GENDER ASSIGNMENT IN L2 SPANISH INTERLANGUAGE: COMPARISON AMONG ENGLISH, GERMAN, AND FRENCH L1 ADULT LEARNERS

A Thesis

Presented to

The Faculty of the Department

of Hispanic Studies University

of Houston

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

By

Elena Berdasco

May, 2013

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Elena Berdasco Muñoz Student

APPROVED:

Marta Fairclough, Ph.D.
Committee Chair

Manuel Gutiérrez, Ph.D.

Alejandra González-Pérez, Ph.D.

Reynaldo Romero, Ph.D.
University of Houston-Downtown

John W. Roberts, Ph.D.
Dean, College of Liberal Arts and Social Sciences
Department of English

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ABSTRACT

The purpose of the present study was to examine gender assignment in second language Spanish at an advanced-beginner level. It also aimed to describe the nature of the relationship between the presence or absence of the gender feature and the causes of divergence among the three different L1 groups (English, German, French). This study uses 229 learners' data to gain insight into the processes involved in Spanish gender acquisition. Three variables were analyzed: morphological similarity, noun ending and possible gender concurrence or non-concurrence with Spanish. To date, few studies have examined these variables, especially, gender transfer, in assessing gender acquisition. The findings reveal that animacy, morphological similarity, and overt ending cues facilitate gender assignment in all groups. A more detailed analysis reveals that positive and negative L1 transfer affects gender assignment in groups with the gender feature in their first language. In contrast, frequency and morphophonological factors influence learners' performance without the gender feature.

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1. Introduction

1.1. Presentation of the study.

The differences between first (L1) and second (L2) language acquisition of grammatical features have been largely investigated (Selinker, 1972; Clahsen, 1988; Hawkins et Chang, 1997; Lardiere, 2000; Long, 2003). One of the differences is the presence or absence of a particular feature in the L1 that can have an influence in L2 ultimate attainment. In some languages, as in Spanish, grammatical gender is an example of a morphosyntactic phenomenon in nouns. Its main function is that it requires a syntactic operation with other constituents that share the gender feature, that is, agreement. The Spanish gender system has two categories: masculine and feminine. Studies on L1 Spanish gender acquisition among children (Hernández-Piña, 1984; Gutiérrez-Clellen, 2000) show that oral production has some errors related to the strategy of overgeneralization by regularity (e.g. words ending in –a were preceded by the feminine article **la fantasma*) or to the strategy of assigning the (non-marked) masculine article for all words with non-overt endings (not –a or –o ending) for a period of time until the children started using the opposite strategy. Agreement between determinants and nouns seemed to be completed by the age of 2.7 years old.

L2 acquisition of grammatical gender comprehension and production has been investigated among advanced learners to determine the extent of ultimate attainment (Dewaele & Véronique, 2001; Franceschina, 2001, 2002, 2005; Hawkins & Franceschina 2004; White et al. 2004; Sabourin et al., 2006; Alarcón, 2006, 2010; Déprez, 2008; Behney, 2011). However, less attention has been paid to other stages in the development of the interlanguage (IL) grammar. Lardiere (2005) reminds us that, similar to the

approach taken in native-language acquisition research, it is important to examine what has been acquired and work backwards to try to figure out how that type of knowledge could have been acquired (p. 10).

This study uses L2 Spanish learners' data to gain insight into the processes involved in Spanish gender acquisition of three post-puberty advanced-beginner groups (L1 French, German, and English). In order to understand the degree of L1 transfer, each L2 Spanish group has a different gender system. French has a morphological gender system similar to Spanish (+Romance Gender) that may lead to stronger surface transfer (Sabourin et al., 2006). German also a gender system, but includes three rather than two categories (+Gender). On the other hand, English has semantic gender but not grammatical gender associated to nouns (-Gender). Previous research has included these three types of participants in their studies (Sabourin et al. 2006; Behney, 2011). In both studies, participants of several L1s were grouped into each category according to the particularities of the gender feature as described above. In the present study, only participants with three different L1 languages were included.

