

The Syntax of Mixed DPs Containing an Adjective: Evidence from Bilingual German-Romance (French, Italian, Spanish) Children

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1. Introduction

The placement of attributive adjectives has been hotly debated since the first contributions to CS in bilingual adults and children. The present paper will focus on CS between an attributive adjective and a noun in bilingual children raised with a Romance language and German from birth. The data will be used in order to decide between different approaches to the categorial status of adjectives and the syntactic derivation of adjective placement in Romance and German. Section 2 presents a traditional approach to attributive adjectives in the Romance languages (e.g. Spanish, Italian, French) and German. Section 3 will discuss some proposals for the syntactic analysis of adjectives which either take adjectives to be lexical or functional categories. Furthermore, it will present the universal base for pre- and postnominal attributive adjectives which will be tested on the data presented. Section 4 summarizes some approaches to adult CS which make use of the categorial analyses and the previous syntactic analyses of adjectives. Predictions for child data will be deduced from these analyses. Section 5 presents the empirical database and the results of twelve longitudinal studies of Romance-German children. We will test the predictions on the database showing that only a derivation of adjectives which follows Kayne's (1994) Universal Base Hypothesis for pre- and postnominal adjectives can account for the data. Two observations are important here: The preference for the prenominal placement of switched adjectives and the rare use of postnominal ordering of German adjectives. Section 6 concludes the article with a summary of the main results and other crucial aspects for further research.

2. Some descriptive facts about attributive adjectives in the languages analyzed

In the Romance languages under investigation, most attributive adjectives are allowed in both pre- and postnominal position.¹ Some authors (e.g. Demonte 2008) have pointed out for Spanish and Italian that the placement of the adjective may depend on the pragmatic properties to be expressed: If the adjective occurs prenominally as in (1), it expresses a quality that includes all entities (here: all keys),

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¹ Some of these adjectives have a different form when occurring before the noun. This is the case in (i), where the adjective *grande* is shortened to *gran* in prenominal position.

(i) el gran cohete / el cohete grande
 the big rocket the rocket big

whereas the postnominal adjective as in (2) qualifies a group of entities (here: a subset of keys) and contrasts this group with another subset (of keys) not sharing this quality.²

- (1) encontré las viejas llaves (Demonte 2008:71) – I found certain keys which are rusty and their most remarkable property is being old
 (I) found the old keys
- (2) encontré las llaves *viejas* (Demonte 2008:71) – the subset of keys which are old
 (I) found the keys old

There is another type of adjectives which can also be placed pre- and postnominally as shown in (3). If the adjective occurs after the noun (3a,b,c), it conveys the same meaning as in (2). However, in prenominal position it has a specialized meaning (3a',b',c').³ These adjectives share the same properties in the three Romance languages Italian, Spanish and French.

- (3) a. un actor pobre (Martín 2009) – an actor who does not have any money
 an actor poor
 a' .un pobre actor (Martín 2009) – an actor who deserves pity or sympathy
 a poor actor
- b. un contadino povero (Schwarze 1995:246) – a farmer who does not have any money
 a farmer poor
 b'.un povero contadino (Schwarze 1995:246) – a farmer who deserves pity or sympathy
 a poor farmer
- c. un élève ancien – an old student
 a student old
 c'.un ancien élève – a former student
 a former student

A certain group of adjectives, however, can only occur in postnominal position in all three Romance languages, as in (4).⁴

- (4) una red eléctrica
 a network electric

So far, some important characteristics about the Romance adjectives have been presented. Spanish and Italian behave quite alike, since attributive adjectives can appear more freely either before or after the noun. In French, however, most adjectives can only appear postnominally (5), yet there is a small group of adjectives which must occur prenominally (6). Furthermore, there are some adjectives which are allowed in either pre- or postnominal position, yet they are not allowed in both positions with the same noun (7):

- (5) des yeux bleus (Klein & Kleineidam, 1994:80)
 INDEF,PL eyes blue

² This dichotomy is expressed in terms of restrictive vs. non-restrictive use of attributive adjectives: While the first chooses the referent from a subset with the property of the adjective (cf. example (2)), the latter encloses only one group with the property of the adjective (cf. example (1)).

³ These adjectives are called non-predicatives (Martín 2009), since the adjective *pobre/povero* with the meaning 'an actor who deserves pity or sympathy' (cf. (3a') and (3b')) cannot occur with the copula verb, as opposed to the predicative use of *pobre* when it conveys the 'poor' meaning (cf. (3a) and (3b)). The same holds for the French adjective *ancien*. Only the adjective with the reading in (3c) allows its predicative use, whereas the meaning of *ancien* in (3c') translated as *former* is not allowed predicatively.

⁴ These are called relational adjectives (Schwarze 1995). Bosque & Picallo (1996) even divide them further into thematic and classificatory adjectives. Relational adjectives can only be used attributively; they can neither build the comparative form nor create new nouns.

(6) une petite fille (Klein & Kleineidam, 1994:80)
a small girl

(7) a. le *dernier* train / *le train *dernier* (adapted from Klein & Kleineidam, 1994:80)
the last train / *the train last

b. la semaine *dernière* / *la *dernière* semaine (adapted from Klein & Kleineidam, 1994:80)
the week last / *the last week

In German, attributive adjectives are only allowed in prenominal position. Despite the fact that they must precede the noun, German prenominal adjectives express similar semantics as pre- and postnominal adjectives in Romance, if the context is taken into account (cf. e.g. Holzer 1996, Martín 2009). For example, the interpretation of the adjective in (8), equaling the Spanish and Italian examples in (3), depends on the context in which the DP is used.

