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Nominal agreement in the interlanguage of Dutch L2 learners of Spanish

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Abstract: Inflectional morphology causes persistent difficulties for second language (L2) learners (Montrul, Silvina & Kim Potowski. 2007. Command of gender agreement in school-age Spanish-English bilingual children. *International Journal of Bilingualism* 11(3). 301–328; Montrul, Silvina, Israel de la Fuente, Justin Davidson & Rebecca Foote. 2013. The role of experience in the acquisition and production of diminutives and gender in Spanish: Evidence from L2 learners and heritage speakers. *Second Language Research* 29(1). 87–118). Learners operate with a default gender value, and overgeneralize the masculine forms of determiners and modifiers (White, Lydia, Elena Valenzuela, Martyna Kozłowska-Macgregor & Ingrid Leung. 2004. Gender and number agreement in nonnative Spanish. *Applied Psycholinguistics* 25(1). 105–133; Schlig 2003). 111 essays written were collected containing 799 correct uses and 281 errors from Dutch students whose written ability in Spanish is A2 (Common European Framework). The results show that singular masculine nominal agreement marking at the determiner is significantly better produced by Dutch L2 learners of Spanish than when the marking of nominal agreement is plural, feminine or at the adjective. This study corroborates the previous results where learners operate with a default gender value and overgeneralize the masculine forms of determiners. Also these results show that L2 learners of Spanish are significantly less accurate in gender agreement with adjectives than with determiners.

Keywords: SLA, nominal agreement, Spanish L2, Crosslinguistic study, Dutch L1 gender default

1 Introduction

A central issue in Second Language (L2) acquisition research is whether L2 learners are capable to develop an implicit grammar of the target language, specifically

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grammatical features that are not present in their first language (L1) (Hawkins and Chan 1997; Alarcón 2011). The purpose in the present investigation is to understand and describe the non-target-like structures of nominal agreement in the interlanguage used in written production of Dutch L2 learners of Spanish. To be able to do so, we will first identify the similarities and differences between Spanish and Dutch nominal agreement. Our empirical data consists of free written production data collected and analysed in order to find correlations and differences with the results of previous research on the acquisition of nominal agreement. The present study explores the interlanguage phenomena in written production of Dutch L2 learners of Spanish, focusing on nominal agreement. Previous research has shown that inflectional morphology causes persistent difficulties for L2 learners (for gender specific studies see Alarcón 2011; Montrul and Potowski 2007; Foote 2008; Montrul et al. 2013; Martínez-Gibson 2011; Finnemann 1992; Fernández-García 1999 for number and gender studies, see; Franceschina 2001; Hawkins and Franceschina 2004; Bruhn de Garavito and White 2002; Sagarra and Herschensohn 2010). Studies using online and offline methodology have concluded that processing number agreement is less difficult than gender agreement (Bruhn de Garavito and White 2002; Gillon-Dowens et al. 2004, Gillon-Dowens et al. 2009; McCarthy 2008; Tokowicz and MacWhinney 2005; White et al. 2004). With regard to gender, and the differences between Determiner-Noun agreement and Noun-Adjective agreement, research on L2 speakers has shown that Noun-Adjective agreement is mastered later than Determiner-Noun agreement (Finnemann 1992; Fernández-García 1999) proving a different status of Determiner-Noun agreement and Noun-Adjective agreement. For the present study, data from written production has been collected from compositions by Dutch students enrolled in Spanish courses at the University of Leiden (Netherlands). A total of 111 essays were collected containing agreement matches and mismatches. Results show that singular masculine nominal agreement marking on the determiner is significantly better attained by L2 learners of Spanish than marking of other forms of agreement with the NP (nominal agreement for plural, or feminine nouns, or on the adjective). This study, by analysing unique data from Dutch L1 learners of Spanish L2, corroborates the results found by other studies using oral production methodology (White et al. 2004, among others) where learners operate with a default gender value and overgeneralize the masculine forms. Our results also concur with their finding that L2 learners of Spanish are significantly less accurate in gender agreement on adjectives than on determiners. The language pair L1 Dutch-L2 Spanish is the novel contribution of this study to the field. By adding a different L1 (which is usually English) we are able to claim broader generalizations. This study contributes to this line of research by showing that the interlanguage of Dutch speakers contains the same acquisitional errors as when the L1 of the learners does not have gender. The contribution to the field is therefore not only another

language pair, but we also show that L1 gendered languages also take the masculine as the default form in Spanish L2. What's more, this study contributes to this line of research by showing that the interlanguage of Dutch speakers contains the same acquisitional errors as those that occur when the L1 of the learners does not have gender.