To analyze L2 learners' comprehension and production of gender assignment and agreement, previous studies designed tasks that based their noun selection on the following factors: gender feature in the L1 and high or low frequency (Sabourin et al., 2006); morphological cues, class, and gender (Alarcón, 2010); gender feature in the L1 (White et al., 2004); or morphological cues and gender (Behney, 2011). However, to our knowledge, no previous study has drawn attention to the way that L1 gender affects a learner´s assignment of gender in the L2. The present study will consider frequency, noun class (semantic/non-semantic), morphological similarity (cognate/non-cognate),

morphological ending cues (overt/non-overt) and possible L1 gender transfer (positive/negative) of the equivalent words being tested.

The focus of the empirical study is to examine the non-native gender assignment IL representation of L2 Spanish gender. Another goal is to determine whether the results can be accounted for in light of recent hypothesis in linguistic theories and second language acquisition literature as it relates to Universal Grammar (UG). The full transfer/full access (FT/FA) hypothesis of Schwartz & Sprouse (1994, 1996) assumes that: (1) at initial states of L2 learning, there is L1 transfer, and (2) L2 learners have UG access no matter their age of acquisition (pre- or post-Critical Period). In other words, L2 learners shall transfer formal features such as gender of their native language at the initial state. Following full transfer, we could hypothesize that at an advanced-beginner level, it is likely that there should be no full transfer effects of the L1 on the L2. However, full access would apply to non-native end-state grammars and shall therefore not be studied here. Another initial-state hypothesis relevant for our purposes on the relation between gender assignment and L1 transfer is partial transfer. At this stage of acquisition, the IL may still be affected by L1 transfer.

Considering the aforementioned transfer hypotheses, the main purpose of this research is to examine L2 assignment of Spanish semantic and grammatical gender at an advanced-beginners level. It also aims to describe the nature of the relationship between the presence or absence of the gender feature and the causes of divergence among the three different L1 groups (+Romance Gender, +Gender, -Gender). Furthermore, the role of morphological similarity among languages and the extent of L1 transfer effects in the IL of L2 morphosyntactic development will be examined.

The next chapter provides an insight into gender as a linguistic system in general, followed by a description of the Spanish gender assignment and agreement system and brief comparison with French, German and English gender systems. Chapter 3 focuses on theoretical considerations and reviews previous findings on L1 and L2 acquisition of grammatical gender. Chapter 4 states the purpose of the study, research questions, and expected outcomes. Chapter 5 describes the methodology used for participants, materials, procedures and data analysis in the current study. Chapter 6 reports the results of the total amount of items and selected items which allow a comparison among groups under the same conditions. This is followed by a discussion of the results and its theoretical implications in chapter 7 that will conclude with an overview of the entire study.

2. Gender as a linguistic system

Etymologically, the word 'gender' comes from Latin *genus* to express 'sort, type or class'. In Latin, the term was already used to refer to grammatical gender. Generally speaking, gender is a criterion used as a basis for noun classification. As defined by Hockett (1958) and adopted by Corbett (1991), gender is an inherent lexical feature used to refer to "classes of nouns reflected in the behavior of associated words" (Hockett, 1958, p. 231). Hence, other syntactic elements such as determiners or adjectives show the morphological correlation related to the head noun, in what is called syntactic agreement or concord. Gender can be of two types: natural or semantic (*i.e.* biological gender or sex) and grammatical or non-semantic (usually associated with inanimate nouns and arbitrarily assigned). For Corbett (1991), semantic criteria are the core of a gender assignment system. That is, gender is not an arbitrary classification when a semantic distinction applies. Some examples of possible semantic criteria are feminine/masculine, animate/inanimate, human/non-human, concrete/abstract, etc. In typical Indo-European languages, the dependence on semantics for assigning gender is relatively small since nouns denoting humans are a minority (Foundalis, 2002). Other languages are largely gender neutral like Finnish, Hungarian, Persian, Mandarin Chinese, Japanese or Turkish.

French and Spanish are Romance languages that have a binary grammatical gender system: masculine and feminine[1]. Both languages also share the same gender in a large number of nouns. Foundalis (2002) compared statistically the grammatical gender assigned to nouns in most Indo-European languages. His results show a relatively high correlation between gender in Spanish and French ($r^2 = 0.44$). German has three genders: masculine, feminine and neuter. Because it belongs to another subfamily of the Indo-

[1] See Ayoun (2007) for a detailed review of French grammatical gender system.

