



# Morphosyntactic variation and gender agreement in three Afro-Andean dialects

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## Abstract

This paper presents an analysis of gender agreement in three little studied Afro-Andean dialects: Chinchano Spanish (Perú), Yungueño Spanish (Bolivia) and Chota Valley Spanish (Ecuador). Data is presented showing a variety of DP gender agreement configurations significantly divergent from standard Spanish. A unified account for these phenomena is proposed combining quantitative methodology and several forms of data collection with a Minimalist approach to data explanation and interpretation. The provided analysis charts evolution and variation of gender agreement, arguing that the parallel development of gender agreement in these three Afro-Hispanic contact varieties can be explained by an approach in which change takes place along paths set by universal properties of grammar (feature valuation, locality of agreement, gradience of fitness in grammatical development, etc.).

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## 1. Introduction and socio-historical background

The study of Spanish dialects and morphological variation in different regions of Spain and Latin America was a landmark of traditional philological approaches. Using the tools and methods of linguistic geography, comparative grammar and structuralism, several schools flourished at both sides of the Atlantic during the 50s and 60s. The generative turn sparked by Chomsky's revolution represented a change in focus which slowly had an impact on existing theoretical perspectives, with a new emphasis on abstraction, generalizations mostly drawn from speakers' intuitions, and data sets based on individual grammaticality judgments. The Principles and Parameters approach (Chomsky, 1981) brought new insights to the formal study of morphological variation, with its reliance on the notions of core and periphery, and the impact of different parameter settings on morphosyntactic properties such as inflection and case. This trend was furthered by the Microparametric perspective of the late 80s and 90s (Benincà, 1989; Black and Motapanyane, 1996). The emergence of Optimality Theory (Prince and Smolensky, 1993), the Minimalist Program (Chomsky, 1995) and, in recent years, of the Biolinguistic perspective (Chomsky, 2001, 2005; Jenkins, 2000) has brought new theoretical tools to the formal study of morphosyntactic variation and to contact phenomena.

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The Biolinguistic perspective looks at language as a natural object, subject to the laws and principles of evolution (Larson et al., 2010; DiSciullo and Boeckx, 2011). Evolution is a pervasive phenomenon in the natural world. Languages, like species, adapt to the surrounding environment and evolve, triggering differentiation and variation. This is a well-known fact that can be traced diachronically across a number of different dimensions, triggering phonological, syntactic or semantic change (Keenan, 1994). Theories of syntactic change have focused on how to model change in syntactic properties, as a product of competing grammars (Kroch, 1989), parameter or micro-parameter resetting (Lightfoot, 1998) or as a change in the attraction/realization property of functional categories (Roberts and Roussou, 2003). Additionally, change and variation can be internally or externally driven. The most significant type of externally-driven variation is contact-induced variation. In general, the term ‘evolution’ will be used in this paper to refer to varying patterns across dialects/idioms. The term ‘change’ is normally used for shorter-span patterns whereas the term ‘evolution’ is reserved to refer to diversity occurring across millennia at many levels of the biological organization of organisms. Nevertheless, adopting an internal evolutionary perspective actually dilutes this distinction, in the sense that it can be assumed that languages change/evolve according to the external (social) environment, as species do in the natural environment.

The present study has a twofold aim. On one hand, it provides data on three little studied Afro-Andean dialects (cf. also Gutiérrez-Rexach and Sessarego, 2011; Sessarego and Gutiérrez-Rexach, 2011, 2012a,b). These data illustrate a variety of DP gender concord or agreement configurations significantly divergent from standard Spanish (stSp). On the other hand, it extends our previous joint work and proposes a unified account for such phenomena by combining a sociolinguistic methodology of data collection and a Minimalist approach to data explanation and interpretation. In doing so, the current work enhances the dialog between formal syntax and variationist studies (Sessarego, 2013a). It also provides an evolutionary analysis of variable gender agreement, one of the most common features of Afro-Hispanic languages and SLA varieties of Spanish (Sessarego, 2013b). It is shown that the parallel development of gender agreement in three Afro-Hispanic contact varieties – Chinchano Spanish (Perú), Yungueño Spanish (Bolivia) and Chota Valley Spanish (Ecuador) – can be explained by a mixed approach in which change takes place along paths set by universal properties of grammar.

The African presence in the Andes can be dated back to the very beginning of the Spanish discovery and colonization of these South American lands.<sup>2</sup> It is generally believed that the blacks who entered the region during this first phase of conquest (approximately up to the mid 17th Century) were for the most part not bozales (fresh from Africa) (Bowser, 1974). They were rather original from Spain and other already settled Latin American colonies. They were also usually educated in the Christian faith and could presumably speak good approximations to the language spoken by their masters (Sessarego, 2011a, 2013c, 2014a).

Conversely, after 1650 and due to the exponential decrease of the native population, bigger contingents of bozales were imported. They replaced the native workforce decimated by European diseases and the extreme working conditions imposed by the Spanish colonizers (Brockington, 2006). The language varieties that emerged from this second African wave, mainly proceeding directly from Africa, exhibited a variety of African transfers and common L2 errors (Lipski, 2005), which sometimes crystallized in the language varieties learned by the following slave generations. In some cases, these language features have been passed on from generation to generation and can still be attested in some of the most isolated Afro-Hispanic communities scattered across the Andean region. Three of such post-bozal dialects are Chinchano Spanish (CS), Yungueño Spanish (YS) and Chota Valley Spanish (CVS), spoken respectively in the rural surroundings of Chíncha (Coastal Peru), in the Yungas Valley (Department of La Paz, Bolivia) and in the Chota Valley (Departments of Imbabura and Carchi, Ecuador) (Lipski, 1987; McWhorter, 2000).

The Land Reforms of the 1950s had a huge effect on the lives of Afro-Andeans from both a cultural and an economic point of view.<sup>3</sup> The social transformations triggered by this change also had an effect on the language spoken by these speech communities. Access to public education and the higher degree of mobility achieved after the elimination of forced work on haciendas particularly intensified the contact between the traditional Afro-Hispanic dialects and the local standard varieties of

<sup>2</sup> Blacks were introduced in these regions now known as Peru, Ecuador and Bolivia by the first decades of the 16th century by the *conquistadores*, who used them as soldiers and servants in many campaigns of exploration and settlement. Black slaves were active participants in the colonization process. Torres Saldamando (1900:409) states that: “El primer negro que pisó tierra peruana fue el que en 1526 desembarcó en Tumbes con Alonso de Molina cuando fue reconocido este puerto por los de Pizarro.” (The first black who entered Peru disembarked at Tumbes with Alonso de Molina when that port was reconnoitered by Pizarro’s men).

<sup>3</sup> African slavery lasted in the Andes for more than three centuries. In Bolivia, it was formally abolished in 1826, immediately after the country’s independence from Spain (Crespo, 1977; Brockington, 2006); in Ecuador, formal abolition took place in 1854, under the presidency of José María Urbina (Bouisson, 1997); while in Peru, blacks’ freedom was declared by president Ramón Castilla y Markezado only in 1856, more than three decades after the independence from Spain of 1824 (Aguirre, 2005). Nevertheless, the official abolition of slavery, in practice, did not provide blacks with the civil rights enjoyed by white and mestizo citizens. As a matter of fact, they were not allowed to receive an education and they did not enjoy political representation. Moreover, they were forced to work as unpaid peons on the lands belonging to the haciendas, they did not own lands, and they were provided with just a small field to work for their own survival during their time off. This system lasted until the Land Reform, which took place in Bolivia in 1954, in Ecuador in 1964 and in Peru in 1975. This reform provided blacks with the right to vote and to receive an education. It also freed them from forced servitude and turned them into small landowners by distributing the lands which formerly belonged to the haciendas (Busdiecker, 2006; Chala Cruz, 2006; Del Carmen Cuba, 2002).

Andean Spanish, thus implementing a language shift where traditional Afro-Hispanic features have been systematically substituted by standard Spanish ones. This process has been classified elsewhere as a “change in progress”, where stigmatized varieties gradually approximate to more prestigious ones (cf. Sessarego and Gutiérrez-Rexach, 2011, 2012a,b).

## 2. Methodology and fieldwork

Instances of language variation and change similar to the ones described here have usually been described by sociolinguists. Methodologically, these studies rely on free-speech interviews to collect naturalistic data, which are subsequently analyzed using statistical tools (Labov, 1966, 1971; Sankoff, 1988a,b; Tagliamonte, 2006). Syntactic analyses have generally preferred to devote their attention to different sources of data. For example, building on the traditional distinction between competence and performance (Chomsky, 1965), such approaches have primarily focused on native speakers’ intuitions and grammatical judgments to better understand the nature of I-language (Chomsky, 1986). More recently, the increasing attention devoted to substandard varieties of English, Italian, German and Dutch has led several scholars to combine sociolinguistic and formal methodologies in order to overcome the metalinguistic awareness of certain speakers in relation to socially stigmatized constructions (Poletto, 2000; Seiler, 2004; Adger and Smith, 2005; Cornips and Poletto, 2005; Cornips and Corrigan, 2005; Henry, 2005; De Vogelaer, 2006; Barbiers, 2009).