2 Theoretical background

2.1 Nominal agreement in Spanish

Spanish morphologically encodes for both gender and number. Gender agreement and Number agreement occur between nouns and other elements in the sentence such as determiners and adjectives, which is the focus of the present study (Antón-Méndez et al. 2002). Nouns in Spanish can be singular or plural. As the *Nueva Gramática de la Lengua Española* (RAE 2009) states, ‘number in nouns provides quantitative information about the entities that are being designated, while number in adjectives does not provide significant information, it is only there for agreement constraints’¹ (1.8 k). As can be seen in examples (2) and (3), Spanish marks for plural via an *-s/-es* suffix (White et al. 2004).

- (1) *el perr-o negr-o*
 the_{-MASC-SG} dog_{-MASC-SING} black_{-MASC-SG}
 ‘The black dog’

- (2) *l-o-s perr-o-s negr-o-s*
 the_{-MASC-PL} dog_{-MASC-PL} black_{-MASC-PL}
 ‘The black dogs’

- (3) *l-a-s sill-a-s negr-a-s*
 the_{-FEM-PL} chair_{-FEM-PL} black_{-FEM-PL}
 ‘The black chairs’

As far as gender is concerned, we classify nouns in terms of their grammatical gender, mostly arbitrary, meaning that the majority of nouns in Spanish have no relation between their grammatical gender and any concept of female or male properties in the real world, and, although it might overlap, grammatical gender

¹ Author's translation.

is different from intrinsic gender (White et al. 2004). The class of semantic gender nouns or intrinsic gender noun includes a small set of animate nouns whose morphological endings correspond to their biological sex:

- (4) *dueña*
owner-FEM.SG
'female owner'
- (5) *dueño*
owner-MASC.SG
'male owner'

However, there are some animate nouns, such as *el/la víctima* (the victim) or *el/la atleta* (the athlete) whose overt noun morphology is invariant but exhibit gender agreement on determiners and adjectives (Antón-Méndez et al. 2002).

Spanish gender is partially predictable since nouns ending in *-o* in Spanish tend to be masculine, while nouns that end in *-a* tend to be feminine (Harris 1991; Corbett 1991; Green 1988). This predictability holds for 68.15% of all nouns (O'Rourke and Van Petten 2011). These nouns are considered to be morphologically marked for gender or have overt morphology, and they are known as transparent nouns. However, as is also known, this is not always the case since we can find a large number of masculine nouns that end in *-a* and a smaller number of feminine nouns ending in *-o* (White et al. 2004). The rest of the nouns do not have overt gender morphology, or are ambiguously marked for gender (most of them ending in a consonant or in other vowels than *-o* and *-a*) and they are known as opaque nouns. Adjectives and determiners always show gender and number agreement with the head noun (in local or long distance domains). Adjectives that are marked for gender show gender agreement by means of the already mentioned canonical gender marking (*-o* and *-a*) (examples 6 and 7 below). However, there are also adjectives that lack overt gender agreement. Thus, regardless of the gender (but not number) of the head noun that they modify, these adjectives do not show an overt morphological marking (example 8).

- (6) *la mesa pesad-a*
the-FEM.SG table-FEM.SG heavy-FEM.SG
'the heavy table'
- (7) *el libro pesad-o*
the-MASC.SG book-MASC.SG heavy-MASC.SG
'The heavy book'

- (8) *l-a mesa azul*
 the-FEM.SG table-FEM.SG blue.SG.
 ‘The blue table’
- (9) *l-o-s libro-s pesad-o-s*
 the-MASC.PL book-MASC.PL heavy-MASC.PL
 ‘The heavy books’

The components involved in the agreement process (both for gender and number) can be adjacent or nonadjacent; in other words, the agreement can be either local or long distance (O’Rourke and Van Petten 2011; Keating 2009; Alemán-Bañón 2012). Examples (10) and (11) below represent adjacent agreement and long distance agreement respectively.²

- (10) Adjacent
un-a casa pequeñ-a cuesta mucho
 a-FEM.SG house-FEM.SG small-FEM.SG costs a lot
 ‘A small house costs a lot’
- (11) Non-adjacent
l-a-s casa-s son bastante pequeñ-a-s
 the-FEM.PL houses-FEM.PL are quite small-FEM.PL
 ‘The houses are quite small’