European languages, its correlation with Spanish nouns gender is lower than between French and Spanish (r^2=0.09) (Foundalis, 2002). To illustrate this, a look at the gender of some words of everyday's life may serve as an example:

Table 1

Examples of everyday's nouns with their gender in Spanish, French, German, and English

Spanish	French	German*	English
sol.MASC	*soleil*.MASC	*Sonne*.FEM	sun
cama.FEM	*lit*.MASC	*Bett*.NEUTER	bed
desayuno.MASC	*petit-déjeuner*.MASC	*Frühstück*.NEUTER	breakfast
autobús.MASC	*bus*.MASC	*Bus*.MASC	bus
trabajo.MASC	*travail*.MASC	*Arbeit*.FEM	work/job
mesa.FEM	*table*.FEM	*Tisch*.MASC	table
silla.FEM	*chaise*.FEM	*Stühl*.MASC	chair
cena.FEM	*dîner*.MASC	*Abendessen*.NEUTER	dinner
noche.FEM	*nuit*.FEM	*Nacht*.FEM	night

*Note**. In German, all nouns are capitalized

On the other hand, some languages are based on strict 'semantic core' systems (Corbett, 1991). Although they are not very common, in these systems the gender of a noun is determined by its meaning. Nowadays, Modern English is an example of a semantic system based on biological sex. Semantic nouns have masculine or feminine gender, such as "gentleman" or "lady", and non-semantic nouns do not have gender as "book". In Old English, however, nouns were classified into masculine, feminine and

neuter. This system disappeared and left no significant traces. Grammatical gender refers to gender assignment of what Corbett (1991) refers to as 'residual' nouns based on a formal system. In this type of system, the information follows morphological and phonological rules or a combination of both. For Corbett and Fraser (2000) semantic criteria precede formal criteria. Mills (1986) further proposes that semantic rules precede morphological and phonological ones in that order.

Regarding semantic criteria, Nesset (2004) states that in the Core Semantic Override Principle (CSOP) "rules referring to biological sex take precedence in gender assignment". Therefore, once the semantic gender has been ruled out, there are secondary rules that apply and interact. Köpke (1982), Poplack and Sankoff (1982; cited in Mills, 1986) have studied and discussed the challenges of trying to establish a rule hierarchy since some languages have not one but three or more genders. Although it is difficult to establish such a hierarchy, it is possible to categorize non-semantic nouns depending on the morphological or phonological pattern as proposed by Corbett (1991). For example, in Spanish, a morphological rule may be the presence of an inflectional suffix (e.g. nouns ending in *–ión* are feminine) whereas a more salient phonological (or morphophonological) rule may be the distinction between masculine words ending in *–o* and feminine words ending in *-a*. In French, certain inflectional suffixes are associated to gender, as *–ette* (*marionette /* 'marionette'), *–trice* (*calculatrice/*'calculator'), *–tion* (*constitution /*'constitution') for feminine nouns and *–eur* (moteur/'motor') for masculine nouns. Similarly, in German, some morphological criteria allow to associate suffixes to gender as *–er* (*Fernseher*/'television') or *–ig* (*Honig*/'honey') for masculine; *–ei* (*Bücherei*/'book store'), –schaft (*Gesellschaft*/'society') or *–ion* (*Nation*/'nation') for

feminine nouns and *–eau* (*Niveau*/'level'), *–zeug* (*Spielzeug*/'toy') or –icht (*Gesicht*/'face') for neuter.

Despite such morphological cues in languages with grammatical gender, semantic and formal assignment rules interact differently. Within Spanish, French and German gender systems, some studies have predicted the probability of accurate gender assignment. Mel'čuk (1958) shows that Spanish gender assignment can be predicted with a set of rules that covers 75-78% of the 1,000 most common nouns. In French, while morphology is important, phonology seems to be a strong predictor for generalizations (see Corbett 2000, p. 57-62). Tucker et al. (1977) demonstrate that the final syllable is somewhat predictive of the gender. The results of their study show 84.5% predictability out of 31,619 nouns in the *Petit Larousse* considering them from their terminal phone, that is, the last sound of the word.

