Journal of Portuguese Linguistics

Flores, C., Rinke, E., Torregrossa, J., & Weingärtner, D. (2022). Language separation and stable syntactic knowledge: verbs and verb phrases in bilingual children's narratives. *Journal of Portuguese Linguistics*, 5, pp. 1–30. DOI: https://doi.org/10.16995/jpl.8043

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Language separation and stable syntactic knowledge: verbs and verb phrases in bilingual children's narratives

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The present study analyses written narratives of 60 Portuguese-German bilingual children between 8 and 15 years living in Switzerland, in both their languages. Portuguese is the children's heritage language (HL) and German the environmental language. The analysis focusses on the children's lexical, morphological and structural knowledge in the verb domain (verb types, agreement morphology, verbal tense, word order within the VP, orthography) and aims to determine the role of language dominance, general proficiency, current age and age of onset of bilingualism (AoO) in bilingual language acquisition at later stages of development (i.e., at school-age). The results show that the bilingual children display stable syntactic and morphological knowledge in both their languages. Lexical knowledge is positively correlated with age and proficiency. Morphological and syntactic deviations are residual in both languages and not correlated with AoO. No effects of cross-linguistic influence are observed. We only find performance differences between the Portuguese and the German corpus at the level of orthography. We conclude that in the analysed age span children have received enough exposure to both languages to develop stable morphological and syntactic knowledge, at least in the verb domain.

1. Introduction

This paper investigates different aspects of bilingual children's written productions of finite and non-finite verbs and verb phrases. The investigation is based on narratives produced by 60 German-Portuguese bilingual children between the ages of 8 and 15 years (mean 12;03) living in Switzerland with Portuguese as their heritage language (HL) and German as their environmental language (broadly, Swiss German in the environment and Standard German at school). We will analyse their production in both languages in order to compare their respective lexical, morphological and structural knowledge in the verb domain.

The verb domain is well suited for this investigation because it allows us to address research questions related to different aspects of bilingual speakers' linguistic knowledge. First, the number of different verb types used by the children can be taken as an indicator of the richness and diversity of the bilingual lexicon. Second, we focus on verb morphology, which is often shown to be demanding for heritage speakers (HSs), for instance in Russian (Mikhaylova, 2018) or in Spanish as HL (Fernández-Dobao & Herschensohn, 2021), particularly in experimental studies. We analyse whether this also applies to bilingual children's written production of tense, aspect and agreement morphology in European Portuguese (EP) as HL. Third, concerning the area of syntax, we investigate the position of the finite verb in the sentence, subject-verb-order and OV-VO placement in infinitival constructions, both in Portuguese and in German.

For each of these three domains, we will compare the children's performance in the two languages. Differences between the two languages can be understood in terms of language dominance, i.e. of unbalanced proficiency between the two languages. For example, the children may show a richer and more diversified lexicon in the environmental language compared to the HL, as often observed in studies on bilingual speakers' lexical competence (Thordardottir, 2011). The absence of differences between the two languages would speak in favour of more balanced bilingualism, which, in turn, may reflect stable syntactic knowledge in both languages. Because the two languages differ crucially with respect to the placement of finite verbs and to verb-object order, a closer look at these cross-linguistic differences also allows us to discuss potential effects of cross-linguistic influence.

The paper is structured as follows. We will first give a short overview of the mentioned properties of the verb phrase in the target languages, German and Portuguese (section 2). Subsequently, we will briefly describe previous findings concerning language dominance and cross-linguistic influence in bilingual children, focusing on the acquisition of the verb domain (section 3). Our aim is not to provide an exhaustive discussion of these aspects but rather to derive concrete research questions for the present study, which will be presented together with some information about participants and methodology in section 4. In section 5, we provide the results and in section 6 we discuss them in more detail, relate them to our research questions and conclude.

2. Verbs and verb phrases in German and Portuguese

As mentioned in the introduction, a closer look at bilingual children's production of verbs and verb phrases in both their heritage and their environmental language can shed light on the question how stable their (lexical, morphological and syntactic) knowledge is in both languages, whether their written production reflects dominance in German, the main environment language, and to what extent cross-linguistic influence occurs.

We will start by providing some information on the verb domain in both languages. Concerning the number of verbs in the lexicon, not much can be said about similarities or differences between German and Portuguese. One interesting aspect about German is that the lexicon contains many verbs that are formed by combining one and the same verb stem with different particles, which may be separable from the stem or not (the latter may be classified as prefixes). An example is given in (1), whereby, for instance, *aus-* is separable but *ver-* is not.

(1) verb stem = *lassen* ('to let')
auslassen ('to omit'), *verlassen* ('to leave, to abandon'), *überlassen* ('to cede'), *anlassen* ('tempering'), *durchlassen* ('to let pass'), *unterlassen* ('to refrain from')

In the verb lexicon of Portuguese, new verb meanings can be formed by combining different prepositions with a verb (see (2)).

(2) verb: *acabar* ('to finish')
acabar de ('have just done'), *acabar com* ('destroy'), *acabar por* ('end up doing something'), *acabar em* ('end up in')

In German and Portuguese, finite verbs are inflected for tense, agreement (person and number) and mood. Concerning agreement, EP is considered to be a rich agreement language, showing different forms for each person with reduced syncretism. Example (3) shows the different forms of the present tense of a regular verb (*falar*, 'to speak').

(3) *falar* ('to speak'): *eu fal**o*** (1st Sing.), *tu fal**as*** (2nd Sing.), *ela/ele fal**a*** (3rd Sing.), *nós fala**mos*** (1st Pl.); *vocês fala**m** / vós fal**ais***[1] (2nd Pl.), *elas/eles fala**m*** (3rd Pl.)

Also, German generally shows differential forms for different persons, even though with higher syncretism. In the present tense, for instance, the 1st Pl. and the 3rd Pl. display the same form, as well as the 3rd Sing. and 2nd Pl. (see the conjugation of *gehen*, 'to go' in (4)).

(4) *gehen* ('to go'): *ich gehe* (1st Sing.), *du gehst* (2nd Sing.), *er geht* (3rd Sing.), *wir gehen* (1st Pl.); *ihr geht* (2nd Pl.), *sie gehen* (3rd Pl.)

[1] The form *vós falais* is falling in disuse in contemporary EP, even though it still figures as 2nd Plural form in the school manuals.

Both German and Portuguese have irregular verb forms. Auxiliaries like the forms for 'to be' (Ger. *sein*, Pt. *ser/estar*) belong to them, but also modal verbs (e.g., German *wollen*, 'to want', Portuguese *poder* 'to be able'), and forms with stem modification in the 1st Sing. because of vowel harmony (e.g., Portuguese *seguir*, 'to follow': *eu sigo; dormir*, 'to sleep': *eu durmo*). So called 'strong' verbs in German lack the inflectional past suffix *–te* of regular verbs and are characterized by a change in their thematic stem vowel in the past (e.g., /ai/ to /i:/ in *bleiben* ('to stay'): *er blieb* (3rd S. simple past); /i:/ to /o:/ in *fliegen ('to fly')*: *er flog (3rd S. simple past)*, etc.

For both German and Portuguese, we expect to find predominantly past tense forms in the narratives. In Portuguese, the most common past tense forms are simple past (*pretérito perfeito* (5a)) and imperfect (*imperfeito* (5b)). The two past tense forms differ with respect to their aspectual interpretation. Roughly, *pretérito perfeito* refers to an action that is concluded in the past, *imperfeito* to an ongoing action in the past. The *mais-que perfeito composto* (compound pluperfect (5c)) is employed to refer to an action in the past that occurred before another action in the past. The *mais-que perfeito sintético* (simple pluperfect (5c)) has the same meaning but it is residual in contemporary EP, being mainly restricted to literary texts. The simple present (*presente* (5d)) is not expected in the narrative, but may occur when children report direct speech of the characters or when they resort to a description of the picture instead of (re-)telling the story.[2]

(5) (a) *Ontem, a Maria **comprou um livro**.*
yesterday the Maria bought a book
'Yesterday, Mary bought a book.'

(b) *Durante o jantar, a Maria **contava**-me esta história.*
during the dinner the Maria told me this story
'During dinner Mary, told me this story.'

(c) *Quando ele chegou, a María já **tinha cantado / cantara**.*
'When he arrived, Mary had already sung.'

(d) *O qué é que tu **fazes**?*
'What are you doing?'

In German, the simple past (*Präteritum* (6a)) and the past perfect (*Perfekt* (6b)) are expected to be found in the narrative stories. The *Perfekt* is almost exclusively used as a past tense form in the spoken register; the *Präteritum* is more appropriate (and more frequent) in written narratives. The *Plusquamperfekt* (pluperfect) has a similar function as the Portuguese *mais-que perfeito composto* (compound pluperfect (5c)) and refers to an action in the past that is concluded before another action in the past took place. The simple present (*Präsens*) is also possible as in Portuguese, but not expected in the narratives and not adequate, except for the contexts identified above (for instance, direct speech, see (6d)).