2.2 Nominal agreement in Dutch (L1)

Dutch, as Spanish, has a two-way gender system; it distinguishes between *de* and *het* words (*de* and *het* are the definite singular articles). Nouns can be non-neuter (*de*-word) or neuter (*het*-word). Grammatical gender is essentially random (also described as arbitrary in the literature (Deutsch and Wijnen 1985; Donaldson 1987; Haeseryn et al. 1997), except for morphologically complex words³ (for example, nouns ending in *-isme* like *communisme* ‘communism’ are always *het*-words, deverbal nouns ending in *-ing* like *wandeling* ‘walk’ are always *de*-words).

² In this case, they are predicative adjectives and attributive adjectives, respectively.

³ There is some debate as to whether this is the most accurate formulation of this phenomenon (Fred Weerman, pers. comm.), but for the purposes of this study we will stick to this description.

The grammatical gender of a noun is reflected in agreement marking: determiners, adjectives (and pronouns) agree with the gender of the noun. The adjective may or may not appear with the ending *-e* /ə/. The ending *-e* appears everywhere in attributive position except for in neuter, singular and indefinite cases. The choice conditions are therefore syntactic: the ending *-e* will appear on the adjective when it is used attributively and the noun:

- (a) is a *de*-word; or
- (b) is a *het*-word and the noun phrase is definite or plural

In example 12, the ending *-e* appears on the adjective because it is attributively used and the word *tafel* is a *de*-word; in 13 the ending *-e* is not present because although the adjective is adjacent (and attributive), the word *book* is a *het*-word and the article is indefinite and singular.

- (12) *een zwaar-e tafel*
 a heavy-DEF.SG table.SG
 'A heavy table'
- (13) *een zwaar boek*
 a heavy-NEUT.SG book-NEUT.SG.
 'A heavy book'

Dutch also distinguishes between singular and plural nouns. Morphologically speaking, pluralisation is generally signalled by adding one of two endings: the ending *-(e)n* as in example 14 and 16 or the ending *-s* as in example 15 (Booij 2002). The plural definite article is always *de* and the adjective modifying plural nouns in prenominal position receives an *-e* ending.

- (14) *hond-en*
 dog-PL
 'Dogs'
- (15) *vader-s*
 father-PL
 'Fathers'
- (16) *de grot-e hond-en*
 the-PL big-PL dog-PL
 'The big dogs'

2.3 Comparison between Spanish and Dutch nominal agreement

By comparing nominal agreement in these two languages, we observe two shared characteristics: in both languages gender is an inherent feature of nouns and both languages have a two-way gender system. However, Spanish gender is more transparent than Dutch, due to its richer inflectional morphology: as mentioned in the previous section, most nouns in Spanish show their gender and number systematically in agreement. Moreover, gender and number agreement inflection on adjectives is more consistent in Spanish, as it must appear in all conditions, whether in Dutch it only shows in a subset of NP constructions, as illustrated in examples (12) and (16) above, where the ending *-e* needs to be present.

3 L2 acquisition of grammatical gender

The acquisition of grammatical gender, in Spanish or any other language with gender, involves acquiring gender both at the lexical level, by learning the meaning of the noun with its inherent gender feature (gender assignment). Gender assignment as carried out through cues from determiners with overt/transparent morphology that occur in prenominal agreement in Spanish is an inherent property of Spanish nouns and it is thought to help the acquisition of nouns (Audring 2008). At the syntactic level, the acquisition of grammatical gender involves establishing the correct agreement between the noun and the other elements in the phrase (gender agreement). Therefore, learning Spanish entails acquiring both the lexical properties of gender as specified in the lexicon, and the syntactic agreement system. In the present study, we will refer to both operations as agreement, pronominal agreement as Determiner-Noun agreement and post-nominal agreement as Noun-Adjective agreement. With respect to number agreement, this type of agreement only requires the proper agreement with other morphologically marked elements in the sentence. This section is structured according to learner type. We will begin with a description of previous work on L2 learners and end by accounting for work on bilinguals, specially heritage speakers. This literature has shown that not only for L2 learners but also for bilinguals a particular difficulty seem to arise when producing nominal agreement. Even heritage speakers, who acquired Spanish from a very early age, with nearly as much input (if not the same) as monolinguals, make persistent errors in their use of gender. It seems to be the language

combinations in both learners and bilinguals which act as the trigger for this type of errors, and not so much the learner type.