We followed a similar hybrid approach to collect the data for our research. Twelve members of each Afro-Hispanic community were individually recorded during 1-hour-long sociolinguistic interviews. In order to obtain a distributed sample of speakers across generations, we ensured that we had four participants in each of the three age groups we selected (80+, 51–80, 21–50). All the informants were native speakers of their dialect and did not speak any other language spoken in their countries, such as Aymara or Quechua/Quichua. These recorded conversations were carried out following the traditional sociolinguistic methodology, thus trying to put speakers at ease in order to elicit more colloquial/vernacular speech and attempting to overcome potential effects related to the Observer’s Paradox (Labov, 1972). Only later, usually after a couple of days from the time of the recorded conversation, was the same informant asked for grammaticality judgments. This specific methodology was adopted to not influence the results of the naturalistic interviews by revealing the participants the nature of the linguistic phenomenon under study in advance. The need for sophisticated methodologies of a multi-faceted nature is also advocated by recent studies on the nature and validity of grammaticality judgments.<sup>4</sup>

In line with Cornips and Poletto’s claim (2005: 944), to understand whether a certain agreement pattern was present in a given community, not only direct questions were asked to our informants: ‘Do you judge X correct in your dialect?’, ‘Can you say X?’, ‘Does X sound right to you?’, also indirect judgments were elicited: ‘Have you ever heard anybody saying X?’, ‘Is X present in this community?’, ‘Do you think that somebody could say X?’. When we compared the results obtained from these questionnaires with the data extracted from the sociolinguistic interviews, we discovered that almost everybody who claimed not to say X, but to know somebody who would use such a structure, were found using X several times during the free-speech interview. These findings showed that X was indeed part of their grammar and further corroborated the value of relying on different data-collecting strategies when dealing with highly stigmatized vernaculars. This allowed us to obtain a more fine-grained picture of the linguistic process under consideration.

In previous studies, we adopted this methodology to study gender agreement variation in Yungueño Spanish (YS) and Chota Valley Spanish (CVS) (Sessarego and Gutiérrez-Rexach, 2011, 2012a,b; Sessarego, 2013a). In this paper we will extend this methodological approach to the study of gender agreement in Chinchano Spanish and compare the results found in this Afro-Peruvian dialect with our previous findings from YS and CVS. Learning accounts of these data within Optimality Theory (OT) (Prince and Smolensky, 1993) will be discussed in Section 4, and a unified model will be provided afterwards to account for the systematic evolution of gender agreement systems across these Afro-Andean dialects.

## 3. The data from three Afro-Hispanic dialects

The data analyzed in this paper is the result of three fieldwork studies. The first one was conducted in the Yungas, Bolivia in 2008–2010 (cf. Sessarego and Gutiérrez-Rexach, 2011); the second one took place in Chota Valley, Ecuador in 2011–2012 (cf. Sessarego and Gutiérrez-Rexach, 2012b); while the third one comprises data collected in the Chinch

<sup>4</sup> See Tremblay (2005) for a summary of the long debate on the accuracy of grammaticality judgements to analyze language phenomena. Standard grammatical judgment tasks are problematic, since it is not clear whether these judgments are dichotomous or gradient (Sorace and Keller, 2005), there are no clear procedures to identify or isolate the influence of extragrammatical factors, and rigorous control techniques are lacking (Schütze, 1996). We agree with these authors on the need of designing tests and procedures aimed at solving this problem and our mixed methodology is consistent with such concerns. The need for this hybrid approach is well-explained by Cornips and Poletto (2005: 944) who state the following: “Adult responses on acceptability-judgment tasks rely at least in part also on explicit, prescriptive notions held by speakers. So, the fact that the use of a construction does not necessarily imply its acceptance can be attributed to explicit, prescriptive knowledge about the superordinate variety. One way to diminish this effect is to ask for indirect acceptability judgments. Moreover, the seeking of (relative) judgments in an indirect way seems very felicitous according to the successful experimental methods described in Labov (1972)”.

region (Peru) in 2013. The findings from this third study are very much in line with those in the first and second ones. Thus, we will first summarize the data from our Bolivian and Ecuadorian studies, and afterward we will show how the Peruvian results complement those findings. As indicated in the previous section, in order to obtain a more fine-grained generalization, data collection was not limited to grammaticality judgments obtained through oral questionnaires. Abstract speaker judgments were combined with actual speech data.<sup>5</sup>

The analysis of the data collected in the Yungas and Chota Valley indicate that much variation is present in such speech communities. Indeed, results show that in both cases the most traditional variety of the local Afro-Hispanic dialect, usually spoken by the eldest members of the community, diverges quite significantly in its agreement system from the variety used by the youngest generation, which presents an agreement system in line with standard Spanish (stSp). As is well known, stSp presents gender agreement on all the grammatical elements inside DP: weak/strong quantifiers, pre-nominal/post-nominal adjectives, articles, and demonstratives:

- (1) a. Toda la cerveza fría.  
all-F. the-F. beer-F. cold-F.  
'All the cold beer.'
- b. Mucha/ esta/ una cerveza fría.  
much-F./this-F./a-F. beer-F. cold-F.  
'Much/this/a cold beer.'

Our Bolivian fieldwork in the Yungan communities of Tocaña, Mururata and Chijchipa unveiled the existence of at least three different gender-agreement patterns in YS (groups A, B, C) (cf. Sessarego and Gutiérrez-Rexach, 2012a), for which the twelve speakers in the study had clear grammatical intuitions. Group A (1 elder speaker) presented gender agreement on definite articles and demonstratives, thus showing default masculine gender specification on the remaining DP elements (2).<sup>6</sup>

- (2) a. Todo la cerveza frío.  
all-M. the-F. beer-F. cold-F.  
'All the cold beer.'
- b. Mucho/ esta/ un cerveza frío.  
much-M./this-F./a-M. beer-F. cold-M.  
'Much/this/a cold beer.'

The agreement pattern belonging to Group B (7 speakers from the old and middle generations) consisted of a relatively more developed gender-agreement configuration, where morphological gender was marked on articles, demonstratives, pre-nominal adjectives, and weak quantifiers (3)<sup>7</sup>:

- (3) a. Todo la cerveza frío.  
all-M. the-F. beer-F. cold-M.  
'All the cold beer.'
- b. Mucha/ esta/ una buena cerveza frío.  
much-F./this-F./a-F. good-F. beer-F. cold-M.  
'Much/this/a good cold beer.'

<sup>5</sup> The comparison between grammaticality judgments and data collected by recurring to sociolinguistic interviews clearly indicated that almost all the informants who claimed to use gender agreement for certain DP elements during the questionnaires were found lacking it in the sociolinguistic recordings. For some of the YS speakers the rate of agreement mismatch on certain categories was as high as 40–50%, while the highest levels reported for some CVS informants were around 30% (cf. Sessarego and Gutiérrez-Rexach, 2012b: 260).

<sup>6</sup> An anonymous reviewer wondered whether the fact that pattern A is attributed to a single speaker should be seen as an idiosyncratic phenomenon or as a stable configuration. Our impression is that this pattern, which is highly deprived of agreement morphology, might once have been well-established in YS; nevertheless, nowadays it can only be found in the speech of the eldest speakers. Even though pattern A may be heard with a certain frequency in the informal conversations held amongst old members of the YS community, it proved very difficult to obtain grammaticality judgments by these speakers. We suspect that more elderly Yungueño speakers would probably show grammars of type A, if they decided to complete our questionnaire; unfortunately, many of them did not feel comfortable with this kind of task and refused to participate in our linguistic research.

<sup>7</sup> An anonymous reviewer pointed out that Afro-Hispanic dialects like YS, CVS and CS usually do not present gender agreement on predicate adjectives (i.e. DP-external agreement, *la cerveza era fría*) and that it would be interesting to incorporate examples concerning such constructions in our study. This is definitively a good point and we agree that such information would provide a broader vision of Afro-Hispanic agreement patterns, thus including both DP-internal and external agreement. Nevertheless, in our original grammaticality-judgment questionnaires we did not include examples of that sort, thus we decided to focus for the moment only on cases of DP-internal agreement. We will certainly keep such suggestions in mind when carrying out future fieldwork research.

Finally, Group C (4 speakers from the youngest generation) presented a generalized agreement configuration, as in stSp (1), where all DP categories are morphologically marked overtly for gender.

Our survey in Ecuador provided similar results. The same constructions tested in YS were tested with twelve members of the Chota community, from the villages of Tumbabiro, Carpuela, El Juncal, Cuajara and Concepción. Two different agreement configurations were found: groups D and E. The informants belonging to Group D (3 elder speakers) had the grammatical intuitions exemplified in (4), where all DP categories except for strong quantifiers manifested morphological agreement.