In German, although gender can be predicted with relative consistency, semantic, morphological and phonological factors overlap. Within semantic criteria, male and female as well as other categories denote the gender of the noun. Rosch et al. (1976; as cited in Zubin & Köpcke, 1986) study the conceptual hierarchization of superordinate and basic level terms. The findings show that superordinate nouns, which are more conceptually vague, received less attributes compared to the basic level terms. Interestingly, the superordinate terms were all neuter except for one item. Some examples of superordinate nouns are *Musikinstrument*/'music instrument', *Metall*/'metal', *Werkzeug*/'tool', or *Gemüse*/'vegetables'. On the other hand, its assignment rules are also based on phonological and morphological rules as well as arbitrary assignment (Köpcke & Zubin, 1984). Some studies in German have shown the importance of phonology

rather than morphology in the correlation between syllabicity and gender prediction. Köpcke (1982) studies monosyllabic words and confirms that 64% of the nouns of his corpus (1,466 nouns) were masculine. However, Hickey (2000) argues that the predictability may be due to the syllable rhyme structure within monosyllabic words in German. Hickey explains that the coda of monosyllabic nouns can consist of a single consonant or a consonant cluster. Monosyllabic nouns with a single consonant are more difficult to predict whereas the different combinations of consonants are fairly regular in predictability of gender assignment. He further provides some examples of combinations: /-lt/ are usually neuter as in *'Pult'*/desk and 'Zelt'/tent; /-nd/ are usually masculine as in *'Mond'*/moon and *'Strand'*/beach. Thus, he concludes that although there may be preferable gender for a given syllable structure, the gender is lexically stored and not productively derived.

In view of the fact that gender assignment concerns the aforementioned criteria, the following section will examine the Spanish gender system in particular. In section 2.2., French, German and English gender systems will be briefly compared for possible L1 transfer among the participants in the study.

2.1. Spanish gender system

Spanish belongs to a group of Romance languages that derived from an ancient Italic language of the Indo-European family. Nouns are divided into masculine and feminine. Its gender assignment system relies on natural and grammatical gender. As mentioned in the previous section, gender assignment is also based on morphological and

phonological criteria. Semantic and functional aspects of gender marking are documented in descriptive grammars[2].

In Spanish, natural gender in human and animate nouns (*e.g.*, domestic or familiar animals) as a semantic factor is expressed through different morphemes. Some pairs share one stem but have two different inflections:

-o or Ø for masculine: *ingeniero, león*

-a, -esa, -ina, -isa –iz for feminine: *ingeniera, alcaldesa, heroína, poetisa, actriz*

Within animals, the distinction is more varied. Gender assignment of more familiar animals usually follows the same natural distinction (*e.g., gato/gata* 'he-cat/she-cat'). When the gender is not specified, the word used is an epicene (*i.e.*, one word designs two entities) and may vary between masculine and feminine arbitrarily (*e.g., elefante/jirafa* 'elefant.MASC /giraffe.FEM'). Sometimes two different words designate a male and a female (*e.g.*, toro/vaca 'bull/cow').

As indicated in the previous section, interaction between semantics, morphology and syntax in gender assignment is a complex system. The masculine gender is the non-marked or inclusive form: *los profesores enseñan seis horas a la semana/*'the.MASC.PL professors.MASC.PL teach six hours per week'. Here, the plural masculine form refers to professors of masculine and feminine gender[3]. A number of linguists have provided ample discussion about the interface between semantics and syntax of gender in Spanish (Harris, 1991; Eddington, 1986; Roca, 2005). Roca (2005) claims that gender assignment

[2] For a more exhaustive description of gender marking in Spanish, see Gramática Descriptiva de la Lengua Española (Bosque and Demonte, 1991).

[3] For current discussion about the use of masculine from a pragmatic point of view, see Nissen Uwe, 1986; Suardíaz, 2002; Fallas Alvarado, 2010.

is largely arbitrary and coded in the lexicon. For example, *esposa* 'wife.FEM', as a semantic noun, is marked as [+FEMALE] in the lexicon whereas *esposo* 'husband.MASC' is underspecified [-FEMALE]. Harris (1991) and Roca (2005) consider masculine the unmarked gender. Roca (2005) argues that there is no redundant sex rule in the lexicon and therefore no need to be encoded [-F]. When a noun lacks lexical gender specification, the redundancy rule of the lexical class is filled with [Ø] → [-F]. Thus, words like *esposos* 'spouses' do not imply sex attribution but refer to both masculine and feminine entities. He further notes that gender assignment is largely an arbitrary phenomenon. Although there is semantic meaning in the language, it is not an exact reproduction of the world for it only represents some of its aspects. Therefore, in Spanish, there is gender in the syntactic categories (±FEMININE) and sex in the semantic categories (±FEMALE) and not necessarily a one-to-one correlation as we have noted for languages that do not have a binary system.