As already discussed in the paper so far, and also pointed out in Audring (2008), the grammatical category of gender is part of a native speaker's linguistic competence. Gender categorizes nouns into two or more genders or classes (feminine and masculine in Spanish), and Determiner-Noun agreement is considered to be determined by the lexical properties of a noun (Montrul and Potowski 2007). Also, the morphological gender rules (*o-* for masculine nouns and *-a* for feminine nouns) should enable the speaker of the language to assign gender to new nouns, such as loanwords. Some studies are not concerned with gender agreement due to considering Noun-Adjective (or agreement with other elements in the sentence) no more than the overt morphological manifestation of the assigned representation in the noun (Audring 2008). However, as explained below, some studies have reported (Montrul and Potowski 2007; Montrul et al. 2008; Martínez-Gibson 2011) that a successful agreement between the determiner and the noun does not guarantee successful agreement with other elements.

Research has shown that there seems to be some inability of L2 learners to fully acquire grammatical features in the L2. This fact has been attributed to the deficiency in acquiring grammatical features that are not present in the first language (Fundamental Difference Hypothesis proposed by Bley-Vroman 1989; Failed Functional Features Hypothesis by Hawkins and Chan 1997). Other accounts claim that second language learners are able to acquire these features in the L2 even though they are not present in their L1 (Full Transfer Full Access Hypothesis by Schwartz and Sprouse 1996 and Missing Surface Inflection Hypothesis, Prévost and White 2000).

White et al. (2004) investigated the acquisition of Spanish gender by speakers of French, a gendered language, and English, a language with no gender marking. The collected data was oral production and an interpretation task. Both gender and number agreement were analysed focusing on determiners and adjectives. They found significant effects of proficiency (three proficiency groups were tested). Results revealed that there was no major effects for advanced and intermediate learners, but low proficiency learners were significantly different from native speakers. There were no significant effects of L1. The results were consistent with the Full Transfer / Full Access hypothesis. FT/FA (Schwartz and Sprouse 1996) hypothesizes that the initial state of L2 acquisition is the final state of L1 acquisition (Full Transfer) and that failure to assign a representation to input data will force subsequent restructurings, drawing from options of Universal Grammar (Full Access).

Research in oral production with Spanish second language learners has found that Noun-Adjective agreement is a source of persistent difficulties for L2 learners (Finnemann 1992; Fernández-García 1999; Montrul et al. 2013) in comparison to Determiner-Noun agreement. This shows the different status of Determiner-Noun agreement and Noun-Adjective agreement, as L2 learners of Spanish are significantly less accurate in gender agreement with adjectives than with determiners. In bilingual acquisition where one language has gender agreement and the other does not, it has been shown that Determiner-Noun agreement is mastered earlier than Noun-Adjective agreement (Montrul and Potowski 2007; Martínez-Gibson 2011).

Both Finnemann (1992) and Fernández-García (1999) studied the oral production of L2 learners of Spanish. Finnemann (1992) used oral interviews of three informants. Fernández-García (1999) used semi guided conversations of seven informants. The results of both studies show that production of nominal agreement was better when the noun phrase contained a masculine noun. In particular, Finnemann (1992)'s results show that her informants produced nominal agreement better with articles than with adjectives, therefore concluding that gender agreement on the article seems to be acquired at an earlier stage. Fernández-García (1999)'s results also show that there is a preference for singular and masculine forms of modifiers (both adjectives and articles), although there was individual variation, as some of her informants preferred the feminine form, overgeneralizing it to contexts where the masculine form was the correct one.

There have been many studies dealing with agreement by heritage speakers. Alarcón (2011) contributed to this discussion by investigating the lack of native representation of gender grammatical features in heritage speakers of Spanish and L2 learners of Spanish. She tested 18 Spanish heritage speakers and 10 L2 learners using a written comprehension task and an oral production task. Contrary to hypotheses that claim a representational deficit in L2 learners, results showed that both groups were accurate in the written comprehension task. The most salient result was that heritage speakers were similarly accurate in both tasks, achieving a native like score in the production task while L2 learners were more accurate in the comprehension than the production task.⁴ Montrul et al. (2013) studied gender agreement in Spanish comparing 29 heritage Speakers (HSs) and 39 L2 learners of Spanish. They used two picture-naming tasks and an online EPT measuring accuracy and reaction times (RTs) of participants' response. Results show that HSs were more accurate than L2 learners

⁴ These hypotheses do not have any predictions when the L1 and L2 have the same features. As it has been already shown, Dutch and Spanish share grammatical gender.

with both determiners and adjectives and L2 learners were less accurate with adjectival agreement than Determiner-Noun agreement.