- (4) a. Todo la cerveza fría.  
all-M. the-F. beer-F. cold-F.  
'All the cold beer.'
- b. Mucha/ esta/ una cerveza fría.  
much-F./this-F./a-F. beer-F. cold-F.  
'Much/this/a cold beer.'

On the other hand, Group E (the 9 remaining speakers) presented the standard agreement pattern exemplified in (1) and already found in YS Group C. In the following step, two separate Varbrul analyses were run for the YS and the CVS data, showing that both the factors 'generation' and 'grammatical category' significantly affected gender agreement variation. In fact, older informants presented less agreement than younger speakers and a clear hierarchy of agreeing categories could be identified across each generation: Demonstratives/Definite Articles > Weak Quantifiers > Prenominal Adjectives > Strong Quantifiers > Postnominal Adjectives (Sessarego and Gutiérrez-Rexach, 2011, 2012a). This is shown in Tables 1 and 2: Figs. 1 and 2 summarize the development of gender agreement in DP across generations and categories in YS and CVS.

The same fieldwork methodology was adopted again for data collection in the Chinchano communities. In parallel to our other two studies, grammaticality judgments and free-speech interviews were collected from twelve Afro-Peruvian speakers (four per generation) belonging to the Chíncha villages of El Carmen, El Guayabo, San José y San Regis. Three different grammatical patterns were attested (Groups F, G, H). Group F (2 elder speakers) had grammatical intuitions that were identical to those of speakers producing the configuration in (4), where gender agreement affects all the categories but strong quantifiers, as in Groups D for CVS.

Group G (2 elder speakers) presented the agreement configuration instantiated by example (5), where the only non-agreeing category is post-nominal adjectives.

- (5) a. Toda la cerveza frío.  
all-F. the-F. beer-F. cold-M.  
'All the cold beer.'

Table 1

Cross-generational variable rule analysis of the contribution of 'grammatical category' and 'generation' to the probability of lack of gender agreement in Yungueño Spanish DP (total = 2604; log likelihood = -624.215; total Chi-square = 50.6609; Chi-square/cell = 2.8145; significance = 0.001; input = 0.041).

	Factor weight agreement	% Lack	N	%data
Grammatical category				
Post-Nom. Adj.	0.95	50	272	19
Strong.Q.	0.66	35	275	11
Pre-Nom. Adj.	0.64	14	220	19
Indef. Art.	0.62	12	280	4
Weak Q.	0.60	10	102	3
Dem.	0.24	3	84	53
Def. Art.	0.23	2	1371	
	Range			
	72			
Generation				
81+	0.67	21	651	25
51–80	0.56	11	927	36
21–50	0.35	1	1026	39
	Range			
	39			

Table 2

Cross-generational variable rule analysis of the contribution of 'grammatical category' and 'generation' to the probability of lack of gender agreement in Chota Valley Spanish DP (total = 2082; log likelihood = -486.408; total Chi-square = 16.0422; Chi-square/cell = 0.8912; significance = 0.000; input = 0.034).

	Factor weight agreement	% Lack	N	% data
<b>Grammatical category</b>				
Post-Nom. Adj.	0.95	50	272	14
Strong.Q.	0.87	35	275	12
Pre-Nom. Adj.	0.76	14	220	8
Indef. Art.	0.70	12	280	9
Weak Q.	0.66	10	102	3
Dem./Def Art.	0.19	3	84	54
	<i>Range</i>			
	76			
<b>Generation</b>				
81+	0.78	21	678	33
51–80	0.55	11	840	40
21–50	0.13	2	564	27
	<i>Range</i>			
	65			

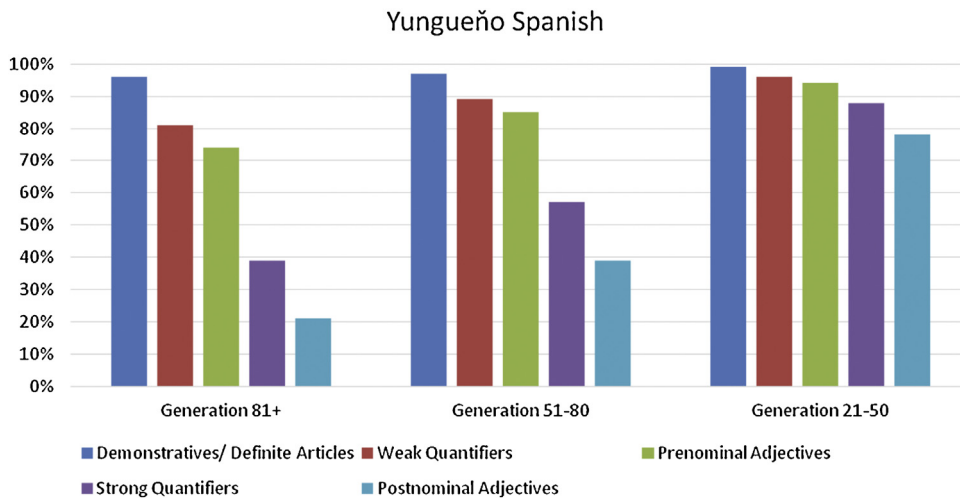


Fig. 1. Gender agreement evolution in YS DPs.

- b. Mucha/ esta/ una cerveza frío.  
much-F./this-F./a-F. beer-F. cold-M.  
'Much/this/a cold beer.'

Finally, Group H (the 8 remaining speakers) presented the fully generalized pattern from standard Spanish (1), as already reported for YS (Group C) and CVS (Group E).

The results from grammaticality judgments were also compared to those in sociolinguistic interviews. As happened in the case of YS and CVS, it became evident that abundant gender agreement variation could be attested.<sup>8</sup> To obtain a more detailed picture, 2445 tokens from the CS sociolinguistic interviews were extracted and coded according to the 'grammatical category' and 'generation' parameters. Thus the factor group 'grammatical category' consisted of the following individual factors: demonstratives/definite articles, weak quantifiers, pronominal adjectives, strong quantifiers, postnominal adjectives. The factor group 'generation' included the three following age groups: 21–50, 51–80, 81+. Given the lack of variation for certain factors, the first run provided knock-outs (cf. Tagliamonte, 2006:152–153), so tokens were

<sup>8</sup> Speakers who claimed to use a grammar of a certain type presented patterns belonging to other grammars. While for the Bolivian and Ecuadorian cases some speakers presented levels of agreement mismatch on certain categories as high as 50% (YS) and 30% (CVS), in the Peruvian study the highest level of lack of concord reached for some informants 25%, for postnominal adjectives and strong quantifiers.



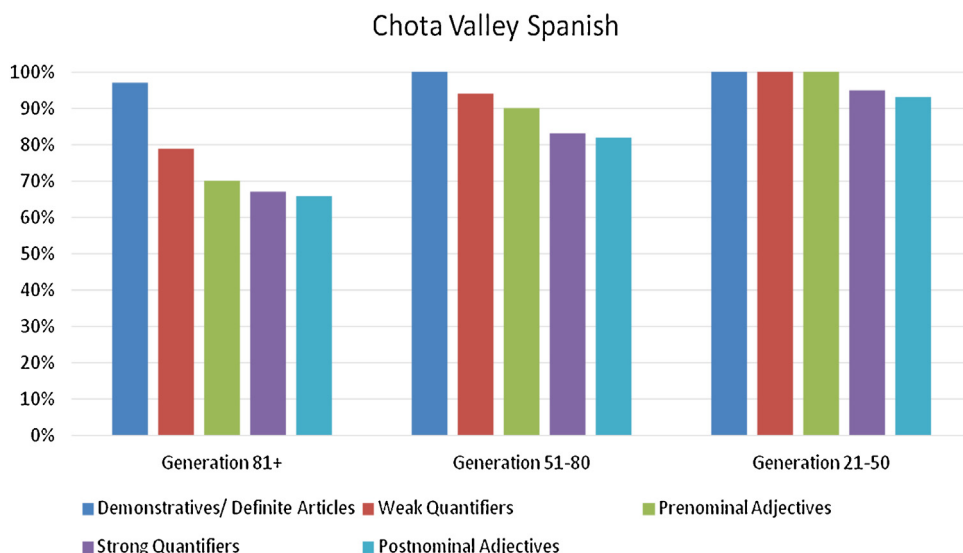


Fig. 2. Gender agreement evolution in CVS DPs.

Table 3

Cross-generational variable rule analysis of the contribution of internal factors to the probability of lack of gender agreement in Chinchano Spanish DP (total = 2455; log likelihood = -210.896; total Chi-square = 5.2353; Chi-square/cell = 0.8725; significance = 0.000; input = 0.007).

	Factor weight agreement	% Lack	N	% data
Grammatical category				
Post-Nom. Adj.	0.94	11	261	11
Strong.Q.	0.92	9	249	10
Other Ds.	0.34	1	1945	79
	Range			
	60			
Generation				
81+	0.76	6	781	32
21–80	0.037	1	1674	68
	Range			
	39			

recoded and several grammatical categories were collapsed, as well as the generations 21–50 and 51–80. Such a recodification allowed Varbrul to run the data, providing the results presented in Table 3.