[2] *We will not consider the mood system of Portuguese or German, since it is not the focus of the present paper.*

(6) (a) *Hans **las** das Buch.*
'Hans read the book.'

(b) *Hans **hat** das Buch **gelesen**.*
'Hans read the book.'

(c) *Als er ankam, **hatte** Maria schon **gesungen**.*
'When he arrived, Maria had already sung.'

(d) "***Singt** Maria gerade*?"
'Is Maria singing now?'

So far, German and Portuguese show some structural similarities, although the morphological forms and the exact use and interpretation of the different tense forms (e.g., the differentiation between two aspectual past tense forms in Portuguese, but not in German) are different to some extent.

With respect to the placement of finite verbs and the order of objects and non-finite verbs, German and Portuguese show clear differences. German is an asymmetric verb-second language. The finite verb generally occupies the second position in main clauses and the final position in subordinate clauses (7). In Portuguese, the position of the finite verb is more flexible.

(7) *Hans **liest** ein Buch, wenn er Zeit dazu **hat**.*
'John reads a book if he has time to do so.'

The verb second property of German implies that a postverbal subject occurs, whenever a non-subject constituent occupies the sentence initial position (8a). In Portuguese, postverbal subjects are appropriate if they occur as subjects of unaccusative verbs (8b) or are used to express new-information focus (8c).

(8) (a) *Gestern **hat** Maria das Buch gelesen.*
'Yesterday, Mary read a book.'

(b) ***Chegou** a Maria.*
'Mary arrived.'

(c) (*Quem falou*?)
('Who spoke?')
***Falou** a Maria.*
'Mary spoke.'

With respect to object-verb order in infinitival constructions, German and Portuguese belong to different language typologies as well: German is an OV-language, Portuguese a VO-language. This means that a direct DP object is generally placed after an infinitive or participle in Portuguese (9a) and before an infinitive or participle in German (9b).

(9) (a) *O rapaz queria* ***comprar*** *uma bola*.

(b) Der Junge wollte einen Ball **kaufen**.
'The boy wanted to buy a ball.'

Before we present our research questions and the results of this study, we will summarize very briefly the main previous findings of research on language dominance and cross-linguistic influence in child bilingualism that may be relevant for the present study.

3. Bilingual acquisition of the verb domain

The acquisition of the verb domain by bilingual children has often been used as a case study to understand which factors affect variation in acquisition outcomes among bilingual children (Nicoladis et al., 2007; Paradis, 2010).

From the lexical point of view, several studies on bilingual language acquisition suggest a positive relationship between verb diversity and general language proficiency (Correia & Flores, 2017; Harley & King, 1989). Verb diversity refers to the number of verb types occurring in an oral or written text. Several studies have measured verb diversity (and, more in general, lexical diversity) in bilingual speakers' both languages and considered the difference between the two measures as a proxy of bilinguals' relative proficiency (Treffers-Daller, 2019, for a review). This methodology has the advantage of not having to rely on vocabulary tests, which are usually normed only for monolinguals and hardly comparable across a bilingual's two languages (Treffers-Daller & Korybski, 2015). However, typological differences have to be taken into consideration. Simon-Cereijido and Gutierrez-Clellen (2009) elicited oral narratives to assess vocabulary and syntactic knowledge in both English and Spanish among Latino children living in the United States. They reported that the children's narratives exhibited greater verb diversity in Spanish than in English. This result was only partially motivated by children's greater proficiency in Spanish than in English because typological differences between the two languages played a relevant role, too: Whereas Spanish expresses path and manner by using two different verbs (e.g., *subir corriendo* 'to go up running'), English tends to use a verb followed by a particle for the same purpose (e.g., *run up*). Thus, typological differences may explain why some studies have found that verb diversity measures tend to be less sensitive to general language proficiency variables than other measures of lexical diversity concerning nouns, adjectives or adverbs (McClure, 1991). As for the pair German and Portuguese, these languages also display, to some extent, different processes of verb formation, as mentioned in section 2. We will come back to this point.

Age of onset of acquisition (AoO) of the environmental language is an important factor, too, in particular when we consider phenomena that are acquired early, such as the morphosyntax of verb forms in languages like German. By using a longitudinal design, Schulz and Grimm (2019) analysed accuracy in the production of subject-verb agreement in German among three

groups of children, monolinguals, simultaneous bilinguals and early sequential ones with an AoO to German between 34 and 40 months. The children were tested at the ages 4;4 and 5;8, respectively. They found that in the first test round, the monolinguals and the simultaneous bilinguals reached mastery in the production of subject-verb agreement, whereas the early sequential ones did not. In the second test round, the early sequential bilinguals caught up with the simultaneous bilinguals, even if they did not reach the cut-off criterion for mastery (90% accuracy). The results of this study show that AoO (0 years in monolinguals and simultaneous bilinguals vs. 3 years in sequential ones) plays a crucial role for the acquisition of subject-verb agreement in German. The authors argue that this is also because subject-verb agreement is acquired early in L1 German, given that the same sensitivity to AoO was not found in association with late acquired phenomena (e.g., negation or case). Furthermore, the behaviour observed among the sequential bilinguals in the second test round suggests that certain phenomena may be progressively acquired with time: In other words, it is likely that in a hypothetical third test round, the sequential bilinguals might have been able to catch up with their monolingual and simultaneous bilingual peers. This consideration is particularly relevant for our study, since we analyse accuracy in the production of subject-verb agreement among children with different AoO to German who are (at least) two years older than the children considered in Schulz and Grimm (2019). Hence, given the development observed in the mentioned study, our expectation is that verb agreement patterns may potentially cause differences between younger bilingual children with different AoO to German but not between older ones.

A study by Chondrogianni and Marinis (2012) considered the production of subject-verb agreement and past tense in English among L1 Turkish children with more than three years of exposure to L2 English. The authors found that the children were less accurate in the production of both forms than English monolinguals. However, they performed better on the marking of past tense (*-ed*) than on the marking of the third person singular of the present form (*-s*). In the case of the production of the morpheme *-s*, variation in children's accuracy score was motivated by their AoO to English. These results are consistent with the ones in Schulz and Grimm (2019). In general, AoO seems to be crucial for the acquisition of verb morphology. Later acquisition of the morpheme *-s* compared to the morpheme *-ed* may reflect the fact that the morpheme *-s* emerges later in L1 language acquisition, too (Brown, 1973). Bilingual children may just need additional time to acquire it. Finally, Chondrogianni and Marinis (2012) argue that the observed difficulties in the production of verb morphology may be related to cross-linguistic differences between Turkish and English, since children had to move from a transparent paradigm (Turkish) to a less transparent one (English) – Torregrossa and Bongartz (2018) and Torregrossa, Eisenbeiß and Bongartz (in press) on the role of transparency in bilingual language acquisition. Because in the present study, we consider two languages (Portuguese and German) with a relatively rich paradigm of subject-verb agreement, we do not expect that the transparency of the verb paradigm

may cause major differences in the mastery of verb morphology across the two languages, but if so, it would be the German paradigm causing some (residual) differences.

In the literature on bilingual language acquisition morphological tense marking is shown to be a quite robust phenomenon in bilingual language acquisition (see also Jacobson and Schwartz, 2005, on early L2 English speakers with Spanish as L1). Even in studies reporting that bilinguals lag behind monolinguals, accuracy in the use of tense-marking tends to exhibit a positive correlation with age, which suggests that tense morphology can be acquired with time (see, e.g., Nicoladis et al., 2007). In addition, it has been shown that the use and knowledge of verb morphology is also positively correlated with amount of language exposure (Paradis et al., 2007), i.e., children with more input to the target language are significantly more accurate in this domain than children with less input.

Nevertheless, cross-linguistic effects may have an influence on the type of errors produced by the children. Nicoladis et al. (2012) analysed the production of past tense forms among English-French and English-Chinese simultaneous bilinguals using a narrative elicitation task. They observed that the type of language combination did not affect children's accuracy scores, although tense marking is available in French, but not in Chinese. However, when producing incorrect irregular forms, English-Chinese children tended to realize more verb stems than overregularizations, while English-French children exhibited the opposite pattern.

For the purposes of our investigation, it is relevant to point out that, in general, child and adult HSs have been shown to exhibit solid knowledge of tense morphology in their HL (see Benmamoun et al., 2013, for discussion). Given the previous findings, we do not expect to observe major difficulties in the production of verb tense forms among the participants of our study. Because both German and Portuguese show tense marking, overregularization is an expected pattern with irregular forms, as has been observed also with monolingual children of the two languages.