Research focusing on early bilinguals has also shown that even early bilinguals experience difficulties with Noun-Adjective agreement. For instance, Montrul and Potowski (2007) tested a group of 29 monolinguals, 22 sequential bilingual children and 16 simultaneous bilingual children, and 22 L2 speakers in an oral retelling narrative and an elicited production task (EPT). They found that HSs were more accurate than L2 learners. Performance on masculine agreement was better than performance on feminine agreement. Bilinguals' error rate was approximately 5% with determiners (Oral Narrative Task) and more than 30% with adjectives (much higher for the L2 group). Martínez-Gibson (2011) obtained similar findings. She tested 16 Spanish-English heritage bilinguals (HS1) (born in the United States, their parents immigrated to the United States), 14 Spanish-English heritage bilinguals (HS2) (born in the United States, their grandparents immigrated to the United States), and 14 English L1-Spanish L2 speakers. They performed an EPT and an interview. Gender mismatches included mostly a feminine noun with a masculine adjective (67.5% of total errors). L2 learners produced the most gender mismatch occurrences. Also, in line with other studies (some of them mentioned above), there was a preference for the masculine default in Noun-Adjective agreement contexts, e. g. La_{FEM} casa_{FEM} *rojo_{MASC}. These studies on the L2 acquisition of Spanish grammatical gender have shown that learners operate with a default gender value, and overgeneralize the masculine forms of determiners, modifiers and adjectives (Fernández-García 1999; White et al. 2004; Schlig 2003; Hawkins 1998; Bruhn de Garavito and White 2002; Montrul et al. 2013; Mayans 2018).

Regarding the differences observed between Determiner-Noun and Noun-Adjective agreement, O'Rourke and Van Petten (2011) argued that the Determiner-Noun sequence has a different status than other agreement sequences because there is a small number of determiners with masculine or feminine overt morphology, e. g. *el/la* (the), *un/una* (a/an), *este/esta* (this), *ese/esa*, *aquel/aquella* (that), *otro/otra* (other), with the exception of possessives *mi* (my) *tu* (your) and *su* (his/her), which are not inflected for gender. Therefore, they argued that it is easier to determine the gender of a noun in a Determiner-Noun sequence because the frequent combination of these two elements (unlike the Noun-Adjective agreement, apart from being a much less frequent combination, there is an infinite number of Noun-Adjective combinations) and also the gender property of a determiner provides cues of the gender of the following noun (with the exception of feminine nouns whose first syllable consists of a stressed *-a* vowel and take a masculine determiner, compare *el alma*, *las almas* (the soul, with masculine article, the souls, with feminine article)). Also, unlike adjectives,

determiners always occur before the noun and they are mostly obligatory in the noun phrase.

Studies with other language combinations have also shown that L2 learners tend to have a preference for one of the agreement forms and tend to overgeneralize in all agreement instances, making it the default. For instance, Blom et al. (2008) investigated the acquisition of Dutch grammatical gender by 20 Moroccan adults learning Dutch as their L2 (among other groups of learners). Moroccan-Arabic makes a gender distinction, and adjectives agree with the noun gender, but definite articles do not. The researchers used a sentence completion task in which participants described pictures to test participants. Results showed that there was a massive overgeneralization of the default article *de*, and they were also non-target like with the use of both the inflected and the bare adjective. Unsworth (2008) investigated the factors of age and input in 103 L1 English speakers learning Dutch (58 children, 19 preteens and 26 adults) via a picture description task. She also found an overgeneralization of the article *de*, and the use of *het* was frequently found with words with a diminutive suffix, one of the few grammatical clues for neuter nouns.

Concluding from these previous studies, without separating type of learner, as far as the acquisition of nominal agreement in Spanish is concerned, the next generalizations can be made: gender seems to be more difficult to master than number (Bruhn de Garavito and White 2002; Gillon-Dowens et al. 2004, Gillon-Dowens et al. 2009; McCarthy 2008; Tokowicz and MacWhinney 2005; White et al. 2004), Noun-Adjective agreement is mastered later than Determiner-Noun agreement for L2 learners (Finnemann 1992; Fernández-García 1999) and there seems to be a tendency to overuse the masculine as default gender marker (Montrul et al. 2013; White et al. 2004; Schlig 2003; Hawkins 1998; Bruhn de Garavito and White 2002; Mayans 2018).