As can be observed, post-nominal adjectives and strong quantifiers in Chinchano Spanish strongly disfavor concord (factor weights 0.94 and 0.92), while the other determiners favor it (factor weight 0.34). The factor group 'generation' is also significant, with generation 81+ favoring lack of gender agreement (factor weight 0.76) and generations 21–50, 51–80 favoring agreement (factor weight 0.37). These results show that little variation occurs among the speakers younger than 81+, thus indicating that, in contrast to the other Afro-Andean dialects, lack of gender agreement is in CS a phenomenon primarily concerned with older informants, not much relevant for the rest of the speech community and in all likelihood destined to disappear within the next 20 years or so.

Fig. 3 summarizes the results obtained for the evolution of gender agreement across DP categories in CS.

As can be noted, even though the tokens had to be recoded to obtain significant results with Varbrul, the evolutionary agreement trend of CS is perfectly in line with what we found for YS and CVS (cf. Figs. 1 and 2). In fact, if we look at the development of gender concord or agreement across categories the following hierarchy or implicational order emerges (Sessarego and Gutiérrez-Rexach, 2011, 2012a,b).

- (6) Demonstratives/Definite Articles > Weak Quantifiers > Prenominal Adjectives > Strong Quantifiers > Postnominal Adjectives.

In other words, if a given speaker *s* (belonging to generation *g*) expresses agreement on a point *p* of the scale, then he will be able to express agreement in all those points dominating *p*. The final stage of this development is represented by

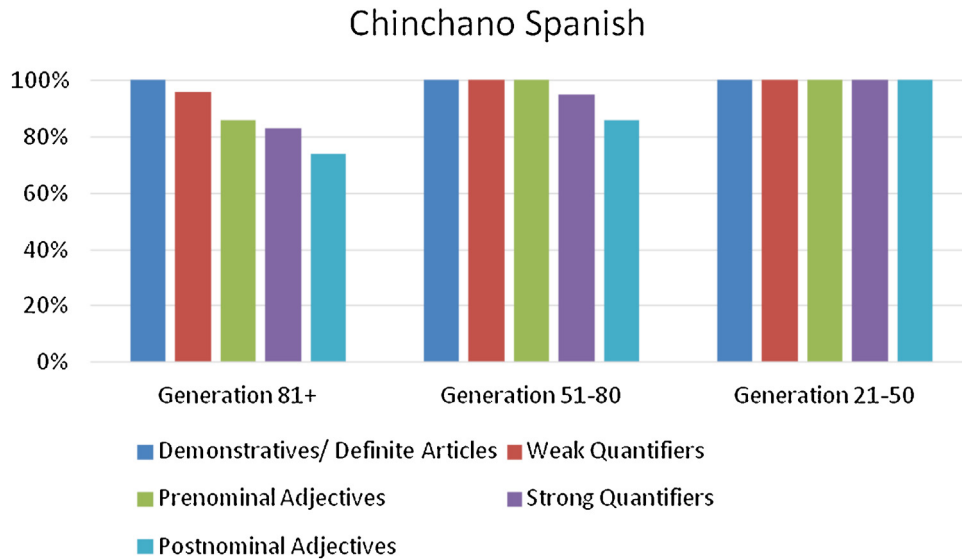


Fig. 3. Gender agreement evolution in CS DPs.

stSp where agreement is expressed across the board. From a diachronic point of view we may state that, in terms of convergence with stSp, CS appears to be in the most advanced stage overall, followed by CVS and YS in this order.

In the literature on Creole linguistics these processes of systematic approximation to the standard variety have often been encapsulated under the umbrella term of ‘decreolization’. This label describes the gradual approximation of a Creole language to the superstrate lexifier from which it developed (Hymes, 1971:111). As far as YS, CVS and CS are concerned, the process at stake has the characteristics of decreolization since “it consists of the systematic substitution of stigmatized Afro-Hispanic features with more prestigious Spanish ones” (Sessarego and Gutiérrez-Rexach, 2011:465), not only at the morphosyntactic level but also at the phonetic and phonological ones (cf. Sessarego, 2012). Nevertheless, it is worth highlighting that the term ‘decreolization’ might be a bit misleading, since it seems to imply that these dialects used to be creoles, which have gradually approximated to the standard variety. On the other hand, as it has been argued elsewhere these varieties were probably never creoles but rather ‘conventionalized advanced second languages’ (Sessarego, 2011a, b, 2013a,b, 2014a,b).

Leaving these details aside, however, what is of interest for the purposes of this article is the characterization of this process from a morpho-syntactic point of view. Several authors have tried to systematize similar cases of variation attested in contact varieties. A well-known example of this trend is De Camp’s (1971) work on Jamaican Creole. This author postulates [+/- formal] discourse features to account for the linguistic variability encountered in post-creole speech communities. His model, however, would be of little use for the data considered in this paper, since the switches between presence/lack of agreement cannot be reduced to an alternation between formal and informal styles. These switches sometimes occur within the same construction or discourse fragment, where it is clear that no stylistic transition has taken place. Example (7) is an extract from a CS interview, where the strong quantifier *todo* ‘all’ shows presence and lack of agreement morphology within the same sentence.

- (7) Había todo una plantación de algodón  
 Have-past all-M.SG a-M.SG. plantation-F.SG. of cotton-M.SG.  
 y toda la gente, los antiguos, tenía  
 and all-F.SG. the-F.SG. people-F.SG. the-M.PL old-M.PL had  
 que trabajar bajo el patrón  
 that work-inf. under the.M.SG. owner.M.SG.

“There was an entire cotton plantation and all the people, the previous generations, had to work for the owner”.

#### 4. Morphological variation and learning: optimality-theoretic accounts

Optimality theory was initially proposed as a theory of constraint ranking, interaction and satisfaction in grammar (Prince and Smolensky, 1993). This theory attempts to explain the emergence of optimal or winning tokens (inputs) from a



candidate set as a byproduct of differential constraint ranking and the relative weight assigned to the violation of such constraints by the candidates. This framework can be used to model change and variation in grammar as the result of changes in constraint interaction and satisfaction for the members of a candidate set. This can be done abstractly, considering the emerging of PARSE/FILL or FAITHFULNESS constraints giving rise to new grammars (Gutiérrez-Rexach, 2007), or as a function of learning algorithms, such as the Constraint Demotion Algorithm (Tesar and Smolensky, 1998) or the Gradual Learning Algorithm (Boersma, 1997; Boersma and Hayes, 2001).

Lipski (2006, 2008) develops a proposal to explain Afro-Hispanic gender-agreement variation within the OT-framework. He claims that gender and number features in Yungueño Spanish DPs percolate from the noun to the determiner and eventually to the post-nominal element (cf. Grimshaw, 1997). The author proposes this model after analyzing a variety of gender-agreement patterns encountered in his naturalistic data. He indicates that no case of post-nominal gender concord is found unless pre-nominal elements agree, as shown in (8):

- (8) a. Una curva ancha  
a-F.SG curve-F.SG large-F.SG
- b. Una curva ancho  
a-F.SG curve-F.SG large-M.SG
- c. Un curva ancho  
a-M.SG curve-F.SG large-M.SG
- d. \*Un curva ancha  
a-M.SG curve-F.SG large-F.SG  
'A large curve'

In order to explain these phenomena, Lipski assumes a DP structure in which number and gender features are projected from the Number Phrase projection (NumP), located between DP and NP. He claims that a Spec-Head relation is required for the gender feature to attach to D and, if percolation takes place, also the elements belonging to the extended projection (i.e. adjectives) will show morphological marking. On the other hand, if percolation does not occur, only the D categories (i.e. articles) will agree in gender with N. Therefore, agreement appears first on D, and then eventually on post nominal elements (cf. Lipski, 2008:104–105).

Lipski postulates three OT constraints with the following ranking (cf. also Samek-Lodovici, 2002): 1) **SinglyExpressed (Gender)**, which states that gender is marked only once in DPs, thus accounting for the lack of agreement on postnominal adjectives; 2) **AGR(gender)**, which requires a Spec-Head relation between D and N; 3) **ExtAgr**, which consists of agreement across the extended projection.

Tableau 1.

	<b>SinglyExpressed (Gender),</b>	<b>AGR(Gender),</b>	<b>ExtAgr(Gender)</b>
una curva ancha	!*		
→una curva ancho			*
un curva ancho	i*	*	*
un curva ancha		i*	*

Lipski's proposal not only accounts for the most traditional YS agreement configuration represented in Tableau 1, it also provides a model for the evolution of gender agreement across generations. By adapting Boersma's (1997) Gradual Learning Algorithm, he designs a dynamic constraint re-ranking model, capable of accounting for language variation. Such a model predicts gradual language shift from a system in which agreement was not present (*un curva ancho*) to the most common current configuration (see Tableau 1), in which gender is marked only on D (*una curva ancho*), and finally to a pattern where agreement is fully redundant (*una curva ancha*), as in standard Spanish. The model consists of a constraint distribution where "some constraints can overlap in part of their ranges, while others must be strictly ordered" (Lipski: 2006:31). This accounts for variation and, at the same time, excludes agreement combinations that are not encountered in the data. Lipski's findings back his model in that some speakers may alternate between *un curva ancho* and *una curva ancho*, however cases like *\*un curva ancha* are unheard. This variable account is graphically depicted in Fig. 4, where **SinglyExpressed(gender)** may overlap with **AGR(gen)**, but they never overlap with **ExtAgr(gender)**.