By contrast, bilingual children's mastery of aspect categories seems to be more vulnerable. The expression of aspect is a complex task, since it involves the integration of information from different domains, including morphosyntactic knowledge related to the aspect markers available in a language, semantic functions (e.g., the distinction between perfective and imperfective interpretations), aspectual properties of verbs (e.g., states or activities) and discourse functions (e.g., foreground and background information) – see Slabakova and Montrul (2002). A number of studies so far has shown that the accurate use of aspect morphology is particularly challenging for bilingual speakers of two (or more) languages exhibiting different form-function mappings related to the encoding of aspect (Montrul, 2009). For example, the imperfect in Spanish can express both habituality and progressivity and is usually translated by past progressive in English. However, English past progressive encodes progressivity only (see Salaberry, 2011, for other differences between English and Spanish in this domain). Also, Portuguese and German differ from

each other with respect to the morphological marking of aspect: Portuguese has different forms in the past tense for imperfective and perfective aspect, German does not have morphological aspect distinctions, although aspect plays a role in the use of different past-tense forms. Given these typological differences, we expect that the bilingual children may have difficulties with aspect marking in Portuguese. However, these difficulties may be found in monolinguals too and, therefore, may only indirectly be attributed to the influence of the contact language.

In addition to potential cross-linguistic effects, some studies conducted on bilingual children have shown that general language proficiency is related to the accurate production of aspect markers. For example, Wiberg (1996) showed that Italian child HSs living in Sweden did not master the encoding of perfective and imperfective aspects in Italian if they had a low general proficiency level. These speakers tended to use *passato prossimo* for both functions, although imperfective aspect is encoded by *imperfetto* in Italian (see Dosi et al., 2016, for similar considerations on the marking of imperfective aspect in Greek by heritage Greek children living in the UK). In our study, we measured general proficiency based on a cloze test. We expect that children with lower rates of proficiency will show more difficulties with aspect marking in Portuguese than children with higher proficiency levels.

For the purposes of the present study, it should be noted that some scholars establish a strong relationship between language dominance – and the occurrence of cross-linguistic effects (Bernardini, 2003; Nicoladis, 2006; Torregrossa et al., 2021; Yip & Matthews, 2000), while others do not (Fernández et al., 2017; Hsin et al., 2013; Müller & Hulk, 2001). However, it is also possible that the effect of dominance is modulated by age. For example, dominance may not be a strong factor affecting cross-linguistic effects among younger bilinguals who just started to enter school, but may show an effect among older ones because heritage bilinguals tend to become more unbalanced with growing age. We account for this possibility by including participants of a wide age range (from 8 to 15 years old).

4. Research questions and methodology

4.1 Research questions

As described above, the present study focusses on several aspects of the verb domain: lexical diversity, adequacy of morphological form, form-function mappings and structural knowledge concerning verb placement and object-verb ordering. Comparing the children's performance in both the heritage and the environmental language and taking into account age and proficiency of the children (as measured by means of a cloze test) will enable us to address potential effects of language dominance and cross-linguistic influence in the verb domain.

In a first step, we will globally describe and analyse the written productions in the target domains in order to evaluate how stable and target-like children's knowledge is.

The first question focuses on the richness and diversity of the bilingual lexicon in each language:

(a) How many different verb types do the children produce?

The second area of interest concerns verb morphology in German and Portuguese as a potentially challenging linguistic domain:

(b) Are the children able to produce the correct morphological forms for different tenses and do they always produce correct person-number agreement patterns?
(c) Do the children employ different tenses adequately?

Focussing on the children's syntactic knowledge in Portuguese and German, we further ask:

(d) Given that the two languages of the child differ significantly with respect to object-verb order and placement of the finite verb, do the children always adhere to the language specific word order patterns or do we observe variation in this domain?

Based on the results and the respective answers to questions a.-d., we will compare children's production in both languages and further ask:

(e) Is their lexicon equally rich and do they perform equally adequate in both languages? Or do we rather find a clear asymmetry in the results pointing to language dominance in one or the other language?
(f) Can we detect systematic morphological and syntactic variation in the children's written productions pointing to asymmetric cross-linguistic influence?
(g) What is the role of age, overall proficiency and AoO to German (the environmental language)?
(h) What about orthographic difficulties? Are they similar across languages or more visible in the HL, since it is not the language of schooling and only used/taught in HL classes?

4.2. Participants and methodology

4.2.1. Participants

This study is based on narratives written by 60 bilingual children from Portuguese migrant families who live in the German-speaking part of Switzerland, with Portuguese as their HL and German (high and Swiss German) as their environmental language(s). The children are between 7;11 and 15;11 years old and attend a HL class offered by the Camões Institute once a week (with a duration of approximately two hours), where data collection took place in collaboration with the HL teachers and their coordinator.

All participants are early bilinguals who are exposed to Portuguese from birth and to German between birth and 10 years of age (M: 45.25 months; SD: 30.98). The children's language profile was assessed through a detailed parental questionnaire, which collected data related to the acquisition and use of both languages (Portuguese and both varieties of German) with family members (see Flores et al., 2022, and Torregrossa, Flores & Rinke, 2022, for more details).[3]

4.2.2. Cloze test

In addition to the background questionnaire, data collection comprised a written cloze test, in Portuguese and in German, which assessed the participants' language proficiency. The test included 40 blank spaces corresponding to whole words or only parts of words of different levels of difficulty and targeting various linguistic structures (lexical knowledge, function words, verb and nominal agreement, pronoun realization, irregular verb and nominal morphology). The test was constructed by the authors on the basis of the ENNI-materials developed by Schneider et al. (2005). The two language versions were given to the children with at least a two-week break, with half of the participants starting with the German version and the other half with the Portuguese version (see Flores et al., 2022, and Torregrossa et al., 2022, for more details on the cloze test). A summary of the cloze test results is presented in **Table 1**.

	Portuguese	**German**
Mean	27.1	26.6
Min–max	1–40	3–40
SD	11.8	10.6

Table 1: Cloze test results in Portuguese and German (mean, min–max, SD).

The results reveal high variation within the group of bilinguals in both languages regarding their proficiency. It comprises participants who filled 1 to 3 blanks in Portuguese and German, respectively, to participants who were able to fill out all 40 blank spaces. The mean value of accuracy is similar in Portuguese (27.1) and in German (26.6). This indicates similar proficiency in both languages, speaking in favour of situations of balanced bilingualism. In addition, a Pearson correlation test shows that the cloze test results in both languages are significantly correlated ($r = .673; p < .001$), i.e., the more proficient the participants are in one language the higher the proficiency in the other language.[4] Furthermore, the cloze test results are positively correlated

[3] The study was approved by the ethics committee for Social and Human Science of the University of Minho (reference CEICSH 016/2019).

[4] For the statistical analysis, we tested the data for normality and homogeneity of variance and conducted either parametrical or non-parametrical between- and within-subject tests.

with participants' age at the time of testing in both languages (Portuguese: $r = .497$; $p < .001$; $r = .489$; $p < .001$). However, there is no correlation between the cloze test results and AoO to German in either language (Portuguese: $r = .205$; $p = .167$; German: $r = .069$; $p = .646$).

4.2.3. Narratives

In addition to the background questionnaires and the cloze tests in Portuguese and German, data collection comprised a story retelling task in both languages. The same picture sequence (ENNI-narratives; Schneider et al., 2005) was used for both languages. A model story was previously recorded by a native speaker of each language and presented to the children together with the pictures on a PowerPoint, at the beginning of the testing session. Afterwards children were given a paper containing the same pictures and asked to write the story they just heard, following the picture sequence. They heard the story only once. Two weeks of interval separated the testing sessions in both languages. Half of the children began with the German and the other half with the Portuguese version.

The structure of the two model stories did not differ in length, number and type of clauses or vocabulary across the two languages, notwithstanding typological differences. **Table 2** gives an overview of the distribution of the structures that are relevant for the present analysis, for each language.

	Verbs		**Tense types**	**SV/VS**		**VO/OV**		**V2/VE**	
	Tokens	**Types**		**SV**	**VS**	**VO**	**OV**	**V2**	**VE**
Portuguese	66	41	Pret.Perfeito:28	31	1	5	0	–	–
			Imperfeito:15	(97%)	(3%)	(100%)			
			Mais-que-Perf. Composto:2						
German	57	41	*Präteritum*:39	33	13	0	5	24	24
			Plusquamp.:5	(72%)	(28%)		(100%)	(50%)	(50%)
			Perfekt:1						

Table 2: Structures used in the model stories.