(8) ein armer Schauspieler – an actor who does not have any money / an actor who deserves
a poor actor pity or sympathy

In sum, German and the Romance languages differ in the position attributive adjectives occupy and the meaning they express via the syntactic position. They share prenominal placement, while postnominal positioning is only grammatical in the Romance languages. The following table (1) summarizes these differences.

	Romance languages			German
	Spanish	Italian	French	
Pre- and postnominal positions are allowed	√	√	√	-
Restrictive vs. non-restrictive meaning thanks to different adjectival position	√	√	√	-
Adjectives of the type <i>pobre/povero/ancien</i> convey different meanings depending on their position	√	√	√	-
Relational adjectives are only postnominal	√	√	√	-
(Some) adjectives can only appear prenominally	-	-	√	√ ⁵

Table (1). Main properties of attributive adjectives in the Romance languages and German

Adjective placement is an interesting field of research in German-Romance bilingual first language acquisition, since the distribution of adjectives differs in these languages. In section 3, we will present two syntactic analyses of adjective placement allowing us to make predictions for child language.

3. Syntactic analyses of adjectives

During the last decades, the categorial status and the syntactic derivations of pre- and postnominal adjectives within the DP have been widely discussed. As for the categorial analysis, the standard view has been to treat adjectives as lexical heads. According to Abney (1987), however, adjectives are functional heads and f-select their complements (NPs, DPs, APs). In section 4, we will show that the different assumptions about the categorial status of adjectives make different predictions for CS in bilinguals.

As for the syntactic derivation of APs, at least two approaches must be distinguished. The first one proposes to generate them via a phrase structure rule either to the left or to the right of the noun phrase as in (9) and (10).

(9) [_{DP} D [_{AP} A [_{NP} N]]]

(10) [_{DP} D [_{AP} [_{NP} N] A]]

⁵ In fact, German only allows adjectives to appear prenominally, as opposed to French, which contains a small group of adjectives which can only occur in this position (cf. the example in (6)).

Although this analysis is supported by two characteristics of attributive adjectives, iteration and optionality, the analysis imposes no upper limit on the number of adjectives occurring in the noun phrase, although we know from Romance languages that these limits exist (Cinque 1995). The phrase structure analysis cannot account for the linear ordering among adjectives and the direction of attachment (Cinque 1995), either. The second approach is called Universal Base approach since it assumes one common underlying syntactic structure for pre- and postnominal adjectives (Cinque 1990, 1993, 1994, Valois 1991, Delsing 1993, Svenonius 1994 and Rowlett 2007, among others). The surface position of the adjective is derived via N-movement or NP-pied piping (Ross 1986, Kayne 1994, Cinque 2010). Within the Universal Base approach, Kayne (1994) proposes that attributive adjectives have a predicative source and involve reduced relative clauses. More specifically, they are derived from a relative clause, a CP-complement of D,⁶ which contains a nominal subject (in Spec,IP) and an AP in a predicative relation. In the case of a prenominal adjective, the raising inside the reduced relative affects the AP. The AP moves to Spec,CP via the subject-NP. This is exemplified in (11):

- (11) [DP [D la] [CP [AP *pálida*] [C] [IP [NP luz] [I [AP *pálida*]]]] 'the pale light'
-

If the adjective occurs postnominally, more movement operations are necessary, as (12) shows:

- (12) [DP [D la] [FP [F luz] [CP [AP *pálida*] [C [N luz]]] [IP [NP luz] [I [AP *pálida*]]]] 'the light pale'
-

The first step is movement of AP into Spec,CP, as with prenominal adjectives. The second step is movement of the NP-head from Spec,IP to C and further raising to F located between DP and CP (FP might e.g. equal NumP). In sum, the prenominal adjective placement requires AP-movement only, whereas postnominal adjectives are generated via more derivational steps (AP-movement and N-movement). Thus, the syntactic derivation of prenominal adjectives is more economical than postnominal placement. Kayne's (1994) approach has some shortcomings. First, it is difficult to explain why attributive adjectives in Germanic languages do not appear postnominally but prenominally, since relative clauses in these languages can be postnominal (e.g. participial reduced relative clauses like *the cat asleep*; Cinque 2010:61). Second, if predication were the source of attribution, the distribution of predicative adjectives should be more widespread; however, the reverse is true (Alexiadou & Wilder 1998, Pysz 2006). In order to avoid these problems, Cinque (2010) proposes that adjectives enter the derivation of DPs in two different ways, depending on their interpretation: Either they are phrasal specifiers of some extended projection of N or they are predicates of reduced relative clauses. For the present analysis of child data, nothing hinges on the exact syntactic derivation of particular adjectives. It suffices to state that postnominal attributive adjectives can be derived from an underlying structure which is also necessary for prenominal order.

In this paper, we investigate child CS and test an approach which makes different predictions for CS depending on the analysis of adjectives as lexical or functional elements.⁷ Furthermore, we will be able to show that the Universal Base approach can account felicitously for the cases in our data which cannot be explained in terms of the phrase structure approach.

⁶ An anonymous reviewer questions the choice of Kayne's (1994) assumption of a CP between D and N at the expense of Cinque's (1995) functional projection FP after every level of the DP. We believe that the child data discussed in section 5 will not be able to decide between the two analyses. We will mention some problems of Kayne's approach below. It has, however, also advantages: Kayne's analysis reduces the number of landing positions as well as the movement steps necessary for adjectives and nouns.

⁷ Due to space limitations, we cannot discuss in depth the monolingual German/Romance DPs containing an adjective. For a detailed analysis of the monolingual data, cf. Müller, Arnau Gil, Eichler, Jansen, Patuto & Repetto (2011).