4 Our study

4.1 Observation and hypotheses

This study contributes to the line of research described at the state of the art by presenting evidence that the interlanguage of Dutch speakers, a gendered language, contains the same acquisitional errors as when the L1 of the learners does not have gender.

It has been observed that Dutch learners of Spanish make errors in their interlanguage with respect to nominal agreement. This type of errors appears in both adjective and determiner positions, for both gender and number. Examples 17 to 19 are extracted from a project description paper of a 3rd year undergraduate student of Latin American Studies at Leiden University, The Netherlands (level B2-C1 from the Common European Framework):

- (17) **l-a forma progresivo*
 the-FEM.SG form-FEM.SG progressive-MASC.SG
 'The progressive form'

- (18) **error-es intralingual*
 errors-MASC-PL intralingual-SG
 'Intralingual error'

- (19) **l-a-s producid-o-s por*
 these-FEM-PL produced-MASC-PL by
 'These produced by'

In these examples, we observe nominal agreement errors, both of gender and number, in the adjective and in the article. To be able to recognize and analyse more errors and find possible generalizations, free compositions written by L2 learners of Spanish were collected, and all cases of nominal agreement in these compositions were gathered.

As presented in the previous section, as far as the acquisition of nominal agreement in L2 Spanish is concerned, gender seems to be more difficult to master than number, Noun-Adjective agreement is mastered later than Determiner-Noun agreement, and there seems to be a tendency to overuse the masculine as default gender marker. To derive our hypotheses, we have taken these findings into account, and have also considered the comparison between two languages with nominal agreement. The L2 possesses a more transparent gender system than the L1, and most nouns show their gender and number agreement inflection on adjectives more consistently in the L2, (as it must appear in all conditions). We therefore propose three hypotheses:

- (a) There will be more errors in gender agreement than in number agreement
- (b) Nominal agreement marking on the article will be better than on the adjective
- (c) Relatively more errors in gender will be found for feminine nouns than for masculine nouns.

4.2 Participants

Data for this study was collected from free compositions written by 23 Dutch students following Spanish courses at the University of Leiden, The Netherlands. Their written ability in Spanish has level A2 (Common European Framework). Proficiency was not measured immediately before this study, as the students took a levelling exam before entering Latin American Studies at Leiden University and were all placed at this level. The self-assessment grid of the CEF qualifies level A2 written ability as follows “I can write short, simple notes and messages relating to matters in areas of immediate need. I can write a very simple personal letter, for example thanking someone for something.” These compositions are part of the students’ written activities, tests and exams.

4.3 Task and materials

For this study 111 essays from Dutch students learning Spanish were examined as to analyse and understand the committed agreement errors. The essays were written between the years 2008–2010. Although with compositions the participants have more time to think about their answers and probably they have time to consult their explicit knowledge on the matter, they are also a free production task, which reflect more naturally what happens in interlanguage, the aim of this study. Our goal is to describe written interlanguage, where both implicit and explicit knowledge are tested. The students were not allowed to consult any help devices and there was a time limit of 45 minutes.

In total, 799 correct uses and 281 errors were found in the essays. The errors were divided along four dimensions with their respective categories⁵:

(a) agreement category

- Number. The head noun can be *singular* ‘casa’ (house) or *plural* ‘casas’ (houses)
- Gender. The gender of the head noun can be *feminine* ‘aventura’ (*adventure*) or *masculine* ‘libro’ (book)

(b) error category

- Position. The error can occur between the pre-nominal determiner *el/la* or *los/las* and the noun, or between the noun and the post-nominal adjective (Error at the Determiner or at the Adjective)
- Type. The error can occur in gender agreement or in number agreement.

⁵ We did not study adjacency as a category as there were not sufficient cases in our data. We only looked at adjacent adjectives.

For the analysis, several regression models were used to search for relationships between the error categories (position and type).

4.4 Procedure

Each composition was scrutinized in order to collect all cases of errors in nominal agreement. First of all, errors were divided into three classes: errors on the article, errors on the adjective and errors on both article and adjective. Secondly, each error was classified as one of three types: errors on gender agreement, errors on number agreement, and errors on both number and agreement.

Statistical analysis was used to assess whether there was a significant correlation between the type of word, type of agreement and the position of the error.