The analysis of the children's narratives included the coding of different properties of the verbs occurring in the narratives in both languages. These properties were: verb type, agreement, morphological form, orthography, tense, and word order patterns in finite and infinite contexts. With exception of the word order patterns, coding was done as follows: We first classified the verb type, then the tense of the verb form, the type of error occurring in the verb (if necessary), adding some comments (whenever needed). The categories used for the coding of tense included

infinitives and participles, too. German verbs with the same verb stem and different prefixes were coded as different verb types. This was done for comparability reasons between the two languages (see Section 2): Both model stories exhibit a similar number of verb types (**Table 2**). Here the relevant properties were verb placement with respect to subjects and objects. For each language, we coded the subject position in association with finite verbs (SV/VS) and the object position with infinitives and participles. The verb position had to be coded in a slightly different manner across the two languages, in order to account for the different syntactic properties associated with finite and infinite verb forms in each language. German shows variation between main and subordinate clauses, exhibiting verb-second and verb-final placement respectively, whereas Portuguese does not. Something similar can be said for infinite verbs and their complements, which differ with respect to the OV/VO order. Therefore, the German VPs had to be coded not only according to the SV/VS and VO/OV pattern, as in Portuguese, but needed a coding for verb-second (V2), verb-final (VF) and verb-first (V1) placement as well. A particularity is represented by prefixed verbs in German with separable particles. In main clauses, the particle appears at the very end of the sentence (VE) whereas in subordinate clauses the whole prefixed verb is placed in sentence-final position. Both the isolated particle at the end in main clauses and the verb forms with the attached particle at the end in subordinate clauses were coded as VE. Another particular case is the placement of auxiliaries and participles in German, which had to be analysed separately, since the participle follows the auxiliary in main clause but precedes it in subordinates. In the case of null subjects and objects, these were coded for the German verbs as well as for the Portuguese ones, despite the fact that German is, in contrast to Portuguese, a non-pro-drop language. Nonetheless, null subjects and objects appeared in the German stories in some rare cases and therefore had to be taken into consideration.

5. Results

The Portuguese corpus contains a total of 1958 tokens. For the analysis, we excluded 58 incomplete sentences, resulting in a total of 1900 coded tokens. The mean number of tokens per participant is 32.2 (minimum: 4; maximum: 61; SD: 11.3).

The German corpus contains 1899 tokens in total. 29 tokens were excluded because they did not contain a verb, or the verb form was incomprehensible. 1870 coded tokens were considered. The mean number of tokens per participant is 31.5 (minimum: 14; maximum: 55; SD: 10).[5] This indicates that the corpora of both languages are balanced regarding the total number of tokens and the average of tokens per child. A t-test for paired samples confirms that there are no statistical differences in number of tokens between the two sets of narratives (in German and Portuguese, respectively; $t = .693$, $p = .49$).

[5] The total amount of coded tokens *includes finite and non-finite verb forms. For some analyses, such as tense, non-finite forms were not counted separately. This explains the variable number of total tokens throughout the analyses in both languages.*

5.1. Verb types and lexical diversity

Lexical diversity was analysed by looking at verb types per participant and per language, i.e., the number of different verbs employed by the children in each language (**Table 3**). The Portuguese corpus contains a total of 138 verb types. The mean number of different verbs produced by the children in Portuguese is 20.9, with a minimum of 4 and a maximum of 36 types (SD: 7.1). In German, the total number of verb types in the corpus is higher (174), but the mean value per child is identical to the Portuguese one (20.9; SD: 6.9, with a minimum of 10 and a maximum of 39).

	Portuguese	**German**
Total	138	174
Mean	20.9	20.9
Min–max	4–36	10–39
SD	7.1	6.9

Table 3: Verb types in Portuguese and German (total, mean, min–max, SD).

A t-test for paired samples confirms that there are no statistical differences between the two languages with respect to the number of verb types ($t = .074$, $p = .94$), indicating that children show a comparable lexical diversity in both languages.

The results show that some of the children use relatively few different verb forms, whereas others almost approach the number of verb types used in the original story version (see **Table 2**). This variation concerning the number of verb types is not unexpected given the age range of the children. In order to find out whether children use a different number of verb types across their two languages and whether this use correlates with proficiency and age at testing, we employed additional statistic tests. First, we correlated the number of verb types produced in one language with the quantity of verbs produced in the other. A Spearman correlation test shows a significant positive correlation between both variables ($r_s = .648$, $p < .001$), i.e., the greater the number of verbs is that a child employs in one language, the greater the amount of verbs that s/he uses in the other one.

In addition, we aimed at testing if there is an association between the children's results in the cloze test, i.e., their global language proficiency (see section 4) and the number of verb types used in the narratives in each language. Two Spearman correlation tests show that this association is positive and significant for both languages (Portuguese: $r_s = .664$, $p < .001$; German: $r_s = .755$, $p < .001$). This means that proficiency, as measured by the cloze test, is associated with lexical diversity in the verb domain in both languages. The more proficient the children are, the greater the quantity of verb types they are able to produce, in the minority as well as in the majority language. Furthermore, as expected, also current age is positively and significantly correlated

with verb types in both languages (r_s = .606, p < .001; German: r_s = .566, p < .001). This confirms that the children know more verbs with increasing age. Finally, a Spearman correlation test indicates that there is no association between AoO to German and the number of verb types produced in German (r_s = .103, p = .491), revealing no effects of age of first exposure to German on children's lexical knowledge (of verbs).

5.2. Correctness of tense forms and form-function mapping of tense morphology

5.2.1. Agreement, morphological form and orthography

We start with the analysis of agreement and form errors and errors at the level of orthography. Agreement errors refer to deviant person-number agreement and form errors to the incorrect conjugation of finite verbs. Orthographic errors comprise every type of spelling mistake affecting the verb form.

Since some orthographic errors lead to agreement errors, a clear-cut distinction between both types of errors is not always possible. We considered as orthographic errors those errors that may appear also in association with other types of words, being related, for example, to a phonetic cause. An example is the deviant use of <u> instead of <o> at the end of Portuguese words with the vowel /u/ as coda. This is a typical orthographic error in EP, seen, for instance, in the preposition *ao*, written as *au* by Portuguese children (and illiterate adults). In some verb forms, this error changes the grammatical person, as in *sair* ('to leave'): *saio* (1P Sing. present tense) against *saiu* (3P Sing. past tense). Nonetheless, cases like these were coded as orthographic errors rather than agreement errors.

For agreement and form, the rate of deviations is residual in the Portuguese corpus, with only 27 errors against 1873 correct forms. The deviation rate is 1.4%.

The picture is different if we look at orthography in the Portuguese corpus. Here, the number of errors, i.e., verb forms that contain orthographic deviations, is much higher, reaching 28.3% (538 out of 1900). The average of orthographic errors per participant is 9.1 (min: 0; max: 30, SD: 7.0).

As for the German narratives, agreement errors are also very rare. In total, we find 13 agreement mistakes among 1555 finite verb forms (0.8%). In 12 cases, number is incorrect, the children employ a 3rd Sing. form instead of a 3rd Plur. (see 10a). In only one case, a child used a non-finite form (10b).

(10) (a) *Eines Tages ging Giraffo und Elefantina in die Badi.* (correct: gingen)
one day went3S Giraffo and Elefantina in the swimming pool
"One day Giraffo and Elefantina went to the swimming pool."

(b) *Wisen sie wie man den Flugzeug raus nehmen.* (correct: nimmt)
know you how one the airplane to take out
"Do you know how to take out the airplane?"

In German, form errors are more frequent than agreement errors: 67 mistakes occur among the 1870 items (3.5%, including non-finite verb forms), which is still a low rate. Most of them consist in the incorrect production of irregular past tense forms (so called 'strong verbs'/*starke Verben*). As shown by examples (11a–c), the children employ a regular past tense form instead of the correct irregular form. This illustrates, on the one hand, that the children may not know the irregular forms but it also shows, on the other hand, that they have knowledge of the regular morphological rules of past tense formation.

(11) (a) *Oh nein* ***schreite** Giraffo.* [correct: '*schrie*']
'Oh no! Shouted Giraffo.'

(b) *Der Elefant* ***denkte** nach.* [correct: '*dachte*']
'The elephant thought about it.'

(c) *Der Elefant* ***reisste** das Flugzeug aus der Hand.* [correct: '*riss*']
'The elephant teared the airplane out of the hand.'

As for orthographic deviations, they are also quite frequent in the German narratives: 264 orthographic or lexical errors occurred among the 1870 items (14.1%), with an average of 4.4 (min: 0; max: 4.4; SD: 3.6). Nevertheless, the rate of orthographic errors in the verb domain is lower in German compared to Portuguese. A non-parametric Kruskal-Wallis test confirms that there is a significant difference between the German and the Portuguese corpus with regard to the rate of orthographic errors ($Z = -4.955$; $p < .001$).