4. Code-switching within the DP

CS has been widely examined in the last decades of the 20th century. Different constraints have been proposed in order to show where CS can appear (cf. e.g. DiSciullo, Muysken & Singh 1986, Belazi, Rubin & Toribio 1994, Poplack 1980). However, research on adult and child bilingual speech has shown that CS appears in positions where it is disallowed according to the CS constraints (cf. e.g. Lindholm & Padilla 1978, Redlinger & Park 1980, McClure 1981, Taeschner 1983, Veh 1990, Cantone & Müller 2005, 2008, Cantone 2007).

CS in DPs containing adjectives is well-documented in adult and child data. See some examples of child CS in (13).

- (13) a. yo tengo un *brown* perro⁸ (Spanish-English, age unclear, McClure 1981:88)
 I have a brown dog
 b. *ich hat* trovato un *schwarze* capello (Italian-German, Giulia, 2;9, Taeschner 1983:170)
 I have found a black hat
 c. pour l' auto *rot* (French-German, Marc, 2;10,23-3;0,4, Redlinger & Park 1980:346)
 for the car red
 d. my *rose* bat (English-French, Olivier, 2;10, Paradis et al. 2000:255)
 my pink bat

These examples have been analyzed in the literature as instances of CS between an adjective and a noun in which the language of either A or N determines the ordering within the NP/DP. The language combinations Germanic-Romance have been chosen thoroughly in CS studies since the languages differ on adjective placement. The data show that neither the language of A nor that of N always determines word order within DPs. The prenominal position of the adjective in (13a,b) would support the idea that the language of A (Germanic) determines word order within the DP. Example (13c) contradicts this assumption since all adjectives must occur prenominal in German. Color adjectives as in (13d) are postnominal in French. Example (13c) could present evidence for the assumption that the language of N determines the position of the adjective. (13a,b) would then be counter-examples to this idea. In sum, neither the language of the A nor that of N determines adjective placement within switched DPs.

Lederberg & Morales (1985) and Chan (2003), among others, have pointed out the relevant distinction between functional and lexical categories in CS. Chan's (2003) study focused on CS between Cantonese and English. He analyzed utterances involving CS between (I) a lexical category and its complement (e.g. the lexical verb and its object) and (II) a functional category and its complement (e.g. INFL or C and its VP or IP). His results concerning CS between a lexical verb and its complement show, as other authors have claimed (e.g. Mahootian 1993, Mahootian & Santorini 1996), that in the vast majority of the cases, the language of the lexical verb determines the position of the complement. Yet, in Chan's corpus, there are some examples in which the word order within the VP is not determined by the language of the lexical head. Chan analyzes these mismatches in terms of performance (not competence). We will apply Chan's analysis of VP order mismatches to the grammatical domain relevant here, namely ordering of A and N, the adjective being a lexical head. Bilingual speakers can choose between two logical orders, namely between (I) AP → A + NP or (II) AP → NP + A. After one of the two possible orders has been chosen, the adjective in one of the two languages is accessed. Bilingual speakers can access adjectives from both languages, that is, adjectives of an A+NP-language (A_{A+NP}) like German *schwarz* 'black' and adjectives of an NP+A-language (A_{NP+A}) like Spanish *negro* 'black'. Taken together the choice of AP-rules and adjectives, there are four possibilities exemplified in (14):

⁸ In switched utterances, we mark one language in italics in order to distinguish it from the other one.

- | | |
|-------------------------|--------------------|
| (14) a. $A_{A+NP} + NP$ | c. $NP + A_{A+NP}$ |
| b. $A_{NP+A} + NP$ | d. $NP + A_{NP+A}$ |

The structures in (14b,c) represent mismatches between the language of the lexical head A and the chosen AP-rule, which are due to performance errors in Chan's approach. In (14c), e.g., the selected AP-rule is Romance. If later on the German adjective *schwarz* with the property of being prenominal is chosen from the lexicon, there is a mismatch between the language of the lexical adjective and the phrase structure rule which expands the AP.

When child mixing is concerned⁹, there is always the question about whether language dominance influences the structure of the switched utterances. The frequency of language mixing has even been argued to be one indicator of language dominance: Bilingual children are assumed to mix language material from their dominant into their weak language (due to lack of lexical knowledge in their weak language). However, previous research has shown that language mixing cannot be used as an indicator of language dominance, since there are bilingual children who mix a lot in the context of their dominant language (cf. Cantone & Müller 2005). Nevertheless, in the case of lexical switching between adjectives and nouns, the mismatches between the AP-rule and the language of the adjective might be related to language dominance. Following Chan's assumptions and taking into consideration that language dominance may be related to the mismatches of the AP-rule, we can formulate the following prediction concerning CS between a lexical category and its complement in bilingual children:

- (15) In the case of a mismatch, the phrase structure rule of the adjective will come from the child's dominant language.

Concerning switching between a functional category and its complement, Chan argues that the language of the functional category always determines the position of its complement. The author proposes that when functional switching takes place, the functional category is accessed before the position of the head of the phrase is determined¹⁰. Therefore, mismatches between the functional category and the position of the head of the phrase are unexpected. For example, under an approach in which adjectives are functional heads and take NPs as their complements, Chan's analysis implies that the adjective is accessed before the AP-rule is taken into account. If an adjective of the type A_{NP+A} is chosen, e.g. *negro*, (14d) must be selected.

As mentioned previously, CS between a functional category and its complement cannot be subject to mismatches since the functional category is accessed before the phrase structure rule is available. This would mean that, when CS between a functional category and its complement occurs, the functional element always determines the position of its complements. If we assume that adjectives are functional heads, then we would make the following prediction for child CS between A and N (valid for both balanced and unbalanced bilingual children):

- (16) The adjective as a functional category should always determine the position of its complement.