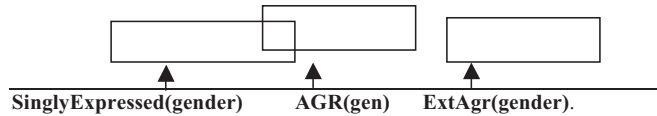


Fig. 4. Lipski's (2006) Gradual Learning algorithm.

Lipski treats gender features on a par with number features. He assumes that both are located in Num. Nevertheless, there is ample evidence suggesting that gender and number features are different and actually head different projections (cf. Picallo, 2008).<sup>9</sup> This contrast is attested in several ellipsis phenomena (Depiante and Masullo, 2001). In stSp and in the Afro-Andean varieties analyzed here, when gender and number agreement operates across DP, a switch in number features across clauses allows nominal ellipsis to obtain (sloppy identity), while differences in gender specification on N block the ellipsis process (9–10).

- (9) stSp
- a. El chico alto y los [e] bajos.  
the-M.SG boy-M.SG tall-M.SG and the-M.PL [e] short-M.PL  
'The tall boy and the short ones.'
- b. \*El chico alto y la [e] baja.  
the-M.SG boy-M.SG tall-M.SG and the-F.SG. [e] short-F.SG  
'The tall boy and the short girl.'
- (10) Afro-Andean dialects
- a. El chico alto y los [e] bajo.  
the-M.SG boy-M.SG. tall-M.SG and the-M.PL [e] short-M.SG  
'The tall boy and the short ones.'
- b. \*El chico alto y la [e] bajo.  
the-M.SG boy-M.SG tall-M.SG and the-F.SG [e] short-M.SG  
'The tall boy and the short girl.'

These phenomena suggest that gender and number features are not located in the same syntactic position. Gender can be analyzed as an uninterpretable feature of N (Picallo, 2008). Number interpretation is located in Num, in a higher projection, where it survives N-ellipsis, which targets the lower *nP* projections (Gutiérrez-Rexach and Sessarego, 2014). Thus, unvalued gender features may trigger agreement processes that are independent of number (Cf. Delicado-Cantero and Sessarego, 2011 for a study of number agreement in YS).

Our data are mostly in line with Lipski's (2006) since almost all the prenominal DP elements show higher rates of agreement than postnominal adjectives. Nevertheless, this is not always the case. In fact, we observed that strong quantifiers almost never agree in gender with N (11).<sup>10</sup>

- (11) a. *Todo las cosa bonito*  
all-M.SG the-F.PL thing-F.SG nice-M.SG  
'All the nice houses'
- b. *Todo la chica de Tocaña*  
all-M.SG the-F.SG girl-F.SG of Tocaña  
'All girls from Tocaña'
- c. *Todo la comunidad*  
all-M.SG the-F.SG community-F.SG  
'All the community'

The above examples and similar ones seem to violate the pre-nominal to post-nominal percolation order, unless we postulate that strong quantifiers are elements external to DP, and then we argue in favor of a different mechanism for the

<sup>9</sup> Picallo (1991) and Bernstein (1993) argue that gender features head a functional category and trigger raising operations. Picallo (2008) treats gender as a formal feature linking grammar to external systems. It is an abstract functional element similar to classifier-like devices.

<sup>10</sup> Lipski (2011) also acknowledges the presence of variable gender agreement on strong quantifiers. For more corroborating data concerning variable agreement phenomena in ABS see Angola Maconde (2000, 2008) and Sessarego (2014b).

Table 4

Gender agreement configurations found in AY, CVS and CS.1.

Grammars	Groups	Agreeing categories	Disagreeing categories	Example
G1S	A	Definite Articles, Demonstratives	Strong quantifiers, weak quantifiers, Prenominal adjectives, postnominal adjectives	(2)
G2	B	Definite articles, demonstratives, weak quantifiers, prenominal adjectives,	Strong quantifiers, postnominal adjectives	(3)
G3	C,E,H	Definite articles, demonstratives, strong quantifiers, weak quantifiers, prenominal adjectives, postnominal adjectives	–	(1)
G4	D,F	Definite articles, demonstratives, weak quantifiers, prenominal adjectives, postnominal adjectives	Strong quantifiers	(4)
G5	G	Definite articles, demonstratives, strong quantifiers, weak quantifiers, prenominal adjectives,	Postnominal adjectives	(5)

checking of the gender feature in languages where they agree in gender and number with N, like Standard Spanish. Additionally, the feature-percolation account of gender agreement runs into problems when compared with data from other Romance varieties in which post-nominal adjectives may agree with N and disagree with D (cf. [Pomino Natascha and Stark, 2009](#) for Fassano Ladin).

A major problem for a constraint-based framework is the great degree of variation attested in our results, even if we only focus on speakers' intuitions. This seems to make it difficult to apply any learning algorithm, since there is no clear winning candidate and there seem to be several competing grammars. Summarizing the results obtained from grammaticality-judgment data, it can be concluded that in the Yungueño community there are three different agreement patterns (Groups A–C); in Chota Valley Spanish we found two configurations (Groups D and E); while in Chinchá Spanish our informants showed three different systems (Groups F–H). When these findings are compared, we can immediately understand that Groups C, E and H use the same grammar, which is the one also found in stSp (1); we also observe that CS Group F matches with CVS Groups D. A summary of all the grammars (Gs) attested in these Afro-Andean dialects can be found in [Table 4](#):

As stated above, when we look at the findings from our naturalistic data collection surveys, the agreement hierarchy in (12) obtains ([Sessarego and Gutiérrez-Rexach, 2011, 2012a,b](#)), which holds across dialects and generations (cf. [Figs. 1–3](#)).

- (12) Demonstratives/Definite Articles > Weak Quantifiers > Prenominal Adjectives > Strong Quantifiers > Postnominal Adjectives.

This hierarchy appears to be respected also by the grammars resulting from our grammaticality-judgment tests (cf. [Table 2](#)). The only exception is G4, where postnominal adjectives agree with N, while strong quantifiers do not. For this reason, and given the fact that also in the quantitative findings strong quantifiers and postnominal adjectives always presented similar levels of agreement, we may postulate a hierarchy which allows for more flexibility, where postnominal adjectives may develop agreement before strong quantifiers (like in G4), thus (12) might be rewritten as (13), where the symbol || allows for the aforementioned equality in preference.

- (13) Demonstratives/Definite Articles > Weak Quantifiers > Prenominal Adjectives > Strong Quantifiers || Postnominal Adjectives.

Given that strong quantifiers are among the elements more resistant to exhibit gender morphology, Lipski's OT agreement ranking is not completely explanatory since it predicts a prenominal to postnominal direction of agreement. One might attempt to save the constraint-based approach by specifying the attested agreement restrictions on a one-by-one basis. In order to characterize all the attested grammars, the following constraints would have to be postulated:

1. NoAgrPostNA: Lack of agreement on postnominal adjectives
2. AgrPostNA: Presence of agreement on postnominal adjectives
3. NoAgrStQ: Lack of agreement on strong quantifiers
4. AgrStQ: Presence of agreement on strong quantifiers
5. NoAgrWQ & PreNA: Lack of agreement on weak quantifiers and prenominal adjectives
6. AgrWQ & PreNA: Presence of agreement on weak quantifiers and prenominal adjectives
7. NoAgrDem & Def: Lack of agreement on demonstratives and definite articles
8. FullAgr: Full agreement across the DP

The systematic “reordering” of such constraints would account for all the grammars reported for YS, CVS and CS, as shown in Tableaux 2–6.

Tableau 2.

	NoAgr PostNA:	NoAgr StQ:	NoAgrWQ& PreNA:	NoAgr Dem&Def:	Agr PostNA:	Agr StQ:	AgrWQ& PreNA:	Full Agr:
→ G1					*	*	*	*
G2			*	*	*	*		*
G3	*	*	*	*				
G4	*		*	*		*		*
G5		*	*	*	*			*

Tableau 3.

	NoAgr PostNA:	NoAgr StQ:	AgrWQ& PreNA:	NoAgrWQ& PreNA:	NoAgr Dem&Def:	Agr PostNA:	Agr StQ:	Full Agr:
G1			*			*	*	*
→G2				*	*	*	*	*
G3	*	*		*	*			
G4	*			*	*		*	*
G5		*		*	*	*		*

Tableau 4.