In addition to Harris (1999) and Roca (2005), Prado (1982) provides a list of grammatical/syntactic constructions within the noun phrase supporting the hypothesis of masculine as the "natural", "normal" or unmarked gender in Spanish. His examples include loanwords (*e.g., bar*/'bar.MASC', *gol*/ 'goal.MASC', *cóctel*/'cocktail.MASC') along with nominalization of infinitive forms (*e.g., el deber*/ 'duty.MASC', *el cantar*/ 'singing.MASC'), nominalization of adverbs (*e.g., el ayer*/'yesterday.MASC'), compound words despite having a feminine "base" (*e.g., limpiabotas*/'shoe shiner.MASC', *salvavidas*/'life-vest.MASC'), adjectival nominalization (*e.g., lo bueno*/ 'the.MASC good.MASC thing'), etc.

In the case of non-semantic nouns, the assignment system also follows the binary system. In Spanish, information marked on the noun can be transparent (overt) *vs.* opaque (non-overt). The standard overt gender assignment rule is that nouns ending in *–o* are masculine and nouns ending in *–a* are feminine. For example, *libro* 'book' is masculine whereas *casa* 'house' is feminine. This rule applies for semantic and non-semantic nous. However, when the word is not overtly-marked, assigning gender becomes a challenge. Some non-overt endings in Spanish are *–e, -s, -isis, -n, -r, -l, -idad, or –ión.* Some examples of non-overt endings are presented here:

–n: plan, tren, origen

–l: papel, alcohol, automóvil, sol

–sis: sinopsis, crisis, bronquitis

–idad: nacionalidad, originalidad

–ión: nación, televisión, habitación

Additionally, masculine nouns ending in *–a* (*e.g., planeta*/'planet') and feminine nouns ending in *–o* (*e.g., mano*/'hand') are deceptively marked (Alarcón, 2011).

In order to find a correlation between gender and inflectional morphemes, Harris (1985) gives a description of gender based on a hierarchical rule system and proposes a list of possible Spanish morphemes. However, he concludes that "the correlation between word markers and grammatical gender is random and arbitrary" (Harris, 1985, p. 37) due to underlying phonological representations which are very difficult to predict for L2 learners. For instance, the words *taza* 'cup.FEM' and *problema* 'problem.MASC' follow the same pattern and have, however, opposite genders. The explanation lays in etymological information a priori inaccessible to the learner: words of Greek origin

ending in *–ma* or *–ema* (*e.g., drama/*'drama', *dilemma/*'dilemma', *teorema/*'theorem', etc.) are assigned masculine gender.

From a descriptive approach, Bull (1965) studied the terminal letter and some groups of graphemes of nouns in William's (1955) *Spanish and English Dictionary*. He found that words ending in *–o, –l, –r, –n, –s* were assigned masculine by a rate of 96% whereas words ending in *–a, –d, –ción, –sis,* and *–itis* were assigned feminine by 98%. Bergen (1978) confirmed his findings, added four more rules and claimed that the bases of gender are mainly phonemic (cited in Franceschina, 2005). Teschner and Russell (1984) carried out a similar study using a larger dictionary (89,000 words). They pointed out some inaccuracies related to the productivity of the ending *–umbre* or *–ie*, simplified some forms, and discarded *–z, -n,* and *–s* as clear endings since the percentage between masculine and feminine words did not show enough evidence in favor of either.

More recently, Morin (2006) called phonemic bases of gender assignment into question and sorted out some productive terminal morphemes. Morin (2006) examines Bull's (1965) data for *–d,–s, –z* endings and argues against relying exclusively on phonemic bases for grammatical gender assignment. She points to the need to distinguish between orthographic, phonological, and morphological considerations and suggests considering morphemic rather than phonemic bases of gender in Spanish.

