. Early exposure to the native language was sufficient to ensure successful acquisition, even though the quality and quantity of relevant input may have decreased in subsequent stages. The results indicate that adverb distribution and VP-ellipsis, both dependent on the same syntactic property (verb movement), have been acquired, even though VP-ellipsis involves the syntax-discourse interface. This may be especially visible in the case of early acquired properties, such as VP-ellipsis (see Santos 2009a for monolingual acquisition). Additionally, the mode of language use may play an important role: VP-ellipsis is present in informal, spoken language and it is well known that HS are more exposed to the spoken variety of their heritage language.

We have seen that HS show knowledge of V-to-T by accepting and producing target word orders in Portuguese and also by producing VP-ellipsis (see the research question I, in section 3.3.). L2 speakers also show knowledge of V-to-T by producing target word orders. However, HS results clearly contrast with the results obtained by the L2 group in the case of production of VP ellipsis: only 52% of the L2 speakers used VP-ellipsis. This means that only for half of the subjects there is clear evidence for acquisition of VP-ellipsis. If we take into account the different results obtained by the L2 group in the two tasks (distribution of adverbs and VP-ellipsis), there is at least the possibility that one of two structures dependent on the same general language property (V-to-I) may, indeed, show a protracted development in L2 acquisition: VP-ellipsis may indeed show this delayed development if we take subjects not producing VP-ellipsis as subjects who cannot produce it. However, since not all adult L1 speakers produced VP-ellipsis, we can also hypothesize that at least some of the L2 speakers that did not produce VP-ellipsis may be able to use it but showed a preference for other structures. Moreover, absence of a structure in production does not necessarily mean that the structure was not acquired.

We are thus raising the issue of possible L1 / dominant language influence in the activation of a particular structure in a relevant context (research question II, section 3.3). The task intended to elicit VP-ellipsis but other structures are adequate in the same context; here, again, it is interesting to compare the performance of HS and L2 speakers. Actually, the two child groups show very similar performances regarding the choice of structures used to solve redundancy. It is interesting to note that both child groups use argument drop (including null object) as one possible structure, clearly contrasting with the adult speakers (both L1 and L2), who never use it. The option for argument drop in

contexts of VP ellipsis should be confirmed (and possibly discussed in light of research on object omission in acquisition – see Pérez-Leroux, Pirvulescu & Roberge 2009). The same happens with pseudo-stripping, which was not produced by children. As discussed in section 3.2, German displays pseudo-stripping as an alternative to solve redundant information in the VP; however, the heritage bilinguals do not resort to this possibility, performing exactly like their L1 counterparts. So there is no evidence of cross-linguistic influence on the HL in these aspects. On the contrary, L2 speakers produce higher rates of pseudo-stripping.

Nevertheless, even though the results show general convergence between heritage and monolingual children, they also show that heritage children are not totally impermeable to cross-linguistic influence. The only case in which HS perform more like L2 learners and differ from L1 children concerns the use of pronouns or adverbs in these contexts. Both heritage children and L2 learners resort much more to this structure than L1 speakers. Redundancy in the VP may be solved through the use of pronouns or adverbs replacing internal arguments or adjuncts. Moreover, German displays VP-anaphora with the overt pronoun *es*. Even though the use of this overt proform is restricted, it signals the presence of an overt anaphora in the VP. These facts might induce the heritage speaker, exactly as the L2 learner, to resort more often to the use of overt forms (especially pronouns) in their weaker language. As suggested in section 3.3., this may be seen as a specific effect of the dominant language on processing of the non-dominant language: when faced with a particular discourse context and intending to convey a particular meaning, the speaker may activate processing routines of the dominant language and project a structure also available in that language, leading to a

preference for overlapping structures. These results suggest that such effect may affect an L2 as well as a HL.

Overall, acquisition of the relevant properties of the target grammar (namely, VP-ellipsis) by HS argues against incomplete development in this area (contra Benmamoun et al., 2013, Montrul, 2008 and supporting Flores, 2014, Pascual y Cabo & Rothman, 2012 and Pires & Rothman, 2009), but preferences that might be due to cross-linguistic influence suggest that at least some differences between L1 monolinguals and HS might be due to the influence of the dominant language.

## **7. Conclusion**

Overall, the results indicate that heritage language acquisition resembles L1 monolingual acquisition, since both child groups perform very similarly. We can thus conclude that early exposition to the native language is sufficient to ensure successful acquisition, especially when we are dealing with generally early acquired properties of the language (verb movement, VP-ellipsis), even though the quantity and quality of input from this language may decrease gradually afterwards. On the other hand, L2 speakers show acquisition of target-like verb movement and (at least some of them) VP-ellipsis; but this group of learners also shows a more protracted development of VP-ellipsis or at least stronger effects of the dominant language affecting patterns of answer in VP-ellipsis contexts.

We have discussed the possibility of cross-linguistic influence effects emerging under the form of specific dominant language effects on HL or L2 processing and giving rise to a preference for a structure over others suitable for the same discourse context. This would indeed qualify as a type of dominant language influence affecting

the syntax-discourse interface, which could have a processing explanation and which could remain visible after acquisition of the relevant properties of the target grammar. This type of cross-linguistic influence may justify some non-target behavior of both L2 and heritage speakers.

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