5 Results

In Table 1 the percentage of errors in the writing of L2 Spanish by Dutch students is presented along with the number of observations. It appears that there are 224 passages of a singular masculine word with a determiner. In 88% of the instances it is a correct combination. For plural sentences, there were 82 observations of which there were 62 correct combinations (76%). Remarkable are the relative low percentages of correct uses in adjectives of feminine words when used in a singular sentence (45%) and especially when used in a plural sentence (24%).

Table 1: Percentage of correct forms per condition (number of observations between brackets).

	Masculine		Feminine	
	Determiner	Adjective	Determiner	Adjective
Singular	88% (224)	84% (337)	82% (171)	45% (100)
Plural	76% (82)	63% (110)	58% (65)	24% (42)

In order to test whether the proportion wrong answers depend on (combinations of) the three explanatory variables (Masculine vs Feminine; Determiner vs Adjective; Singular vs Plural) several binomial regression models were fitted to

the data. The fit of these models can be compared using a likelihood-ratio test (as the difference in $-2 \log$ likelihood of nested models is chi-square distributed with difference in number of parameters as degrees of freedom). In Table 2 the fit of the tested models is presented.

Table 2: Fit and comparison of different models to estimate the influence of singular/plural, feminine/masculine and determiner/adjective on errors of Dutch students.

Model	-2 log like-lihood	Comparison			
		Models	χ^2	df	p
1. Constant	1310.55	1 vs 2	29.15	1	<0.001
2. + S[ingular (1) vs Plural (0)]	1281.40	2 vs 3	47.70	1	<0.001
3. + M[ascul. (1) vs Feminine (0)]	1233.70	3 vs 4	58.00	1	<0.001
4. + D[etermin. (1) vs Adjective (0)]	1175.69	4 vs 5	0.04	1	0.834
5. + S * M	1175.65	5 vs 6	1.27	1	0.260
6. + S * D	1174.38	6 vs 7	12.26	1	<0.001
7. + M * D	1162.13	7 vs 8	0.50	1	0.481
8. + S * M * D	1161.63				

If the distinction Singular-Plural (S) is added to the model, the model is a significant better description of the observed data than without this distinction ($\chi^2(1) = 29.15$; $p < 0.001$). For both the distinction Masculine-Feminine (M) and Determiner-Adjective (D), the fit of the model increases significantly if either effect is taken into account (see Table 2).

In the remainder of the models (5–8) different interaction effects are subsequently added to the model. Comparison of the fit of the model shows that adding the interaction between S(ingular – Plural) and M(asculine – Feminine) does not improve the fit of the model over a model with only the three main effects ($\chi^2(1) = 0.03$; $p = 0.834$). The interaction effect between S(ingular – Plural) and D(eterminer – Adjective) also fails to reach significance as well ($\chi^2(1) = 1.27$; $p = 0.260$). However, the interaction between M(asculine – Feminine) and D(eterminer – Adjective) does explain differences in error rate in the writing of Dutch students ($\chi^2(1) = 12.26$; $p < 0.001$). Finally, the interaction between the three explanatory variables (S * M * D) did not reach significance ($\chi^2(1) = 0.50$; $p = 0.481$).

Hence, the most sparse model which explains the (relative) error rate best contains next to main effects of S(ingular vs plural), M(asculine vs Feminine) and D(eterminer vs Adjective) an interaction of S(ingular vs Plural) and D(eterminer vs Adjective). The parameter estimates of this model are presented in Table 3.

Table 3: Parameter estimates of the best fitting model (in logits) with main effects of plural, feminine and adjective as well as the interaction between masculine and determiner (β : regression weight; se: standard error).

Parameter	β	(se)	p
Constant	0.90	(0.024)	<0.001
S(ingular: 1 Plural: 0)	0.183	(0.027)	<0.001
M(Masculine: 1; Feminine: 0)	0.106	(0.029)	<0.001
D(Determiner: 1; Adjective: 0)	0.080	(0.040)	0.043
M * D	0.285	(0.056)	<0.001

A complicating factor in the interpretation is that the estimates are based on logits of the observed proportions (i. e. $\text{Logit}(F) = \ln[F/(N - F)]$). Because logits are a nonlinear transformation (which can take values between $-\infty$ and $+\infty$), necessary to test the effects of the different explanatory variables, this complicates the interpretation. However, the higher a logit, the higher the associated proportion (or percentage) and based upon the estimates presented in Table 3 the proportion of errors in each cell can be approximated. The parameter estimates show (see Table 3) that nominal agreement with singular nouns leads to less errors than with plural nouns (se = 0.027, $p < 0.001$). Masculine nouns lead to less errors than feminine nouns (se:0.29, $p < 0.001$). When the interaction between gender and position is taken into account, there are more errors in the interaction masculine-determiner (se:056, $p < 0.001$).