Eddington (2002) uses an Analogical Modeling (AM) of Language algorithm to demonstrate that phonemic material besides the word-final phoneme may be relevant for gender assignment. First, he used a database of 2,416 frequent Spanish nouns to prove analogical simulations using the AM model and comparing it to Bull's (1965) pedagogical rules. The nouns were encoded into eight different variables according to the

final syllable and the rhyme of the penultimate syllable. The success rate was of 95.0%. Each variable predicted gender equally well and did not depart from the benchmark. Then, he tested Spanish speakers' intuitions regarding gender of unknown words. The results showed that by utilizing the aforementioned variables the success rates do not differ significantly from each other ($\chi 2$ (3) = 3.052, $p < 0.5$).

From a pedagogical approach, gender is as an aspect of inflectional morphology that poses a challenge when acquiring a second language (Montrul, 2004; White 2003; Bruhn de Garavito et al., 2002, Franceschina 2002, 2005; Foucart 2008; Alarcón 2011; Behnley 2011). As summarized by Franceschina (2005), the most frequent types of rules proposed for gender assignment of Spanish nouns are:

- Semantic rules (e.g. names of rivers are masculine)
- Grammatical form rules (e.g., infinitives, phrases, indeclinable words and compound words are masculine)
- Etymological rules (e.g., words of Greek origin ending in –a are masculine)
- Word ending rules (e.g., words ending in –l, -o, -n, -e, -r, -s are masculine)
- Phonological rules (e.g., uncommon words with a stressed –á- in the first syllable are masculine). (p. 97)

Acquiring Spanish gender assignment as an L2 may pose important challenges. To facilitate the learning processes, the norms proposed by the aforementioned studies have been adapted to many Spanish textbooks as Clegg (2011) summarizes in Table 2. The author points out that these norms have been used for more than four decades. Despite this, students seem to still commit errors. He explains that this is due to many factors, among others, the teachers' lack of understanding of the norm-based system, for

example, that the rules only apply to inanimate nouns. Another problem he mentions is that the rules are based on a large amount of words used by native speakers.

Table 2

Summary of Spanish Noun Gender Norms (Clegg, 2011, p. 304)

Terminal Phonemes Associated with Masculine Gender	Terminal Phonemes Associated with Feminine Gender
/l/ /o/ /n/ /e/ /r/ /s/	/a/ /d/
Words of Greek origin ending in *–ma, –ta*	*–ión, –is*
Atypical terminal phonemes /b/ /k/ /i/ etc.	*–umbre,* /z/

He then analyzed the effects of frequency on the terminal phonemes and their associated gender using the 2,507 most frequent nouns (excluding animate epicene nouns) of the top 5,000 included in Davies' dictionary. The results are shown in Table 3 and 4 and will serve for comparison and discussion of the results of our study.

Table 3.

Results for Masculine Terminal Phonemes (Adapted from Clegg, 2011, p. 307)

Ending	Quantity	Accuracy	Exceptions
–o	684	99.9%	1
–e	132	79.0%	35
–r	73	97.3%	2
–n	44	97.8%	1
–l	37	78.7%	10
–s	15	100%	0
–ma	15	48.5%	16
Atypicals	5	71.0%	2
Total	1,006	75.4%	85

Table 4.

Results for Feminine Terminal Phonemes (Adapted from Clegg, 2011, p. 308)

Ending	Quantity	Accuracy	Exceptions
–a	661	99.4%	4
–ión	300	99.7%	1
–ud, –ad	117	100.0%	0
–z	17	81.0%	4
–is	5	55.6%	4
–d	4	100.0%	0
–umbre	4	100.0%	0
Total	1,108	90.8%	13

Since phonological and morphological properties apply to non-semantic nouns, these findings are of particular interest for the present investigation. The interaction of frequency and terminal phonemes may have an impact on the acquisition of gender. As a consequence, the more frequent and the more overt the ending cue, the easier it should be for language learners to assign gender. Within non-overt nouns, attention should be paid to frequency. These factors will be later displayed in the methodology of the present study.