Chan's approach implies a phrase structure derivation of APs, independently of whether adjectives are analyzed as lexical or functional heads.¹¹ For the purposes of this paper and following Chan's work about CS between a lexical/functional category and its complement, prediction (15) presupposes that adjectives are lexical heads, whereas prediction (16) can be formulated if adjectives are analyzed as functional categories. In turn, we can use the CS data in order to decide between the two categorial analyses of adjectives in the literature.

⁹ Language mixing is used as a cover term here to describe that lexical material from both languages has been used in one utterance or one discourse. We introduce this term because the relevant literature on the role of language dominance uses the term mixing.

¹⁰ In his work, Chan does not make clear when exactly the position of the head is determined during the derivation (cf. Chan 2003:141).

¹¹ Chan bases his analysis on the distinction between lexical and functional categories. He assumes, contra Kayne (1994) and in the vein of Saito & Fukui (1998), that the distinction between OV- and VO-languages is best described with the head-parameter.

Predicative adjectives occur as complements of clearly functional categories, namely determiners, if analyzed via the phrase structure approach. Chan's analysis of functional switching could be extended to the relation between determiners and the ordering within their complement (cf. (9) and (10)). In other words, one could assume that the determiner as a functional category not also determines the order of its complements (as expressed in (16) for adjectives if analyzed as functional categories) but also the order within its complement. If this is the correct line of arguing, the language of D could possibly influence the ordering of adjectives and nouns within the complement of D. We will test the extension of Chan's idea when we discuss the CS data.

Would it be also possible to decide between a phrase structure approach to adjective placement and the Universal Base approach? A phrase structure approach would, as already mentioned, allow mismatches in both directions, i.e. both (14b) and (14c) might in principle occur, with a preference of the AP-rule of the dominant language (cf. (15)). Under the Universal Base approach, at least two results are expected. In the Romance languages, either A or both A and N are allowed to move further up in the derivation, depending on the pre- or postnominal placement of the adjective, respectively. In German, only A can move to Spec,CP. Two predictions follow for bilingual first language acquisition if we assume the Universal Base approach and combine it with economy of derivation:

(17)

- a. Prenominal adjective placement should be preferred across the board, since it necessitates less movement steps than postnominal ordering.
- b. In switched (and monolingual) DPs, German nouns should not be able to move as high as C/F, unless the child has chosen the Romance underlying structure for other reasons.

We can deduce from (17) that prenominal placement of adjectives should be much more frequent because it is derivationally less costly. Furthermore, sequences of the type $N_{\text{Ger}}+A_{\text{Rom}}$ should in principle be unattested. On the contrary, Romance nouns may occur more frequently with German pre- and postnominal adjectives.

5. The data

For the purpose of the present study, we have investigated the longitudinal data of twelve bilingual children: four French-German, six Italian-German and two Spanish-German children.¹² Table (2) includes the information relevant for the linguistic analysis.¹³

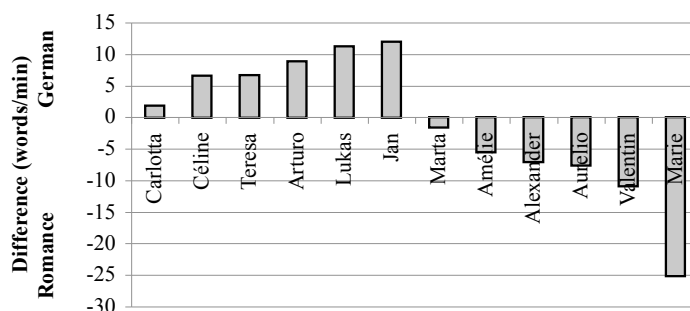
¹² The data are taken from three research projects under the direction of Prof. Dr. N. Müller, which were financed by the DFG: 1. Frühkindliche Zweisprachigkeit: Italienisch-Deutsch und Französisch-Deutsch im Vergleich (Hamburg, 1999-2005); 2. Die Architektur der frühkindlichen bilingualen Sprachfähigkeit: Italienisch-Deutsch und Französisch-Deutsch in Italien, Deutschland und Frankreich im Vergleich (Wuppertal, 2005-2008); 3. Code-Switching bei bilingual aufwachsenden Kindern in Deutschland, Italien, Frankreich und Spanien: Italienisch-Deutsch, Französisch-Deutsch, Spanisch-Deutsch, Italienisch-Französisch, Italienisch-Spanisch, Französisch-Spanisch (Wuppertal, 2009-2013).

¹³ The children were bilingual from birth and spoke their two languages to differing degrees, some of them being linguistically (un)balanced. The average age span was from 1;6 to 5;0 years. For a detailed description of the data, cf. Müller, Kupisch, Schmitz & Cantone (2011), Cantone, Kupisch, Müller & Schmitz (2008), Hauser-Grüdl, Arencibia Guerra, Witzmann, Leray & Müller (2010), and Müller, Arnaus Gil, Eichler, Jansen, Patuto & Repetto (2011).