	Full Agr:	NoAgr PostNA:	NoAgr StQ:	NoAgrWQ& PreNA:	NoAgrDem& Def:	AgrPost NA:	Agr StQ:	AgrWQ& PreNA:
G1	*					*	*	*
G2	*			*	*	*	*	
→G3		*	*	*	*			
G4	*	*		*	*		*	
G5	*		*	*	*	*		

Tableau 5.

	AgrWQ& PreNA:	AgrPost NA:	NoAgr StQ:	Full Agr:	NoAgr PostNA:	NoAgrWQ& PreNA:	NoAgrDem& Def:	Agr StQ:
G1	*	*		*				*
G2		*		*		*	*	*
G3			*		*	*	*	
→G4				*	*	*	*	*
G5		*	*	*		*	*	

Tableau 6.

	NoAgr PostNA:	Agr StQ:	AgrWQ& PreNA:	AgrPost NA:	NoAgr StQ:	Full Agr:	NoAgrWQ& PreNA:	NoAgrDem& Def:
G1		*	*	*		*		
G2		*		*		*	*	*
G3	*				*		*	*
G4	*	*				*	*	*
→G5				*	*	*	*	*

Hypothetically, such reordering of constraints would take place according to a specific learning algorithm, which would factor in constraint demotion (as in [Tesar and Smolensky, 1998](#) approach), gradual learning ([Boersma and Hayes, 2001](#)) or fusional reduction of constraints ([Brasoveanu and Prince, 2011](#)). Nevertheless, such algorithms would not explain why agreement is restricted by a hierarchy such as the one in (13) or why younger generations seem to be moving in the same direction in the three dialects. The approach in [Gutiérrez-Rexach \(2007\)](#) would be more compatible with what we are characterizing here, since constraint demotion (or reranking) is viewed not as a learning strategy but as a series of ordered steps to maximize the satisfaction of an ordered scale. Transitions are dependent on cut points or thresholds on the scale. Applying this reasoning to the present case, the constraint **Max(Agr.Gen)** could be formulated stating that items higher than a given cut point in the scale are better targets for gender agreement. Candidates will incur in a violation of this constraint as a function of whether they allow agreement below such cut point. Even if this account were descriptively adequate it still does not explain what agreement is or what conditions its occurrence.

## 5. Agreement operations

The treatment of agreement has undergone important developments in contemporary syntactic theory, probably reflecting several dimensions of agreement phenomena (cf. [Bosque and Gutiérrez-Rexach, 2009](#)).<sup>11</sup> In the Minimalist Program ([Chomsky, 1995, 2001](#)), syntactic derivations are not modeled as a rule-based process on string sequences. Rather, terminals or “syntactic objects” are viewed as structured objects with features of different sorts. Syntactic operations are strictly dependent on feature valuation and checking. Agree is considered a syntactic operation along with Merge (external merge and internal merge or move). [Chomsky \(2000, 2001\)](#) argues that Agree consists of a relation between two elements within a syntactic domain: a probe and a goal. There are several configurational constraints on Agree ([Preminger, 2011](#)). For agreement to be possible, there has to be a configuration in which an unvalued instance of a feature *F* c-commands another instance of *F*; the probe and the goal have to be sufficiently close to each other (Locality Condition); a goal agrees with a probe if there is not an identical goal closer to the probe (Minimality Condition); and, finally, the goal has to have an unchecked instance of the same uninterpretable feature (Activity Condition). The agreement process can be computationally characterized as a dynamic search procedure, with the probe as seeker and the goal as object. The probe consists of an unvalued set of *phi*-features on a functional head, which is uninterpretable as such and must receive a value from some other syntactic constituent ([Béjar, 2008](#): 133–134).

Recent work on Agree advocates a version of this operation which departs from the previous view of ‘feature assignment’ mechanisms ([Chomsky, 2000](#)). Rather, the process is seen as an instance of ‘feature sharing’ an idea in line with the view of agreement as feature unification common in HPSG ([Pollard and Sag, 1994](#)). Within the probe-goal theory of the syntactic computation, the operation Agree has been reformulated by [Pesetsky and Torrego \(2007\)](#) as in (14).

- (14) (i) An unvalued feature *F* (a *probe*) on a head *H* at syntactic location  $\alpha$  ( $F_\alpha$ ) scans its c-command domain for another instance of *F* (a *goal*) at location  $\beta$  ( $F_\beta$ ) with which to agree;  
 (ii) Replace  $F_\alpha$  with  $F_\beta$ , so that the same feature is present in both locations.

If a goal is valued for *F*, replacing the token-value of the probe with the value of the goal results in an instance of valued *F* substituting for the specification of the unvalued probe. A valued *F* may now serve as the goal for some ulterior operation of Agree triggered by an unvalued, higher instance of *F* serving as a new probe. The result is that a single feature *F* will be shared by several positions, and the process could iterate further. According to [Pesetsky and Torrego \(2007\)](#), items enter the derivation with four different kinds of features specified in (15):

- (15)  $uF[val]$  uninterpretable, valued  
 $iF[val]$  interpretable, valued  
 $uF[]$  uninterpretable, unvalued  
 $iF[]$  interpretable, unvalued

<sup>11</sup> On the one hand, agreement can be viewed substantively as the specific morphological marking or exponence of a term. It can also be understood relationally as a property shared by two or more elements. Finally, agreement can be treated as an abstract property or operation and the overt manifestation of such a property or operation on syntactic objects. In the latter developments of the Government & Binding framework of the late 80s and 90s, the IP projection was split in two individualized agreement atoms projecting their own maximal phrase: subject agreement (AgrS Phrase) and object agreement (AgrO Phrase). This split, in conjunction with a hypothesis such as Generalized Spec-Head Agreement ([Koopman, 2000; Sportiche, 1998](#)), assumed that all syntactic relations were reducible to feature-checking operations and such operations only took place in designated projections. Subjects would only be identified as such when checking their abstract agreement feature with the verb under AgrS, etc. Agreement processes internal to DP were assumed to take place under NumP or a nominal AgrP.

Adger and Smith (2005) and Adger and Svenonius (2011) argue for characterizing syntactic variation in terms of (un)interpretable features. Certain uninterpretable features may be present/active in one category or element but absent/inactive in another. Since these features are uninterpretable, the difference would have no semantic repercussion. Thus, choosing between objects *x* or *y* differing only in the nature or presence of an uninterpretable feature would make them equally legitimate for a convergent derivation and also semantically equivalent. Therefore, syntactic variation without semantic import can be formalized as dependent on the specification and activity of uninterpretable features in a derivation. As expected, syntax *per se* remains invariable or “perfect” (Brody, 2003), given that variation is located only in the lexical component. Variation will occur when one item or another enters the numeration and takes part in a syntactic derivation. Several (social and idiolectal) factors may affect the outcome: ease of lexical access (probably linked to frequency of use), speaker–hearer relationships, social identity, etc. (Adger and Smith, 2005: 164). Such a variable activity for the gender feature is what we observe when analyzing the YS, CVS and CS DPs. It is important to highlight that this framework does not necessarily view feature variation as an instance of dialectal variation. Rather, it can also represent idiolectal variation and feature activity is not an on/off switch that applies across the board to all the speakers of a dialect.

An element drawn from a numeration or array of lexical resources with a valued feature will be specified as *uF* (i.e. *u*(n)terpretable*F*(eature)) if the feature is uninterpretable and as *iF* (i.e. *i*(n)terpretable*F*(eature)) if the feature has an interpretation at LF. A feature *F* that has not participated in Agree and is not already valued is annotated by an empty pair of brackets: *uF*[] (or *iF*[]). And, after the co-valuation or unification operation (Agree) takes place, it turns into *uF*[val] (or *iF*[val]). On the other hand, an element which is not active for Agree and/or cannot participate as probe or goal of the Agree operation will be specified as having a default specification for such a feature at the interfaces, annotated as *uF*[0]. As stated above, the Agree operation may be blocked by a violation of several conditions (locality, activity, etc.). The feature sharing process across categories bearing a specification for the uninterpretable feature *F* is exemplified below. The first three elements in (16) agree, i.e. they participate as probes or goals in the Agree operation in a serial fashion. The last one does not and lacks the same value as the other items:

- (16) a. *uF*[] ...*uF*[val] → (Agree) *uF*[val] ...*uF*[val]  
 b. *uF*[] ...*uF*[val] ...*uF*[val] → (Agree)  
     *uF*[val] ... *uF*[val] ... *uF*[val]  
 c. *uF*[] ...*uF*[val] ...*uF*[val] ...*uF*[val] →  
     ~~*uF*[0] ...*uF*[val] ...*uF*[val] ...*uF*[val]~~

There has been much debate on the status of gender features in generative grammar. The term *concord* traditionally distinguishes this pattern of agreement within DP from the canonical specifier-head type. Agreement theory as developed in pre-minimalist work accounts only for the latter. Carstens (2000) argues that the more articulated feature-checking theory developed in Chomsky (1995) provides an account of concord, because checking relations are more numerous in this framework and are intrinsically symmetrical. Similarly, Baker (2008) also aims at extending the special theory of subject–verb agreement to concord phenomena, by modifying Chomsky’s (2000, 2001) Activity Condition. Carstens (2010) specifically argues that, in languages with grammatical gender systems, the gender of nouns is uninterpretable yet intrinsically valued. She presents evidence that nominal gender is infinitely reusable as an “active goal” feature in successive Agree relations, unlike Case, and concludes that Agree relations do not lead to *uF* deactivation/deletion marking for nominal gender. According to Carstens’ phonological theory of valuation, the conversion of *uF* from [–value] to [+value] is phonological in nature, providing information on how *uF* will be pronounced. Hence probe features do not become potential goal features upon valuation in Agree. This theory also predicts that the overt expression of agreement and concord might differ even if they are both the manifestation of general activity/probe configurations.