In addition, we ran Spearman correlation tests to assess if the rate of orthographic errors is associated with the children's proficiency, measured by the cloze tests in both languages, as well as with their current age and AoO to German. The results show that there is a strong, negative correlation between proficiency and number of orthographic errors in Portuguese ($r_s = -.558$, $p < .001$); the correlation between orthographic errors and current age is also significant, but moderate ($r_s = -.319$, $p = .015$). For German, both correlations are moderate (proficiency-orthography: $r_s = -.396$, $p = .002$; age-orthography: $r_s = -.363$, $p = .005$). This confirms that, as expected, the more proficient and the older the children, the less orthographic errors they produce. In addition, a Spearman correlation between the rate of deviations in German and in Portuguese indicates that there is a positive association between both variables too ($r_s = .521$, $p < .001$), i.e., the children who have more problems with orthography in one language also have more problems in the other language. Finally, the role of AoO was assessed through a Spearman correlation between the amount of orthographic errors in German and the AoO to German, which showed no correlation ($r_s = -.151$, $p = .311$).

A closer look at orthographic errors shows that the majority of errors corresponds to common errors that also monolingual children of both languages commit (e.g., the confusion between the nasals <n>/<m> in the coda: *comsigo* instead of *consigo* in Portuguese, see (13d); the deletion

of the silent <e> in the grapheme <ie>: *siht* instead of *sieht* in German, as in the example (15) below. A few errors seem to result from cross-linguistic influence, which occurs in both directions, i.e., transfer of Portuguese spelling into German (e.g., the use of the Portuguese grapheme <c> for the German <k>: *comt* instead of *kommt*, see (14c)) and transfer of German spelling into Portuguese, by using the German graphemes <sch> instead of the Portuguese <ch> for /ʃ/ (see (12)). The rate of this kind of errors is, however, very low (less than 10% of all analysed errors in both languages).

(12) e *schurou. [correct: '*chorou*']
and cried
'And he cried.'

5.2.2. Tense

In a next step, we proceed with the analysis of verb tense in both corpora (see **Table 4**).

Portuguese						
Tense	***Pretérito Perfeito***	***Pretérito Imperfeito***	***Presente***	***Pretérito Mais-que-perfeito composto***	**other**	**Total**
Distribution raw counts (%)	980 (68%)	307 (21%)	103 (7%)	30 (2%)	23 (2%)	1443 (100%)
errors raw counts (%)	4 (0.4%)	21 (6.8%)	16 (15.5%)	0	0	41 (2.8%)
German						
Tense	***Präteritum***	***Perfekt***	***Präsens***	***Plusquamperfekt***		**Total**
Distribution raw counts (%)	1194 (76%)	179 (12%)	156 (10%)	26 (2%)		1555 (100%)
errors raw counts (%)	3 (0.3%)	3 (1.7%)	24 (15.4%)	0		30 (1.9%)

Table 4: Tense forms in Portuguese and German (total, mean, min–max, SD).

In Portuguese, as expected, the most frequent tense form used by the children in the narratives is the past perfect (*pretérito perfeito*, see (13a)) with a total amount of 980 occurrences, followed by the imperfect (*pretérito imperfeito*, (13b)) with 307 forms, and the present tense (103 forms, (13c)). The more complex *pretérito mais-que-perfeito composto* (see 13d) was used in 30 contexts; other tense forms, such as the *pretérito perfeito composto* or the *condicional* were used in a total of 23 contexts. The children used between 1 and 7 different tense forms (mean: 3.2; SD: 1.2) in the Portuguese narrative.

(13) (a) *Depois o girafito gritou.*
then the Girafito screamed
'Then the Girafito screamed.'

(b) *Ele tinha um avião novo.*
he had an airplane new
'He had a new airplane.'

(c) *Elefantina vê o seu amigo feliz outra vez.*
Elfantina sees the + her friend happy again

(d) *O Girafo tinha trazido um pequeno avião *comsigo* [correct: '*consigo*']
the Girafo had brought a little airplane with-him
'Giraffo brought along a little airplane.'

If we compare this distribution with the distribution of tense forms in the model story that was originally told to the children, we see a very similar distribution, with a dominant use of the *pretérito perfeito*, followed by the *imperfeito* and with few instances of the *pretérito mais-que-perfeito composto*. Only the present tense is not used in the model story.

Furthermore, we can say that, in general, the children employ the different tense forms correctly: the global rate of tense errors is very low (42 out of 1443/2.9%). Here the most frequent deviation is related with the inappropriate use of the imperfect (*pretérito imperfeito*), with a total of 21 (out of 307) imperfect forms used incorrectly (6.8%). Strictly seen, these are not tense but aspect errors, since the distinction between *pretérito perfeito* and *imperfeito* is an aspectual distinction. The perfect tense (*pretérito perfeito*) is almost always correctly employed (4 errors out of 980 forms). As for the present, we counted 16 (out of 103) contexts where the present is used inappropriately, which is mostly related to an isolated use of the present tense in past perfect narration sequences.

In German, the number of different tense forms used in the narratives is more reduced than in Portuguese, being restricted to only four forms: the simple past form (*Präteritum*, 1194 out of 1555 occurrences (14a)), followed by the past perfect form (*Perfekt*, 179 out of 1555 (14b)); the simple present (*Präsens* (14c)) is used in 156 sentences and the *Plusquamperfekt* in 26 cases. This means that the range of different tense forms used by each participant is also more restricted than in Portuguese, ranging from 2 to 4 different tense forms (mean: 2.9; SD: 0.7).

(14) (a) *Elefantina ging auf der stelle zu ihm.*
Elefantina went immediately to him
'Elefantina went immediately to him.'

(b) *Sie hat es geschafft.*
she has it done
'She did it.'

(c) *Es *comt eine Elefant.* [correct: '*kommt ein*']
it comes an elefant
'An elefant is coming.'

(d) *Giraffo hatte einen Flugzeug mitgebracht.*
Giraffo had a airplane brought
'Giraffo brought an airplane.'

The use of only four different tense forms is widely consistent with the model story that only shows three different tense forms (mainly simple past, some few instances of *Plusquamperfekt*, one perfect tense form).[6] We observe two differences: First, the number of perfect forms employed by the children is higher than in the model story. Although the simple past is more adequate for written narratives, the perfect is not incorrect and actually represents the predominant past tense form in the spoken language.

Second, we find some (very few) mistakes in the use of tense forms. There are only 30 sentences out of 1555 (1.9%) that contain a tense form that does not seem to be adequate. In most of these cases, children use a present tense form where a past form would be more adequate as in (15) below.

(15) (*Eines Tages ging Giraffo und Elefantina in der nähe von einen Poll.)*
(One day, Giraffo and Elefantina went close to a swimming pool.)
dann ***siht*** *Elefantina das sein bester freund was in den Händen hatte.*
[correct/expected: '*sah*']
then sees Elefantina that his best friend something in the hands had
'Then Elefantina notices that her best friend had something in his hand.'

Although a past tense form would be more adequate in this context, the present tense form is not completely ungrammatical and its use may also be motivated by the presence of the pictures in some cases.

In three cases, a perfect form is used instead of the *Plusquamperfekt* in the subordinate clause (see (16)).

(16) *Als sie es rausgeholt hat, brachte sie es Giraffo.* [correct/expected: '*hatte*']
when she it took out brought she it Giraffo
'*When she had taken it out she brought it Giraffo*.'

[6] The model story also included 4 *present subjunctive I forms in reported speech. We will leave them out of this discussion because we did not include the analysis of the subjunctive mood (due to its very low occurrence).*

In this case, it is not the tense reference to be wrong, but rather the aspectual connotation of the tense form (perfective aspect to denote a concluded action in the past before another action in the past). This is to some extent similar to the tense-errors observed in Portuguese, where the perfect past tense is employed instead of the imperfect past tense form.

To sum up, the results indicate that, globally, the children use the tense forms adequately in both languages. Since they are telling a story, the past tense is, by large, the most used form. Other tense forms are used less frequently, but in general also correctly. The rate of inadequate tense forms is residual in both language corpora.

5.4. Verb word order patterns

As already described in section 2.3, German and Portuguese differ with respect to finite verb placement. German shows quite strict verb-second placement in main clauses and in specific subordinate clauses and verb-final placement in most subordinate clauses. The two languages also differ with respect to the order of non-finite verbs and their complements (OV/VO).

We start with the analysis of verb-second and verb-final placement in German (leaving aside for the moment the more flexible finite verb placement in Portuguese).

5.4.1 The position of the finite verb in the clause and vis-a-vis the subject

There are in total 1013 contexts for verb-second placement in German. Only main clauses with finite verbs were considered. We excluded the second conjunct in coordination structures with identical subjects (*Er kam und sah.*/'He came and saw.') as well as yes/no- questions which show verb-initial word order (3 examples in the corpus). The results are given in **Table 5**.

	verb-second placement	**verb-final placement**
Correct	993 (98%)	321 (100%)
Incorrect	20 (2.0%)	–
All	1013	321

Table 5: Verb-second and verb-final placement in German.