Name	Language combination ¹⁴	Romance utterances	German utterances	Number of DPs containing an adjective			
				Romance DPs	German DPs	switched DPs	TOT
Alexander	Fr. / Ger.	9.802	8.715	313	144	26	483
Amélie	Fr. / Ger.	13.343	12.798	478	361	19	858
Céline	Fr. / Ger.	6.060	12.660	112	382	5	499
Marie	Fr. / Ger.	5.496	1.541	294	13	5	312
Aurelio	It. / Ger.	7.043	4.625	91	98	6	195
Carlotta	It. / Ger.	9.634	12.910	159	374	11	544
Marta	It. / Ger.	7.623	6.716	90	69	1	160
Jan	It. / Ger.	8.083	10.607	69	195	12	276
Valentin	It. / Ger.	7.938	3.067	260	46	33	339
Lukas	It. / Ger.	7.725	12.888	99	356	6	461
Arturo	Sp. / Ger.	5.718	6.680	57	150	5	212
Teresa	Sp. / Ger.	4.694	5.181	13	66	0	79
TOT				2.035	2.254	129	
(in %)				(46,06%)	(51,02%)	(2,92%)	

Table (2). Overview of the bilingual children in the longitudinal study

Arencibia Guerra (2008) has discussed the degree of language balance in bilingual children with the aid of different criteria. In the vein of Cantone & Müller (2005), she has shown a correlation between the amount of CS and language fluency. Figure (1) ranks the bilingual children analyzed here with respect to language fluency measured in words uttered per minute (cf. Arencibia Guerra 2008, Eichler 2010 and Patuto 2010). Figure (1) shows the average fluency difference in the two languages of the children. Some children, like Carlotta and Marta, are equally fluent in both languages, whereas Jan is much more fluent in German and Marie has a comparatively much higher level of fluency in French than in German.

Figure (1). Ranking of the bilingual children with respect to bilingual fluency¹⁵

5.1. The monolingual DPs and adjective order

Arnaus Gil (2011), Repetto (2006) and Rizzi (2011) have analyzed adjective placement in the children's monolingual DPs. Table (3) illustrates target-like and target-deviant use of Romance pre- and postnominal orders (the language analyzed is in capital letters and marked in bold). The first result is that prenominal placement occurs much more frequently in target-deviant orders than postnominal order. The second result is that Italian and Spanish are more prone to target-deviant prenominal

¹⁴ The language combinations presented in table (2) are to be read as follows: It. for Italian, Ger. for German, Fr. for French and Sp. for Spanish.

¹⁵ Positive values on the y-axis reflect an imbalance in favor of German, negative values an imbalance in favor of the Romance language.

placement than French, since French is the Romance language with the least flexible ordering. German adjective placement is nearly error-free.

	Prenominal adjectives		Postnominal adjectives	
	target-like	target-deviant	target-like	target-deviant
(a) Ger- FR	921 (93,88%)	60 (6,12%)	135 (92,47%)	11 (7,53%)
(b) Ger- IT	205 (68,79%)	93 (31,21%)	458 (99,57%)	2 (0,43%)
(c) Ger- SP	2 (50%)	2 (50%)	64 (100%)	0 (0%)
(d) GER -Romance ¹⁶	2018 (97,3%)	-	-	56 (2,7%)

Table (3). Target-like and target-deviant uses of both prenominal and postnominal Romance adjectives in a Romance DP

5.2. Switching within DPs containing D, A and N

In order to investigate whether the functional category D determines the order of the adjective and the noun in switched DPs, we will present the results of our study of CS between an adjective and a noun in DPs also containing a determiner. We have found only 78 instances despite the huge corpora analyzed. The relative infrequency of this type of CS has also been shown in previous empirical studies (e.g. Poplack 1980 for CS between Spanish and English).

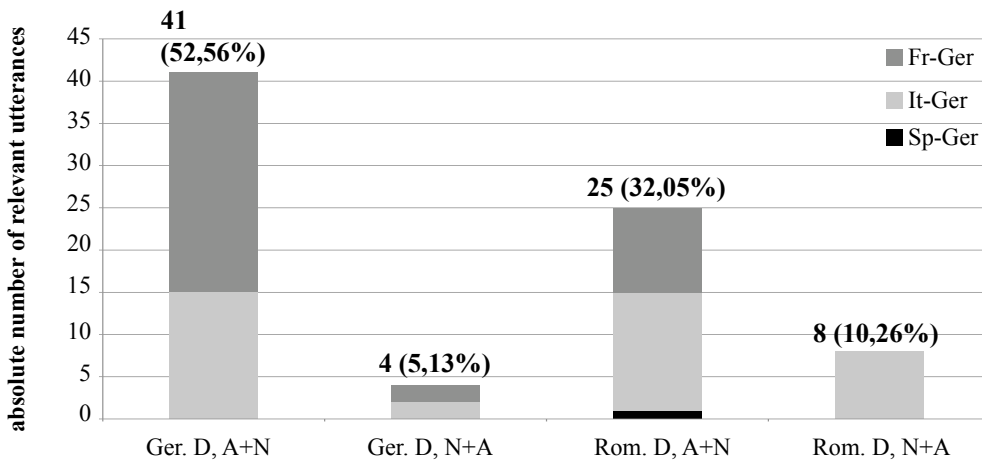


Figure (2). Word order in switched DPs (determiner, adjective, noun)

Figure (2) shows the data according to four different groups: (column 1) a German D followed by the prenominal adjective rule A+N; (column 2) a German D followed by the Romance adjective order N+A; (column 3) a Romance D followed by a prenominal adjective (A+N); (column 4) a Romance D followed by a noun and a postnominal adjective (N+A).

According to the assumption that determiners as functional categories always match the language of the phrase structure rule of AP, mismatches should be disallowed. However, as illustrated in column 2 of figure (2), this is not always the case, as shown in (18).

- (18) a. *ein* pannolino *klein* (Carlotta, It-Ger, 2;9,25, German context)
 a diaper small
 b. *das* auto *verde* (Lukas, It-Ger, 2;5,6, German context)
 the car green
 c. *eine* boule *groß* (Alexander, Fr-Ger, 2;5,25, German context)
 a bowl big

¹⁶ The data (d) in table (3) show the total number of monolingual German DPs containing an adjective for all language combinations.