2.2. Agreement and concord in the generative model. A comparison among Spanish, French, German and English.

Within the generative framework, the status of gender has been the object of considerable debates. Gender is a feature specified in the lexical entry of a noun that has

marked consequences on associated elements ―determiners, adjectives, pronouns, etc. We adopt the "feature checking" mechanism outlined by Chomsky (1995) and developed by Carstens (2000; as cited in Hawkins & Franceschina, 2004) which states that gender is an *interpretable* feature [±fem] in the lexicon whereas agreement features are *uninterpretable* [*u*gender] because they need to be checked in syntax. We will make a distinction between French [+Romance gender], German [+gender] and English [-gender] for the purposes of comparison among the languages involved in this study.

Agreement occurs as a consequence of the uninterpretable feature checking. Agreement is an asymmetric relation between two elements the "controller" ―the one having inherent properties― determines the morphological form of the "target" (Corbett, 1991). Although this type of relationship has been usually referred to as index agreement or concord, some distinctions are may be made (Svenonius, 2006). He notes that index agreement is described as the relationship between a controller and a target element within a Determiner Phrase (DP) (person, number and gender); for example, subject and verb agreement or an anaphor and its antecedent. On the other hand, concord is described as the checking between of a feature (number, gender, and case) within a constituent, usually a noun phrase. According to Corbett (1991), number and gender are relevant to both.

In this sense, in Spanish gender is realized on determiners (*e.g., el/la* 'the'; *un/una* 'a'; *doscientos/doscientas* 'two hundred'), demonstrative, possessive and indefinite pronouns (*e.g., este/esta* 'this'*; tuyo/tuya* 'your'*; algún/alguna* 'some'), third person singular and third person plural personal pronouns (*e.g., él/ella* 'he'*; lo/la* 'it'), adjectives (*famoso/famosa* 'famous'), quantifying adverbs (*e.g., cuánto/cuánta* 'how

much')[4] and nominalized adjectives (*e.g., el barato/ la barata* 'the cheap one') . In French, agreement and concord is marked on determiners, demonstrative, possessive and relative pronouns, third person singular and third person plural pronouns, on some adjectives and on some past participle forms of verbs as illustrated in the following examples:

le pays ; un pays / 'the.MASC country; a.MASC country'

la robe ; une robe / 'the.FEM dress; a FEM dress'

Je veux celui-ci / 'I want this.MASC one'

La jolie robe / 'The.fem beautiful. FEM dress'

Marie est allé**e** au parc / 'Marie is gone.FEM to the parc' / 'Mary has gone to the parc'

In German this distinction is visible on definite and indefinite determiners, adjectives and pronouns. Case is also reflected in the paradigm, bearing information from the DP and not just from the NP. Table 5 presents an overview of German concord for definite articles and cases by gender and number.

Table 5

German concord for definite articles in nominative, accusative, dative, and genitive cases

	Masculine	Feminine	Neuter	Plural
NOM	*der Bieispiel*	*die Farbe*	*das Buch*	*die Beispiele/Farbe/Bücher*
ACC	*den Beispiel*	*die Farbe*	*das Buch*	*die Beispiele/Farbe/Bücher*
DAT	*dem Beispiel*	*der Farbe*	*dem Buch*	*den Beispiele/Farbe/Bücher*
GEN	*des Beispieles*	*der Farbe*	*des Buches*	*der Beispiele/Farbe/Bücher*

[4] Harris (1991) suggests that the usually considered gender markers (*i.e., –o/–a* endings) are rather word markers since they can also be found on adverbs (*e.g., dentro /fuera* 'inside/ouside'). For the purposes of this study, we will recognize them solely as word markers, not gender markers.

In contrast with German, French and Spanish, English has a strict natural gender system. Gender agreement morphemes appear under two conditions: the controller is a semantic noun and is marked on the third person singular and plural on possessive determiners as well as personal, possessive and reflexive pronouns (see Table 6). There are, however, some exceptions that denote a semantic association with animals (pets) or other entities, such as for example, cars, motorbikes or ships. Apart from this classification, English does not have grammatical gender for inanimate nouns.

Table 6

Examples of Gender-Marked types of words in English for third person singular

	Masculine	Feminine	Neuter
Personal pronoun	he / him	she / her	it
Possesive determiner / pronoun	his / his	her / hers	its / -
Reflexive pronoun	himself	herself	itself

Regarding the acquisition of grammatical gender in L2, some studies have shown the ability or inability to represent the uninterpretable feature when such feature is not present in the L1 in ultimate attainment (Hawkins et al. 2004; Lardiere 2000; White et al, 2004). We argue that at this stage, L2 learners of Spanish from three different L1s (+Romance gender, +Gender, -Gender) encounter difficulties with article-noun agreement.