The results show that the children have very stable knowledge of the verb placement patterns in German. Only 20 errors (2.0%) were found: 16 errors correspond to the use of V3 order instead of V2 placement. These errors are very similar across the children. They mainly involve a sentence initial adverb followed by the subject: In 9 cases, the sentence is introduced by the adverb *dann* ('then') as in example (17a). Three cases include a sentence initial adverbial phrase (*eines Tages*/'one day'), as in (17b).

(17) (a) *Dann der Elefante Mädchen hat alles gesagt*
then the elephant girl has everything said
'Then the elephant girl said everything.'

(b) *Eines Tages Elefantina und Giraffo haten gespiell*
one day Elefantina and Giraffo had played
'One day Elefantina and Giraffo played.'

The adverbs mentioned serve to establish a temporal order of events and may be actually analysed as not being integrated into the narrow sentence structure (as coordinating conjunctions like *aber* ('but') and *und* ('and'), although this is not an option in adult speech). Verb-first placement instead of verb-second order occurs only in four contexts. The sentences are all introduced by a coordinating conjunction. In (18a), an expletive subject is missing in preverbal position (*es*/'it'); in (18b), a pronominal object should have been employed before the finite verb (*das*/'this') and in (18c), the child uses a null subject, which is not allowed in German.

(18) (a) **Und kommt plötzlich eine nette Frau mit einen Netz.*
and comes suddenly a nice lady with a net
'and there comes suddenly a nice lady with a net'

(b) **Aber hat er nicht geschaft*
but has he not managed
'but he has not managed'

(c) **aber hat nicht geschaft*
but has not managed
'but (he) has not managed'

There are 321 contexts for verb final placement, e.g., in subordinate or relative clauses. All of them are correct. No errors occurred. Examples of a relative clause and a subordinate clause are given in (19a–b).

(19) (a) *… der überglücklich war.*
that superhappy was
'that was superhappy'

(b) *wie der Elefant sich nach vorne bückte*
how the elephant himself forward bent
'how the elephant bent forward'

Eight cases are included, where the finite verb does not exactly surface in final position (20 a–b). In all of the cases, this verb placement is a grammatical option in adult speech, too.

(20) (a) *so dass das Flugzeug landete am Wasser.*
so that the airplane fell in the water
'so that the airplane fell in the water'

(b) *dass er Elefantina anfing anzuschimpfen.*
that he Elefantina started to scold
'that he started to scold Elephantina'

Because Portuguese has a very flexible verb position (see section 2.3), we cannot directly compare verb placement in German to verb placement in Portuguese. However, we can take a closer look at the position of realized subjects in the two languages. As has been shown in section 2, postverbal subjects are possible in Portuguese, but only licensed under certain conditions (focus, unaccusatives or passives), whereas VS-order is frequent in German due to V2 placement. The difference between the two languages is exemplified in the model stories: Portuguese has only one VS-sentence out of 32 sentences with realized subjects, whereas German has 13 out of 46 sentences with realized subjects. In a next step, we analysed the position of the finite verb vis-a-vis the subject in order to find out whether the children adequately differentiate between the two languages.

	VS		**SV**		
	appropriate	**inappropriate**	**appropriate**	**inappropriate**	**total**
Portuguese	90 (8.3)	8 (0.7)	980 (90.5)	5 (0.5)	1083
German	309 (23.2)	1 (0.1)	1007 (75.5)	14 (1.0)	1333

Table 6: SV/VS distribution in the Portuguese and the German corpus.

As shown in **Table 6**, the SV/VS distribution in Portuguese is as follows: Over a total of 1083 contexts, where the subject is realized (either as pronoun or as NP), 985 sentences display the SV word order and 98 show inversion. Eight out of all VS instances are not felicitous, i.e., SV order would be more adequate (see example (21)).

(21) **escurgou o avião da mão* [correct: '*escorregou*']
slips the airplane from + the hand
'The airplane slipped from his hand.'

In the SV-contexts, we find five sentences where a VS-order would be more appropriate. All cases are sentences with unaccusatives such as *chegar* ('to arrive', see (22)). Here, one would expect VS order in the adult language, although SV is not completely ungrammatical.

(22) *Nesse momento um Elefante chegou.*
at + this moment an elefant arrived
'At this moment arrived an elefant.'

In German, 1331 contexts with SV/VS were coded. 1021 contexts display SV-order. Only 14 errors occur, all of them represent deviations from V2 order (V3 clauses as in (17a–b) above).

As expected, VS order is much more frequent in German than in Portuguese. Only one error occurs, as shown in (23).

(23) *Und fallte ausfer-sehen, das Flugzeug ins Wasser.*
and fell accidentally the airplane in the water.
'and accidentally fell the airplane in the water'.

The comparison between Portuguese and German shows that the children made only very few errors, showing very stable knowledge of subject-placement. They also clearly differentiated between the two languages in this domain.

5.4.2. Object-verb order with infinitives and participles in German and Portuguese

Finally, we had a closer look at object-verb placement in infinitival constructions. As discussed in section 2, German and Portuguese show opposite patterns in this respect: German shows OV order quite consistently, whereas Portuguese – like all Romance languages – is a VO language.

Again, the children show very consistent and stable knowledge in both languages. Among the 125 contexts in the Portuguese narratives, we find only one deviant structure (24).

(24) *O Elefante provou u Avião apanhar*
the elephant tried the plane catch
'the elephant tried to catch the plane'

The same holds true for German. None of the 189 contexts shows an incorrect word order. In 182 cases, we find OV-placement of pronominal or nominal objects with participles and infinitives as in (25a–b).

(25) (a) *dass Giraffo ein Flugzeug mitgenommen hatte*
that Giraffo a airplane brought had
'that Giraffo had brought an airplane'

(b) um das Flugzeug aus dem Wasser zu fischen.
in order to the airplane from the water to fish
'*in order to fish the airplane out of the water'*

Seven examples featuring a sentential object exhibit a correct VO-order (26).

(26) *Elefantina hat gesagt was pasiert ist.*
Elefantina has said what happened is
'Elefantina has said what has happened'

An interesting, though quite rare case of cross-linguistic influence (only three instances) is found when the children made use of null objects, a syntactic option available in Portuguese, but not in German. In all three examples (stemming from different children), the respective non-finite verb is *fangen* ('to catch', see (27)).

(27) *Dann die Elefante(n)frau verzucht zu fa(n)gen.*
then the elephant woman tries to catch
'Then the elephant woman tries to catch him.'

In the following chapter, we discuss the results of this study more closely, relate them to our research questions and conclude.

6. Discussion and conclusions

The first result emerging from our study is that the German-Portuguese bilingual children produced a similar amount of verb types across their two languages when retelling the story. In Section 2, we showed that verb diversity has been considered as a relevant indicator of children's language proficiency across many studies. This is confirmed by our data, since in both languages, the amount of verb types produced in the narratives correlated with children's proficiency. We also found a correlation between verb diversity and children's age in both languages: The older the children, the greater the amount of verb types that they produced. Notably, this holds true not only for the environmental language (German), but also for the HL (Portuguese). Thus, this result seems to contradict the hypothesis that the language competence of HSs may stagnate at some point of their development (see Benmamoun et al., 2013, for discussion).

We noticed that verb diversity (as well as proficiency) in each language was not correlated with AoO to German. Although the bilinguals tested in this study had different AoO to German (ranging from birth to 10 years), their lexical and syntactic knowledge in German did not seem to be affected by this variation. This suggests that after some time of exposure to a L2 (a minimum of five years of length of residence, in our case), sequential bilingual children may be able to catch up with their simultaneous bilingual peers in lexical and syntactic knowledge in certain domains (see Rothweiler, 2006; Tracy & Thoma, 2009; Schulz & Grimm, 2019, for similar considerations). As for the pattern observed in Portuguese, the absence of correlation between verb diversity, proficiency and AoO to German suggests that reduced exposure to the HL (as motivated by increasing exposure to the environmental language) is not necessarily associated with a decrease in lexical and syntactic knowledge in the HL. By contrast, the results of the present paper show that the development of both languages may advance hand in hand, thus contradicting misconceptions of subtractive bilingualism, which postulate that the development of one language necessarily happens at the expense of the other one (see, e.g., Lambert, 1981, and Genesee, 1987, for discussions of this idea).