## 6. Locality, agreement and variation

Our evidence and data presented in Section 3 are consistent with recent research on the acquisition of gender agreement in DP by second language learners. There is evidence from Second Language Acquisition (SLA) and first language acquisition that gender and number are acquired differently. Gender is acquired quickly and without errors by L1s while L2 and heritage Speakers (HS) have difficulties mastering gender. No group shows difficulties acquiring number, although it emerges considerably later than gender (Socarrás, 2011). Hawkins (1998) showed that English students speaking French as a second language presented more agreement on definite articles than on indefinite ones (weak quantifiers), and also more agreement on determiners than on adjectives. Bruhn de Garavito and White (2000) report very similar findings for L1 French teenagers with one or two years of classroom exposure to L2 Spanish. In an oral interview, subjects were asked to describe pictures. Despite a difference in proficiency levels (lower versus advanced



levels) between Hawkins' (1998) study and this one, the results were comparable: a high rate of accuracy observing more problems with indefinite versus definite articles and more problems with adjectives than with articles in general. More recently, Franceschina, 2005 tested advanced speakers of Spanish coming from a variety of backgrounds (Italian, Portuguese, English, Arabic, German and French) and reaches similar conclusions. Studies of agreement patterns of HS show similar patterns of agreement mismatches, affecting indefinite/definite determiners and adjectives (Montrul et al., 2008; Martínez-Gibson, 2011). For example, Alarcón (2011) shows that HS are more accurate with articles than with adjectives. Although we are not claiming here that ABS speakers are SL learners, since they are obviously native speakers of ABS, it is interesting to observe that there are clear parallels between the evolution of agreement in ABS and the development patterns of SLA of gender. This would strongly suggest that similar or identical structural mechanisms are at play in both cases (cf. Pienemann, 1998; Sessarego, 2013b).

Bruhn de Garavito and White (2000) and Socarrás (2011) claim that non-agreeing instances (or 'mismatches') are the manifestation of a default gender marking, which in Spanish is manifested as the masculine form (cf. Harley and Ritter (2002) for default values in general). Here we will adopt this proposal and postulate that such default marking is the morphological output of an uninterpretable feature with a default, i.e. non agreeing, value ( $uF[0]$ ). As stated in the previous section, such marking is the phonological pronunciation of the value resulting from lack of activity under the Agree operation.<sup>12</sup> Thus, a probe with an unvalued gender feature ( $uGen[]$ ) will receive a default value ( $uGen[0]$ ) and such value when transferred to the sensory-motor interface will be phonologically read as the masculine form in regular concord elements such as determiners and adjectives. Notice that such result should be differentiated from the non-convergent transfer of an unvalued feature, which will result in ungrammaticality.

In the following examples from YS we see the results of such variation in agreeing and non-agreeing configurations:

- (17) a. [ Mucho [NumP [nP [NP cerveza [AP frío]]]]]  
 $uGen[0]$ ..... ~~$uGen[fem]$~~ ..... ~~$uGen[0]$~~
- b. [ Mucha [NumP [nP [NP cerveza [AP frío]]]]]  
 $uGen[fem]$ ..... $uGen[fem]$ ..... ~~$uGen[0]$~~
- c. [ Mucha [NumP [nP [NP cerveza [AP fría]]]]]  
 $uGen[fem]$ ..... $uGen[fem]$ ..... $uGen[fem]$

Summarizing the results from CS, YS and CVS we obtain five different agreement configurations or 'grammars' (Gs) in these dialectal/idiolectal varieties:

- (18) G1: Gender agreement applies only to definite articles and demonstratives ([example 2]);  
 G2: Gender agreement applies to all categories but strong quantifiers and post-nominal adjectives ([example 3]);  
 G3: Gender agreement applies to all categories ([example 1]);  
 G4: Gender agreement applies to all categories but strong quantifiers ([example 4]);  
 G5: Gender agreement applies to all categories but postnominal adjectives ([example 5]);

When we compare these findings with the sociolinguistic results in our study, we see that in all these varieties, gender agreement develops across categories and across generations in a systematic way, as argued above. The gender-agreement ranking in (13) is maintained across the grammatical categories analyzed and across generations of speakers. The grammatical patterns in (18) also align with the hierarchy in (13): no grammar shows agreement on weak quantifiers unless definite articles agree too; there is no agreement on post-nominal adjectives unless pre-nominal show it too.

The evolution of gender agreement can be explained as the gradual development of gender concord across DP elements. In Sessarego and Gutiérrez-Rexach (2011), this agreement order is attested for YS and a general Local-Agreement Gradient Function (LAGF) is proposed. According to LAGF, agreement (sharing) obtains, as the result of the Agree operation, in a local relationship. In other words, if a functional head which is a potential probe for Agree is closer to the goal than an alternative potential probe, the former will become the trigger of the Agree operation. Here we are presenting a revised version of such function:

<sup>12</sup> In Sessarego and Gutiérrez-Rexach (2011, 2012a) it was claimed that agreement mismatches were due to the presence or absence of the relevant gender feature, the latter annotated by specifying the relevant terms with a 'no-Gen[]' mark. Nevertheless, we agree with an observation by an anonymous reviewer, namely that the assumption that an item X could be endowed with 'no-Fs', would at best cause violations of Economy, because such (unvalued) no-Fs cannot have effects at any of the interfaces.

- (19) (i) If A and B are potential probes for feature F in goal G and B is closer (more local) to G than A, then Agree can apply between A and G only if it applies between B and G;  
 (ii) A functional element becomes a potential active probe for F when it is specified as unvalued for F; and  
 (iii) There is speaker variation with respect to the specification and activity of F.

Variation is introduced when a functional head becomes active for a given unvalued feature, in our case Gender, and thus can participate in agreement operations. What the data seem to indicate is that there is a progression in the extension of agreement across generations. Dynamically speaking, the progressive introduction of unvalued active Gen features in functional categories within DP, coupled with locality of Agree, yields an increasing ability to display agreement on less local or more distant functional heads acting as probes. Notice that we do not treat gender as an independent projection within DP, since the existence of the Agree operation and the mechanism of co-valuation makes it unnecessary the postulation of agreement categories. Functional heads with the categorial [D] specification (definites, etc.) are needed as probes to close a DP phase, thus they also become the first targets for co-valuation. Demonstratives can be assumed to be generated or move to the specifier of DP (Brugè, 2002). Thus, G1 represents the stage where only determiner probes associated with the categorial feature D are active probes for the application of Agree to *uGen*.<sup>13</sup>

We will assume the Spanish DP structure proposed in Gutiérrez-Rodríguez (2008), following arguments by Giusti (1993) and Sánchez López (1993) among others. According to this proposal, the structure of a full-fledged Spanish quantified phrase, such as *todos los muchos coches* 'all the many cars', is as follows:

- (20) [QPs todos [DP los [QPw/AP muchos [coches]]]

There are two positions for quantificational determiners in Spanish and Italian. The higher one corresponds to strong quantifiers (QPs), whereas the lower one corresponds to weak quantifiers, which can be considered adjectival in nature (Abney, 1987). DP is the only obligatory projection for the DP phase, so in G1 only probes inserted at the head of the phase are active for gender agreement. Neither QPs nor QPw or APs are active probes for gender, thus receiving a default value.

Weak quantifiers are closer to the gender-valued N goal than strong quantifiers and thus are better probes for gender agreement, representing the agreement stage G2. The fact that prenominal adjectives also agree in this stage follows directly from the long-advocated structural equivalence between weak quantifiers (cardinality counters) and this sort of adjectives. G4 and G5 represent the progressive extension of the Agreement operation to strong quantifiers and postnominal adjectives. The delay in the extension of agreement to strong QPs follows directly from the fact that they are more distant or less local than D for co-valuation. The contrast between prenominal and postnominal adjectives and the fact that the latter undergo agreement later lends indirect support for a proposal on the derivation of adjectives along the lines of Cinque (2010), who claims that modified nouns (phrasal constituents) raise for feature-checking purposes. According to Cinque, prenominal qualifying adjectives are direct modifiers to the noun. They are thus in a more local relation to N than postnominal ones<sup>14</sup>:

- (21) [[Adj N]<sub>i</sub> Adj t<sub>i</sub>]

The stage G3 indicates complete convergence with standard Spanish. We can then conclude that gender concord is a gradient operation, subject to a locality measure on agreement.<sup>15</sup> Such gradience is attested cross-generationally and, more significantly, within a single speaker. We will address this important issue in the next section.