- d. *der girafe groß* (Alexander, Fr-Ger, 2;6,25, German context)
the giraffe big

As can be seen from figure (2) and the examples in (18), the language of D does not determine the adjectival ordering in switched DPs. All examples in (18) contain a German D with a postnominal A. If the language of D determined the ordering, the adjectives in (18) should appear before the noun.

The next section will provide an overview of the analyzed data focusing exclusively on the word order between an adjective and a noun in switched DPs.

5.3. Switching between an adjective and a noun

We have also analyzed our data on the basis of the position of the adjective in a switched DP in which no determiner was present. Despite the huge corpora, there are only 129 tokens showing the relevant switch (illustrated in figure (3)). The most frequent instances of switching between A and N are represented by the first and the third column. The first column shows German adjectives and the German ordering A+N (cf. (19a)). The third column indicates Romance prenominal adjectives (cf. (19b)).¹⁷ These two types of switches account for 104 utterances. Next in frequency is the second column, which displays German adjectives and the Romance ordering (cf. (19c)).

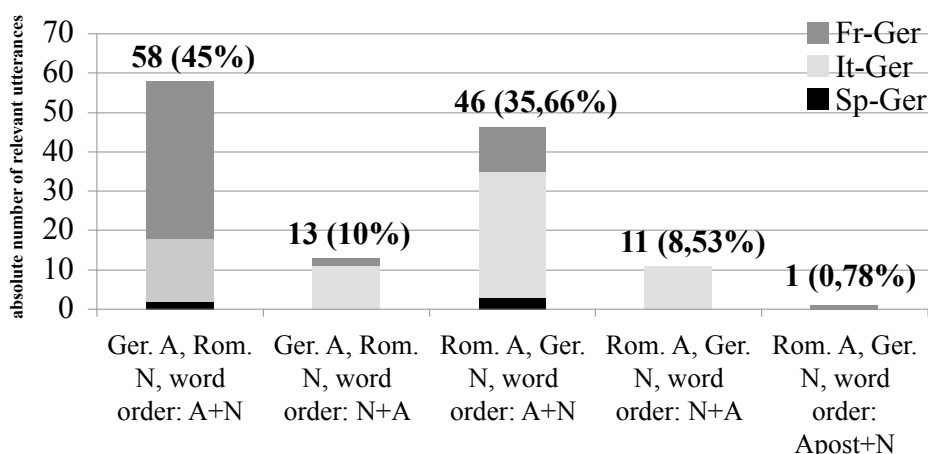


Figure (3). Word order in switched DPs (adjective, noun; omission/production of determiner)

There is only one example (19e) for a Romance adjective with a German noun which follows the German order (fifth column). The difference between the third and the fifth column is that in the latter the French adjective *vilain* must occur postnominally in adult French, while the Romance adjectives in the third column of figure (3) can be used pre- and postnominally in the adult language (cf. (19b)). There are only eleven examples of a Romance A and a German N which display the Romance order N+A (cf. (19d)). As a general result, figure (3) shows that prenominal placement of adjectives in switched DPs is very frequent (81%) as opposed to the postnominal position (19%).

- (19) a. das **blau** *cheval* (Alexander, Fr-Ger, 2;7,6, German context)
the blue horse
b. un **grande** *ohr* (Arturo, Sp-Ger, 3;6,7, Spanish context)
a big ear
c. una *cosa* **schwerer** (Aurelio, It-Ger, 4;0,9, Italian context)
a thing heavier
d. i *boxerhunde* **piccole** (Jan, It-Ger, 4;9,16, Italian context)
the dog small

¹⁷ These instances correspond to the prenominal uses of the adjectives which are possible in the Romance languages.

- e. un **vilain** *ritter* (Amélie, Fr-Ger, 3;6,24, French context)
 an evil knight

Let us start with the assumption that adjectives are lexical heads and that their placement is mainly determined by the language of the adjective. As shown in (14), mismatches between the language of the adjective and the chosen AP-rule might exist. According to (15), in the case of a mismatch, the phrase structure rule of the adjective should come from the child's dominant language. The 13 cases of $N_{Rom}+A_{Ger}$ and the instance of $Apost_{Rom}+N_{Ger}$ constitute mismatches between the AP-rule and the language of the adjective. In all other cases, the AP-rule and the language of the adjective match. The children who produce these mismatches are Alexander, Aurelio, Carlotta, Jan, Lukas and Valentin. Carlotta is a balanced bilingual, while Alexander, Aurelio and Valentin develop their Romance languages as their strong languages; Lukas and Jan are dominant in German (cf. figure (1)). We would expect that in mismatches the AP-rule comes from the children's dominant language, which is not always the case. Also, Carlotta as a balanced bilingual should not show mismatches at all, yet we have found one mismatch in her productions.

If we analyze adjectives as functional heads, we would expect that there are no mismatches between the AP-rule and the language of the adjective at all. Figure (3) shows that this prediction is not corroborated by the data. As shown in section 5.2, Chan's (2003) approach to functional categories and CS can also be extended to D: The language of the functional category D determines the order of the complement, i.e. whether we find a D+A+N or a D+N+A order. On the basis of the data we have analyzed in section 5.2, D is not responsible for the adjectival ordering in a switched DP, either.

To sum up, neither an analysis in which adjectives are lexical categories nor an analysis in which adjectives are treated as functional categories can account for the data. Furthermore, an approach which models the different adjective orders in the phrase structure component of the grammar cannot explain the mismatches between the language of the (lexical) adjective and the AP-rule, while these are not related to language dominance.