A difference in the amount of verb types produced in one or the other language can also be taken as an indicator of children's language dominance (see references in Section 2). The observation that the amount of verb types does not differ across the two languages shows that the children considered in this paper are relatively balanced. Therefore, they should exhibit a similar degree of mastery of morphosyntactic forms across their two languages. The following considerations on children's mastery of subject-verb agreement, tense and aspect marking in the narratives also support this conclusion.

As for the production of subject-verb agreement, our study shows that the children exhibit very few errors in both languages, suggesting that their knowledge in this domain is quite robust. At first, this result seems to contradict previous studies – mainly conducted on English – showing that person-number agreement may be a vulnerable domain among bilingual children (see, e.g., Chondrogianni & Marinis, 2012). However, it should be considered that previous studies analysed bilingual children who were younger than the children considered in the present investigation (i.e., up to 6 vs. ranging between 8 and 15). This suggests that bilingual children may need some time to catch up with their peers, provided that language exposure remains stable across time (see Schulz & Grimm, 2019, for similar considerations). Furthermore, the languages considered in this contribution have a more transparent person-number inflection paradigm than English. Therefore, it is not excluded that German and Portuguese children may be able to master subject-verb agreement earlier than their English peers (see Chondrogianni & Marinis, 2012; Torregrossa et al., 2022).

In contrast to agreement morphology, tense marking seems to be a relatively stable phenomenon in heritage language and second language acquisition (see Section 2). This is confirmed by the results of our study: Few errors occur in both the German and Portuguese narratives. Notably, the children produced some overregularizations in German (Section 5.2.1), similarly to what has been found among English-French bilingual children in English (see Nicoladis et al., 2012).

Some children may exhibit some difficulties in the appropriate use of *imperfeito* in Portuguese. On the one hand, this result shows that bilingual children may have problems with aspectual distinctions. In particular, bilingual children seem to struggle with the use of imperfect tense forms in languages that encode the perfect-imperfect distinction, such as Greek, Italian and Spanish (Dosi et al., 2016; Wiberg, 1996; Salaberry, 2011, respectively). It should be kept in mind, however, that this has been noticed among monolingual children, too, as has been claimed in Section 3. However, the children of the present study seem to exhibit better knowledge of the aspectual features of the Portuguese verb system, compared to the results reported in the previously mentioned studies.

Our analysis considered word order patterns within the verb domain, too. Again, we found very few instances of deviant word order in both languages. This suggests that the children had enough language experience to be able to master the relevant syntactic properties. This seems to

hold also for children with later AoO to German, when we consider their narratives in German. We explain this finding as the result of the early timing of acquisition of verb placement in German and Portuguese (Flores, 2010). Knowledge of verb placement becomes stable in pre-school age as well as relatively impermeable to effects of cross-linguistic influence, provided that optimal conditions of language exposure are given, i.e., sufficient, continuous contact with both languages. As shown by Flores (2010), this impermeability may change in situations of loss of continuous exposure to one of a bilingual's languages. In general, our data do not confirm instances of transfer from German to Portuguese or vice-versa at the morphological or syntactic level. We interpret this result as due to children's balanced bilingual development in the age span under investigation, following on the idea that dominance in one or the other language may modulate the occurrence of cross-linguistic effects (see references in Section 3).

Notably, the only domain in which we noticed some differences between the bilinguals' two languages is orthography, although this was not the focus of our study. Children exhibit significantly higher rates of orthographic errors in the Portuguese narratives than in the German ones. This result is not surprising if one thinks that German is the main medium of instruction for all participants, whereas access to instruction in the HL is limited to the weekly afternoon class offered by the Camões Institute. On the one hand, these classes have the important function of fostering fundamental literacy skills in Portuguese (in addition to cultural bonds to the HL, Gonçalves, 2020) and favoring the acquisition of linguistic phenomena that are mainly related to formal registers (Rinke et al., 2019, Torregrossa et al., 2022), since children's contact with written formal Portuguese is mostly restricted to these classes. On the other hand, the greater orthographic accuracy exhibited by the German narratives compared to the Portuguese ones shows that for certain academic achievements, amount of literacy exposure plays a crucial role. In other words, the time dedicated to 'focus on form' may improve children's literacy outcomes (Mitchell, 2000; Norris & Ortega, 2000; see, however, Bongartz & Torregrossa, 2020, for a more nuanced picture of the role of amount of literacy exposure in bilingual classrooms).

Overall, the written narratives of the Portuguese-German bilingual children show extremely low rates of errors in all relevant domains considered, which seems to hold for both languages. This observation is consistent with previous studies on Portuguese HSs living in German-speaking environments (Flores, 2015; Rinke & Flores, 2021) that have been shown to develop very stable linguistic knowledge also in other domains beyond the verb phrase. These results contrast with some widespread deficit-based perspectives and recurrent misconceptions regarding the nature of the bilingual competence, which is *à priori* assumed to be lacking compared to monolingual norms.

Competing Interests

The authors declare that they have no competing interests.

References

Benmamoun, E., Montrul, S., & **Polinsky, M.** (2013). Heritage languages and their speakers: Opportunities and challenges for linguistics. *Theoretical Linguistics*, *39*(3–4), 129–181. DOI: https://doi.org/10.1515/tl-2013-0009

Bernardini, P. (2003). Child and adult acquisition of word order in the Italian DP. In N. Müller (Ed.), *(In)vulnerable Domains in Multilingualism* (pp. 41–81). Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/hsm.1.03ber

Bongartz, C., & **Torregrossa, J.** (2020). The effects of balanced biliteracy on Greek-German bilingual children's secondary discourse ability. *International Journal of Bilingual Education and Bilingualism*, *23*, 948–963. DOI: https://doi.org/10.1080/13670050.2017.1355888

Brown, R. (1973). *A first language: The early stages*. London: George Allen & Unwin Ltd. https://www.mpi.nl/publications/item_2301263. DOI: https://doi.org/10.4159/harvard.9780674732469

Chondrogianni, V., & **Marinis, T.** (2012). Production and processing asymmetries in the acquisition of tense morphology by sequential bilingual children. *Bilingualism: Language and Cognition*, *15*, 5–21. DOI: https://doi.org/10.1017/S1366728911000368

Correia, L., & **Flores, C.** (2017). The Role of Input Factors in the Lexical Development of European Portuguese as a Heritage Language in Portuguese-German Bilingual Speakers. *Languages*, *2*(4), 30. DOI: https://doi.org/10.3390/languages2040030

Dosi, I., Papadopoulou, D., & **Tsimpli, I. M.** (2016). Issues in the acquisition of grammatical aspect in Greek-English bilingual children. In M. Howard & P. Leclercq (Eds.), *Tense-aspect-modality in a second language: Contemporary perspectives* (pp. 75–103). Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/sibil.50.04dos

Fernández-Dobao, A., & **Herschensohn, J.** (2021). Acquisition of Spanish verb morphology by child bilinguals: Overregularization by heritage speakers and second language learners. *Bilingualism: Language and Cognition*, *24*(1), 56–68. DOI: https://doi.org/10.1017/S1366728920000310

Fernández, E., De Souza, R., & **Carando, A.** (2017). Bilingual innovations: Experimental evidence offers clues regarding the psycholinguistics of language change. *Bilingualism: Language and Cognition*, *20*(2), 251–268. DOI: https://doi.org/10.1017/S1366728916000924

Flores, C. (2010). The effect of age on language attrition: Evidences from bilingual returnees. *Bilingualism. Language and Cognition*, *13*(4), 533–546. DOI: https://doi.org/10.1017/S1366728909990054X

Flores, C. (2015). Understanding heritage language acquisition. Some contributions from the research on heritage speakers of European Portuguese. *Lingua*, *164*, 251–265. DOI: https://doi.org/10.1016/j.lingua.2014.09.008

Flores, C., Gonçalves, M. L., Rinke, E., & **Torregrossa, J.** (2022). Perspetivas múltiplas sobre a competência bilingue de crianças lusodescendentes residentes na Suíça: A investigação linguística em diálogo com a didática [Multiple perspectives on the bilingual competence of Lusodescendant children living in Switzerland: Linguistic research in dialogue with didactics]. *Revista Portuguesa De Educação, 35*(1), 102–131. DOI: https://doi.org/10.21814/rpe.24205

Genesee, F. (1987). *Learning through two languages: Studies of immersion and bilingual education*. Rowley, MA: Newbury House.

Gonçalves, M. L. (2020). "Nasci na Suíça, mas sou do Porto". ELH e a construção de identidades plurais ["I was born in Switzerland, but I am from Porto". HLT and the construction of plural identities]. In C. Lira & J. Azevedo-Gomes (Eds.), *O POLH na Europa – Português como língua de herança. Volume 2 – Suíça* (pp. 63–79). Lisboa: Sagarana Editora.