<sup>13</sup> Notice that the characterization of locality is restricted or relativized here to active probes. For example, in (i) the determiner agrees in gender with the noun despite the presence of an "intervening" adjective:

(i) Todo las mucho cerveza  
 all the-fem much beer-fem  
 'All the many beers'

Nevertheless, the adjective would not intervene and be a more local probe for agreement in this case, since at the relevant stage (G1) adjectives are not active probes for gender concord.

<sup>14</sup> Elements such as post-nominal possessives behave like post-nominal adjectives with respect to concord and are introduced as agreeing elements in a stage later than prenominal adjectives. This would be consistent with the less local nature of this elements (Ticio, 2010).

<sup>15</sup> As observed by a reviewer, the hypothesis underlying this paper is that the observed concord mismatches amount to whether or not functional categories or modifying adjectives fail to show concord overtly with N. In other words, the basic mechanisms accounting for concord do not vary cross-dialectally. The observed differences would reside in the externalization (after transfer to the sensori-motor systems) of such concord elements, following the hierarchical structure of the DP architecture. This hypothesis avoids having to adopt the assumption that the category "noun" of the older generations of Afro-Hispanic speakers is different from that of the younger ones, as claimed in Sessarego and Gutiérrez-Rexach (2011) who proposed that non-concord elements lack grammatical gender in the former group.

## 7. Grammar evolution across generations and domains

Far from stipulating what the sequence of DP activations is, we would like to propose an evolutionary algorithm capable of capturing the development of gender agreement across generations and grammatical domains. Within the formal approach of Principles and Parameters (P&P) (Chomsky and Lasnik, 1993), languages can essentially be seen as combinations of a finite set of fundamental principles, which are common to all varieties, and a set of binary parameters that determine syntactic variability among languages. Within this framework, principles are “language-invariant statements” (Chomsky, 1995:25), whereas parameters must be set for certain values. Principles are part of a genetically innate Universal Grammar (UG) which all humans possess. As such, they do not need to be learned by exposure to language. Rather, exposure to language merely triggers the parameters to adopt the correct setting.<sup>16</sup> For this reason, instances of language internal or idiolectal variation have often been disregarded as belonging to E-language variety phenomena, and not constituting critical evidence for unveiling the nature of I-language. As a result, formal syntactic theories have traditionally been built on partly-idealized standard languages, on the basis of well-formedness judgments coming from a limited set of informants. As stated in the first section, parameter resetting or change is viewed in diachronic terms but never as a potential synchronic process.

Nevertheless, it is obvious that variation is a component of human language. It can be viewed as the result of the interplay between computational constraints and evolutionary dynamics (Nowak et al., 2002). These two different aspects may introduce a tension forcing change in grammar or allowing variation. In other words, strict computational requirements, as modeled in the Minimalist Program, seem to require uniform processes of syntactic computation and identical outputs among speakers. Nevertheless, several internal and external factors seem to favor evolution in grammatical processes. At a given point in time, the introduction of evolutionary dynamics among speakers belonging to the same generation creates variation. If speakers do not belong to the same generation, variation becomes more obvious and is labeled as ‘change’.<sup>17</sup> In the case under discussion in this paper, it seems reasonable to hypothesize that what is causing the variation data in the three dialects is the introduction of gender agreement features under different categories, which become the target of the Agree operation when they become active.

Nowak et al. (2001) propose a framework to study the evolutionary adaptation of grammar to new scenarios within UG. There is a differential probability that a child learning from a parent with a given grammar will speak that same grammar (normally a very high probability). The average fitness or grammatical coherence of the population represents the probability that individuals understand each other when speaking; provided that the total population size is constant. In other words, a population with very high rates of grammatical variation will exhibit low grammatical fitness or coherence. Thus, if we assume high rates of language change, the only stable equilibrium solution consists of having all grammars occurring at similar frequencies, so that almost everybody would end up speaking a different language. At the other side of the spectrum, we would have a scenario in which all the members of a given community instantiate the same grammar, so fitness or coherence is maximal and there is zero variation. Additionally, according to Nowak et al. (2001) model, candidate grammars could differ in their overall performance. For example, some grammars could be more able of describing some concepts or they could be less ambiguous than others. In such terms, different grammars would be assigned different fitness values, according to the specific external (social) circumstances. The authors picture an evolutionary process where the population may switch to a fitter candidate grammar.

If we apply this idea to the YS, CS and CVS scenarios, the main consequence is that we predict gradience of nominal concord among the members of the community. What is left unexplained is the particular direction of agreement that we observe in these varieties. As argued in Sessarego and Gutiérrez-Rexach (2011), the Local-Agreement Gradience Function (LAGF) predicts that if a functional head which is a potential probe for Agree is closer to the goal than an alternative potential probe, the former will become the trigger of the Agree operation. Variation is triggered as a by-product of differential specification: whether a functional head is specified as  $\mu\text{Gen}[\text{val}]$  or  $\mu\text{Gen}[0]$  at the point of transfer to the interfaces, following its ability to act as a probe or not. The progressive introduction of active unvalued Gen features inside the DP, allows them to act as probes for agreement. The probe-goal sharing process is limited by locality, in the sense that only when a more local functional head is active as a probe is the more distant active too. The data from these three dialects indicates that this

<sup>16</sup> Chomsky (2000) compares the language faculty to a switch box. This box consists of two components: a fixed network, which are the innate principles of language, and several switches, which are options determined by experience, as binary parameters that can be set on or off. Different parametric combinations lead to different grammars. According to the Principles and Parameters model (Chomsky and Lasnik, 1993), children are assumed to learn language from an undetermined input represented by their parents and their social environment. During this process, acquisition can be imperfect, thus involving parameter resetting and therefore cross-generational language change. Chomsky and Lasnik's (1993) model does not allow parameter resetting during the lifespan of the speaker; in their view, once a parameter has been set, it is for good.

<sup>17</sup> For Adger and Smith (2005), variation in syntax originates as the result of differential uninterpretable-feature specifications in the lexicon. When a given property is introduced in a grammar, if it is successful it will expand among a given population and become the prevalent option. If an uninterpretable feature is specified as unvalued, it will become the target for syntactic operations and display overt properties at the output such as agreement.

innovation can take place quite rapidly, taking only three generations to transition from an impoverished overt-agreement system to a generalized one. The rate of progression is different in them, but the trend is similar.

One might alternatively hypothesize that gender agreement is subject to evolutionary pressure triggering change, a pressure that would start a “cascade” of different agreement configurations, as a path instantiating a change in progress from no agreement or impoverished agreement to full agreement across heads. Such a hypothesis might be combined with the negation of the computational hypothesis, in other words, there are no grammatical constraints regulating a specific change path. This negative hypothesis can be refuted just by looking at the data presented from the three vernaculars studied in this paper. In all of them agreement instantiation seems to follow a hierarchical order in which certain elements agree first and, only if there is agreement between these elements, it is possible to add agreement to others. The fact that this hierarchy can be easily matched to a hierarchy of functional projections in the Spanish DP strongly suggests that the increasing rate of agreement is mediated by locality constraints. Thus, our paper shows that the evolutionary hypothesis is dependent on the computational hypothesis.

This paper does not claim that the path of agreement will be uniform across languages. A close inspection of our data clearly shows that older speakers of CVS seem to be able to establish agreement with distant targets to a higher proportion than their generational counterparts in YS. What this indicates is that the rate of convergence is faster in CVS than in YS, something probably explained by external social factors. Technically, the fitness point for CVS is higher across grammatical varieties in CVS, at least with respect to gender configurations.

In any case, the gender agreement domain has evolved cross-generationally in CS, YS and CVS and it has followed the same specific developmental sequence in each case. In line with Nowak et al. (2001) model, we claim that external factors are pushing these Afro communities toward abandoning their traditional dialects in favor of “fitter”, less stigmatized grammars.

## 8. Conclusions

In this paper, we have presented data on the general principles regulating gender agreement in three Afro-Hispanic vernaculars approximating to more prestigious Spanish dialects. We hypothesize that these data instantiate a scenario of morphological variation, instantiating general mechanisms of feature valuation and agreement. Variation is a component of human languages and it emerges as the result of the interplay between computational or derivational constraints on syntactic objects and evolutionary dynamics stemming from different behavior of the Gender feature under Agree. Our goal has been to characterize the ingredients of gender variation in a systematic fashion, as computational differences in feature activity and by restrictions on syntactic operations: more specifically on Agree. The main consequence of this situation is that contact standard Spanish varieties leads younger speakers to apply Agree to less local probes.

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