6 Discussion and conclusion

Studies on second language acquisition have tried to find an answer to the relevant question whether “L2 learners are able to fully develop an implicit grammar of the target language, particularly of L2 grammatical features that are absent in their L1” (Alarcón 2011: 332). It is in this context that contrastive linguistics can provide acquisitional and eventually pedagogical implications to SLA research. By comparing L1 and L2, as we did in our study, we may be able to understand the causes of the errors committed in the interlanguage of L2 learners. Moreover, in interlanguage we can observe not only characteristics from one language, but of two languages, as it is produced by a L2 learner and thus can exhibit features of the learner’s L1 (Gast, online source). In other words, second language learners often seem to identify categories from their L2 with categories from their L1 (‘inter-lingual identification’, ‘interference’, cf. Weinreich 1953). L2

learners seem to make several assumptions of ‘inter-lingual equivalence’ that give rise to non-target-like structures in their L2.

This article provides interlanguage data of Dutch L2 learners of Spanish, concerning nominal agreement and not only gender agreement, as number is also part of the analysis. We observed that in both languages gender is an inherent feature of nouns and both languages have a two-way gender system, although Spanish gender is more transparent than Dutch: most nouns in Spanish show their gender and number systematically and consistently in agreement. Based on previous studies together with this comparison, we generated our hypotheses: (a) there are many more errors in gender agreement than in number agreement, (b) nominal agreement marking on the article is better than on the adjective and (c) relatively more errors in gender are found for feminine nouns. The results show that singular masculine nominal agreement marking on the article is significantly better produced by Dutch L2 learners of Spanish than when the marking of nominal agreement is plural, feminine or on the adjective. All three hypotheses are therefore confirmed. This study corroborates the results found by White et al. (2004), where learners operate with a default gender value and overgeneralize the masculine forms of determiners. These results also concur with their finding that L2 learners of Spanish are significantly less accurate in gender agreement with adjectives than with determiners. There is therefore an overgeneralization of the masculine ending also present in the agreement with adjectives. Moreover, the singular is the default within the number agreement. Despite our methodology does not reflect true implicit knowledge of the L2 learner, we can observe in our results that the error pattern is identical to those investigations where they use oral production tasks or online tasks.

With regard to the different status of Determiner-Noun and Noun-Adjective agreement, frequency is an important issue to be taken into account at this point, as mentioned by O’Rourke and Van Petten (2011). Articles and nouns form combinations which are much more fixed and frequent than the combinations of nouns and adjectives. Therefore, the first grouping (Determiner-Noun) can be stored as such, and thus less errors are likely to occur in second language production. The fact that we possess a fixed number of articles and determiners on the one hand and a much bigger number of adjectives reinforces the idea that articles and nouns are much closer and therefore stored together.

The pedagogical problem in teaching Spanish is that even advanced learners still make Determiner-Noun agreement mistakes after three years of language study. The problem with Noun-Adjective agreement, as Rogers (1987) already pointed out, is a matter of production rather than of perception. The results of this study suggest that the Spanish language learner seems to be

misled to believe that in the case of definite articles, they are direct exponents of gender, and that gender is a lexical property that must be memorized.

What is extremely fascinating of Learner corpora is, as Gast (2012) already points out, that interlanguage is always produced by a language learner and as such, it contains both characteristics of the L1 of the learner as the target language. “This output not only provides the empirical basis for contrastive studies, but also functions as a conceptual link between the linguistic systems investigated, as it can be used to establish comparability between categories from different languages” (Gast, online source p 2). This means that data on SLA can help us to understand not only the process a second language learner makes when dealing with a second language, but also contributes to a better understanding of how the languages work, from a contrastive analysis perspective.

Moreover, from a pedagogical perspective, we can begin to answer the following questions: what are the implications of these findings for the teaching of Spanish grammar to Dutch students, and how can the differences be taught optimally? A possible working hypothesis is that if the category gender receives more attention than number in classroom instruction, it will have positive effects on the final proficiency of the learners. Moreover, taking into account how Dutch gender marking is stored, it may be that the best strategy to learn Spanish gender is its memorization as a fixed combination.

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