Harley, B., & **King, M. L.** (1989). Verb lexis in the written compositions of young L2 learners. *Studies in Second Language Acquisition, 11*(4), 415–439. DOI: https://doi.org/10.1017/S0272263100008421

Hsin, L., Legendre, G., & **Omaki, A.** (2013). Priming cross-linguistic interference in Spanish-English bilingual children. In S. Baiz, N. Goldman & R. Hawkes (Eds.), *BUCLD 37: Proceedings of the 37th Annual Boston University Conference on Language Development* (pp. 165–177). Somerville, MA: Cascadilla Press. https://bit.ly/3Q7DkM7

Jacobson, P., & **Schwartz, R. G.** (2005). English past tense use in bilingual children with language impairment. *American Journal of Speech and Language Pathology, 14*, 313–323. DOI: https://doi.org/10.1044/1058-0360(2005/030)

Lambert, W. E. (1981). Bilingualism and Language Acquisition. *Annals of the New York Academy of Sciences, 379*(1 Native Langua), 9–22. DOI: https://doi.org/10.1111/j.1749-6632.1981.tb41993.x

McClure, E. (1991). A comparison of lexical strategies in L1 and L2 written English narratives. *Pragmatics and Language Learning, 2*, 141–154.

Mikhaylova, A. (2018). Morphological Bottleneck: The Case of Russian Heritage Speakers. *Journal of Language Contact, 11*, 268–303. DOI: https://doi.org/10.1163/19552629-01102005

Mitchell, R. (2000). Anniversary article. Applied linguistics and evidence-based classroom practice: The case of foreign language grammar pedagogy. *Applied Linguistics, 21(3)*, 281–303. DOI: https://doi.org/10.1093/applin/21.3.281

Montrul, S. (2009). Knowledge of tense-aspect and mood in Spanish heritage speakers. *International Journal of Bilingualism, 13*(2), 239–269. DOI: https://doi.org/10.1177/1367006909339816

Müller, N., & **Hulk, A.** (2001). Crosslinguistic influence in bilingual language acquisition: Italian and French as recipient languages. *Bilingualism: Language and Cognition, 4*(1), 1–21. DOI: https://doi.org/10.1017/S1366728901000116

Nicoladis, E. (2006). Cross-linguistic transfer in adjective-noun strings by preschool bilingual children. *Bilingualism: Language and Cognition, 9*(1), 15–32. DOI: https://doi.org/10.1017/S136672890500235X

Nicoladis, E., Palmer, A., & **Marentette, P.** (2007). The role of type and token frequency in using past tense morphemes correctly. *Developmental Science*, *10*, 237–254. DOI: https://doi.org/10.1111/j.1467-7687.2007.00582.x

Nicoladis, E., Song, J., & **Marentette, P.** (2012). Do young bilinguals acquire past tense morphology like monolinguals, only later? Evidence from French-English and Chinese-English bilinguals. *Applied Psycholinguistics*, *33*(3), 457–479. DOI: https://doi.org/10.1017/S0142716411000439

Norris, J. M., & **Ortega, L.** (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, *50*(3), 417–528. DOI: https://doi.org/10.1111/0023-8333.00136

Paradis, J. (2010). Bilingual Children's Acquisition of English Verb Morphology: Effects of Language Exposure, Structure Complexity, and Task Type. *Language Learning*, *60*, 651–680. DOI: https://doi.org/10.1111/j.1467-9922.2010.00567.x

Paradis, J., Nicoladis, E., & **Crago, M.** (2007). French-English bilingual children's acquisition of the past tense. In H. Caunt-Nulton, S. Kulatilake & I.-H. Woo (Eds.), *BUCLD 31 proceedings* (pp. 497–507). Somerville, MA: Cascadilla Press. https://bit.ly/3zCyv6j

Rinke, E., & **Flores, C.** (2021). Portuguese as heritage language in Germany – a linguistic perspective. *Languages. Special Issue on Heritage Languages in Germany*, *6*(1), 10. DOI: https://doi.org/10.3390/languages6010010

Rinke, E., Flores, C., & **Santos, A. L.** (2019). Heritage languages at school: Implications of linguistic research on bilingualism for heritage language teaching. In C. Gabriel, J. Grünke & S. Thiele (Eds.), *Romanische Sprachen in ihrer Vielfalt: Brückenschläge zwischen linguistischer Theoriebildung und Fremdsprachenunterricht (Romanische Sprachen und ihre Didaktik)* (pp. 211–232). Stuttgart: ibidem. https://hdl.handle.net/1822/60519

Rothweiler, M. (2006). The acquisition of V2 and subordinate clauses in early successive acquisition of German. In C. Lleó (Ed.), *Interfaces in Multilingualism: Acquisition, Representation and Processing* (pp. 91–113) Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/hsm.4.05rot

Salaberry, R. M. (2011). Assessing the effect of lexical aspect and grounding on the acquisition of L2 Spanish past tense morphology among L1 English speakers. *Bilingualism: Language and Cognition*, *14*(2), 184–202. DOI: https://doi.org/10.1017/S1366728910000052

Schneider, P., Dubé, R. V., & **Hayward, D.** (2005). The Edmonton Narrative Norms Instrument. University of Alberta Faculty of Rehabilitation Medicine. www.rehabresearch.ualberta.ca/enni

Schulz, P., & **Grimm, A.** (2019). The Age Factor Revisited: Timing in Acquisition Interacts With Age of Onset in Bilingual Acquisition. *Frontiers in Psychology*, *9*, 2732. DOI: https://doi.org/10.3389/fpsyg.2018.02732

Simon-Cereijido, G., & **Gutierrez-Clellen, V. F.** (2009). A cross-linguistic and bilingual evaluation of the interdependence between lexical and grammatical domains. *Applied Psycholinguistics*, *30*(2), 315–337. DOI: https://doi.org/10.1017/S0142716409090134

Slabakova, R., & **Montrul, S.** (2002). On viewpoint aspect and its L2 acquisition: a UG perspective. In R. Salaberry & Y. Shirai (Eds.), *The L2 acquisition of tense-aspect morphology* (pp. 363–398). Amsterdam: John Benjamins. DOI: https://doi.org/10.1075/lald.27.15sla

Thordardottir, E. (2011). The relationship between bilingual exposure and vocabulary development. *International Journal of Bilingualism*, *15*, 426–445. DOI: https://doi.org/10.1177/1367006911403202

Torregrossa, J., Andreou, M., Bongartz, C., & **Tsimpli, I. M.** (2021). Bilingual acquisition of reference: The role of language experience, executive functions and cross-linguistic effects. *Bilingualism: Language and Cognition*, *24*, 694–706. DOI: https://doi.org/10.1017/S1366728920000826

Torregrossa, J., & **Bongartz, C.** (2018). Teasing apart the effects of dominance, transfer and processing in reference production by German-Italian bilingual adolescents. *Languages*, *3*(36). DOI: https://doi.org/10.3390/languages3030036

Torregrossa, J., Eisenbeiß, S., & **Bongartz, C.** (in press). Boosting bilingual metalinguistic awareness under dual language activation: Some implications for bilingual education. *Language Learning*.

Torregrossa, J., Flores, C., & **Rinke, E.** (2022). What modulates the acquisition of difficult structures in a heritage language? A study on Portuguese in contact with French, German and Italian. *Bilingualism. Language and Cognition*. DOI: https://doi.org/10.1017/S1366728922000438

Tracy, R., & **Thoma, D.** (2009). Convergence on finite V2 clauses in L1, bilingual L2 and early L2 acquisition. In P. Jordans & C. Dimroth (Eds.), *Functional Elements: Variation in Learner Systems. Studies on Language Acquisition* (pp. 1–43). Berlin: De Gruyter Mouton. DOI: https://doi.org/10.1515/9783110216172.1

Treffers-Daller, J. (2019). What defines language dominance in bilinguals? *Annual Reviews of Linguistics*, *5*(1), 373–393. DOI: https://doi.org/10.1146/annurev-linguistics-011817-045554

Treffers-Daller, J., & **Korybski, T.** (2015). Using lexical diversity measures to operationalize language dominance in bilinguals. In C. Silva-Corvalán & J. Treffers-Daller (Eds.), *Language Dominance in Bilinguals: Issues of Measurement and Operationalization* (pp. 106–133). Cambridge: Cambridge University Press. https://bit.ly/3bAS5YT. DOI: https://doi.org/10.1017/CBO9781107375345.006

Wiberg, E. (1996). Reference to past events in bilingual Italian-Swedish children of school age. *Linguistics*, *34*(5), 1087–1114. DOI: https://doi.org/10.1515/ling.1996.34.5.1087

Yip, V., & **Matthews, S.** (2000). Syntactic transfer in a Cantonese-English bilingual child. *Bilingualism: Language and Cognition*, *3*(3), 193–208. DOI: https://doi.org/10.1017/S136672890000033X