5.4. *Switching between an adjective and a noun in a phrase structure approach*

One syntactic approach to the analysis of attributive adjectives is the phrase structure approach, proposing to generate attributive adjectives via a phrase structure rule either to the left or to the right of the noun phrase as shown in (9) and (10), respectively.

The data we have presented in this paper cannot be explained in terms of the phrase structure approach, since both are equally costly. We have shown, however, that prenominal placement of adjectives is preferred across the board, i.e. in monolingual as well as in switched DPs.¹⁸

¹⁸ An anonymous reviewer points out that N-movement could in fact be explained by the phrase structure approach, following Ticio (2010), among others. The author postulates two different positions for adjectives, one prenominal base position for Germanic adjectives and a postnominal base position for Romance adjectives which, in turn, can occur prenominal via N-movement. Following this idea, the phrase structure approach still fails to account for the data analyzed here mainly for three reasons. First, accounting for two different syntactic base positions for German and the Romance languages and determining adjectival ordering within a switched DP by the language of the adjective imply that there ought to be more prenominal adjectives when the adjective comes from German and more postnominal adjectives when the adjective is Romance. However, on the basis of our data, prenominal adjective position was preferred at the expense of the postnominal position. Second, economy of derivation (Ticio 2010 and references here in) would imply that bilingual children group the common syntactic derivation from both the German and the Romance language together. This would account for the preference of the prenominal position in switched DPs found in our corpora. However, the productions of the second column in figure (3) would remain unexplained, namely, when a German adjective occurs after a Romance noun. This is, in fact, the most frequent postnominal placement of adjectives found in our data (this combination accounts for 54.2% of the total postnominal adjectival placement). Finally, the phrase structure approach, following Ticio (2010), starts from the premise that Germanic and Romance languages generate their adjectives in a different position in syntax. Under the Universal Base approach, a unique base position for both language groups is postulated and only the syntactic derivation poses the difference between both. We would like to claim, on the basis of our data, that the Universal Base approach to be presented in section 5.5 can successfully account for our data, that is, for the preference of the prenominal position, for the disallowance of German nouns to move to C/F and the possibility to find German adjectives in postnominal position.

5.5. Switching between an adjective and a noun in a Universal Base approach

In section 3, we have presented an approach to attributive adjectives which assumes that postnominal placement underlies both pre- and postnominal orders. Therefore, both Romance and Germanic languages exhibit the same underlying structure (Crisma 1990, Cinque 1990, 1994, Scott 1998, among others). The postnominal position of the adjective is the result of A- and N-movement to a higher position which is located between the head D and the AP. In section 4, we have formulated prediction (17), stating that German nouns should not be able to move as high as C/F. In other words, sequences of the type $N_{\text{Ger}+A_{\text{Rom}}}$ should be unattested, e.g. **die fledermaus grande* ‘the_{Ger} bat_{Ger} big_{It}’. On the contrary, German adjectives can be placed pre- and postnominally with Romance nouns, since Romance nouns can move up to C/F. Remember the syntactic structures for pre- and postnominal adjective placement presented in (11) and (12) in section 3. The Universal Base approach can explain why nearly all instances of CS analyzed in the present study exhibit prenominal ordering. First, prenominal ordering is evidenced in both language types involved and, more importantly, it is less complex in terms of economy of derivation since it involves less movement steps than postnominal order. We would like to emphasize again that the language of D does not seem to play a decisive role within the Universal Base approach (cf. figure (2)), although this still has to be tested on a larger database. The prediction in (17) is corroborated by the bilingual data: Postnominal adjectives are not attested with German nouns in the data unless the child is unbalanced and therefore chooses the Romance underlying structure (cf. figure (3), column 4).

In what follows we will discuss the type $N_{\text{Ger}+A_{\text{Rom}}}$ shown in figure (3), column 4, for each example separately.¹⁹ The examples of this type come from those children who have a strong imbalance: Jan, Valentin and Lukas.

- (20) a. *i boxerhunde piccolo* (Jan, It-Ger, 4;9,16, Italian context)
the-PL boxerdog small
b. *con suo Teppich volante* (Jan, It-Ger, 4;10,6, Italian context)
with his carpet flying
c. *il stadion grande* (Jan, It-Ger, 4,10,27, Italian context)
the stadium big
d. *eisenbahn rotto* (Valentin, It-Ger, 2;6,30, German context)
train broken
e. *eisenbahn grande* (Valentin, It-Ger, 2;7,13, German context)
train big
f. *hase piccolo* (Valentin, It-Ger, 2;7,26, German context)
rabbit small
g. *krokodilio grande* (Valentin, It-Ger, 3;10,13, German context)
crocodile big
h. *schere piccola* (Valentin, It-Ger, 3;5,4, German context)
scissors small
i. *una schaufel magica* (Lukas, It-Ger, 3;1,10, Italian context)
a bucket magic

¹⁹ The balanced bilingual child Carlotta produces three utterances of postnominal Romance adjectives with the noun *baby*.

- (i) a. *baby grande* (2;2,19, German context)
baby big
b. *baby piccolo* (2;4,21, Italian context)
baby small
c. *baby grasso* (2;4,21, Italian context)
baby fat

However, the noun *baby* also exists in Italian and could be considered as one of those nouns for which the language cannot be determined (cf. Deuchar & Quay 1998, Deuchar 1999); other nouns of this type are e.g. *mama* and *auto*. Lukas uses one instance of $N_{\text{Ger}+A_{\text{Rom}}}$ with the noun *auto*: ‘das auto verde’ (It-Ger, 2;5,6). We can conclude that these examples are no counter-evidence to our assumption that German nouns cannot move as high as C/F, since these nouns could be either German or Italian.

These examples all have in common that the noun (stem) is unambiguously German, as opposed to those in footnote 19. Therefore, they could constitute counter-evidence for the assumption that German nouns cannot move as high as C/F, thus generating postnominal placement of the adjective. Notice, however, that the children who use postnominal placement of Romance adjectives with German nouns are among the most unbalanced children in terms of fluency (cf. figure (1)). We hypothesize that these children can move the noun that far in syntax because the underlying structure of the DP is Romance. What evidence could there be for a Romance underlying structure? Lukas and Jan produce the examples in (20) in the Italian context, i.e. in the recording in which they speak Italian with the interacting adult. In contrast, the examples in (20) by Valentin occur during the recordings in which he is supposed to speak German with his German mother. However, Valentin speaks Italian in the vast majority of German recordings. In sum, although the examples in (20) do not come from the same linguistic context, they are all instances of a Romance DP containing a mixed German noun.

As mentioned in section 5.3, Valentin develops Italian as his strong language, while Jan and Lukas are dominant in German. Since these three children pattern similarly with respect to adjective placement within switched DPs containing a German noun (cf. (20)), the reason for using the structure $N_{\text{Ger}}+A_{\text{Rom}}$ cannot be attributed to the dominant language. We thus have a reason to believe that the mere fact of being unbalanced is the source of these examples while it seems to be irrelevant which of the two languages develops as the stronger one. The reverse is not true, namely that the mere fact of being unbalanced necessarily leads to CS utterances of the type $N_{\text{Ger}}+A_{\text{Rom}}$ (cf. Marie in figure (1), who does not produce switches of this kind).

We would like to add a final remark on the examples in (20). If we are right in assuming that the children use a Romance underlying DP structure with a German noun, the Universal Base approach would, *in extremis*, mean that the German noun has been borrowed into the Romance lexicon first and it has been inserted only later into syntax as if it were a Romance noun. This conclusion can be drawn on the basis of the Romance syntactic properties of the mixed utterances, which allow Romance (but not German) nouns to move to C/F. In this line, we can interpret the examples in (20) in terms of borrowing and not CS.²⁰ We have found that the children knew the Romance equivalent of the German nouns in the CS examples, so knowledge gaps can be excluded as a reason for borrowing.

Muysken (2000) distinguishes between three categories in the analysis of CS. One is *alternation*, which is “a true switch from one language to the other, involving both grammar and lexicon” (Muysken 2000:5). Examples for alternations are all switches in which the language of the adjective and its ordering match. Second, *integration* occurs if a word is integrated into the structure of the other language. Finally, *congruent lexicalization* is typical of typologically similar languages and also occurs between dialect and standard varieties:²¹

The term congruent lexicalization refers to a situation where the two languages share a grammatical structure which can be filled lexically with elements from either language. The mixing of English and Spanish could be interpreted as a combination of alternations and insertions, but the going back and forth suggests that there may be more going on [...], and that the elements from the two languages are inserted, as constituents or as words, into a shared structure (Muysken 1997:362).

In contrast to alternation, congruent lexicalization presupposes a shared syntactic frame which is filled with elements from both languages. In the present case, one could argue that the Italian underlying structure represents the frame into which German nouns are inserted. More interestingly, only extremely unbalanced children exhibit this kind of lexicalization. Future research will have to apply Muysken’s distinction to CS involving other grammatical domains.

6. Conclusion

In this paper, we have analyzed switched DPs containing an adjective in the longitudinal studies of twelve bilingual children acquiring German and Romance as their L1s. Approaches which underlie the distinction between lexical and functional categories and analyses which assume a derivation of

²⁰ Example (20g) nicely shows that German stems can be combined with Romance affixes.

²¹ The author exemplifies congruent lexicalization with the following example: *Bueno, in other words, el flight que sale de Chicago around three o'clock* (Muysken 2000:6, cited in Pfaff 1976:250).

adjective placement in terms of phrase structure rules or a universal base have been tested on the corpora. Only the Universal Base approach to adjective placement together with language fluency can account for the types of CS utterances found in our data.

Our analysis has the (interesting) shortcoming that switching between adjectives and nouns is quite rare in the language pairs involved. This result has also been replicated in an elicited production task (elicited imitation) on CS with 28 Spanish-German and nine Italian-German children of the same age range as the bilingual children analyzed here (Jansen, Arnaus Gil, Eichler, Müller & Patuto 2010). Future research will have to find new ways to elicit adjective-noun sequences containing CS in young bilingual children. We may speculate (with our knowledge on other, more preferred points of CS, like between D and N) that bilingual children prefer to switch at points where the two languages are equivalent at surface structure. This does not mean that the two languages MUST be equivalent to allow CS to occur (as formulated in Poplack 1980), but it might indicate that it is more costly to switch at non-equivalent points at surface structure.

One rather unexpected result is that the language of D does not seem to play a role in determining the order of A and N in switched DPs. Since D is argued to express some of the DP-features which are important for noun and adjective inflection in Romance and German (gender, number, case, and definiteness in German), this result is important for further theorizing on the syntax of CS in adults and children.

Our approach is falsifiable on the basis of positive evidence. If our assumptions are right, switched DPs of the type **die fledermaus grande* ('the bat big') should be absent in bilingual children who are similarly fluent in both of their languages (i.e. balanced according to this measure).

We would finally like to add that our analysis supports ideas presented by Woolford (1983), MacSwan (2000), González-Vilbazo (2005), Cantone (2007), González-Vilbazo & López (2011), and Jansen et al. (2010a, 2010b), namely that CS is constrained by nothing more than the two grammars involved and that it serves as a mean to test different syntactic analyses of a particular grammatical phenomenon.

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