In order to explain the processes involved in this phenomenon, in the present study we will examine the role that L1 and L2 grammatical differences play in the acquisition of gender concord between determiners and nouns (in particular, definite

article-noun) at an advanced-beginners level. In the instrument, a written recognition task was used in which the participants were asked to circle one of the two possible definite articles (*el/la*) presented next to each item. At this point in the Spanish instruction, each of the language groups had already been instructed that *"el"* is used for masculine nouns and *"la"* for feminine nouns. Because they have learned to associate *"el"* with masculine gender and *"la"* with feminine, this was deemed the most direct way for the researcher to observe what gender the participants assigned to each word. It could be argued that this study involves the feature-checking operation of "concord". However, given that it does not consist of a production task and that the articles were presented next to each noun, the term gender assignment, agreement or concord will be considered interchangeable, as it has been considered in previous L2 gender acquisition studies by Sabourin et al. (2006) and Alarcón, 2011.

In addition to looking at the presence or absence of the gender feature in their L1 (Franceschina, 2005; Sabourin, 2006; Foucart 2008) the interest of this study lies in detecting more specifically the sources of such difficulties in gender assignment by selecting words with possible L1 positive and negative transfer.

3. Gender acquisition: Previous Studies and General Theoretical Considerations

3.1. Theoretical Issues.

In the literature, some theoretical approaches propose different hypothesis about the nature of IL competence. Some representational accounts predict incomplete L2 acquisition whereas others maintain that attainability is possible as in native speakers' grammars. The no parameter resetting hypothesis states that UG access is only available through the L1 available parameters (Clashen & Muysken, 1989). In line with this hypothesis, the representational deficit hypothesis (RDH) (originally, the failed functional features hypothesis or FFFH; Hawkins and Chan, 1997; Hawkins, 2004¸ Hawkins & Hattori, 2006) claims that uninterpretable functional features, such as gender agreement, are not available and consequently not attainable, if they are not present in their first language beyond the Critical Period (CP). According to this hypothesis, English native speakers would have access to the interpretable feature of gender but not to the uninterpretable feature [*u*gender], that is, they could have knowledge of the gender of nouns but would not achieve accurate ultimate gender attainment.

In contrast with this theoretical approach, Schwartz and Sprouse (1994, 1996; White 1989; 1996; Bruhn de Garavito & White 2002; White et. al. 2004) support the full transfer/full access (FT/FA) model. The core idea of this model is that L1 grammar constitutes the initial stages of L2 initial acquisition (full transfer), but have access to the L1 abilities via the Universal Grammar during the learning process and is in principle attainable (full access). In other words, L2 functional categories are constrained by the UG which enables parameter resetting. Following this hypothesis, Hawkins and Franceschina (2004) assume that "in initial/transitional stages of development, L1 French

learners of L2 Spanish would be quite different from L1 English speakers in their treatment of D-N concord, because they transfer a [*u*gender] feature and have an L1 grammar for concord which is syntactic in nature" (p. 192). In the case of Romance gender, L2 learners whose L1 has no gender [-gender] are presumed to have more problems acquiring gender at a transitional state than [+gender] and [+Romance gender] because gender is not part of their L1 representation.

The question that arises is whether the source of difficulty is restricted to mapping problems related to production or lack of knowledge (Lardiere, 2000; cited in Bruhn de Garavito & White, 2002). The missing surface inflection hypothesis (MSIH) (Haznedar and Schwartz, 1997; Prévost and White, 2000; White, 2003) considers that producing functional morphology in a native-like fashion is due to phonological interference. In other words, the error source is the complexity of mapping features and morphemes. As a result, difficulties in L2 agreement marking arise. More recently the prosodic transfer hypothesis (Goad, White and Steele, 2003; Goad and White, 2004, 2006, 2009) claims that L1 prosodic representations determine the success (or lack thereof) in spoken production of L2 inflection and function words which would include gender agreement. Since our study investigates the accuracy of noun-article gender concord using written recognition offline tasks, we shall not consider further this hypothesis.

Assuming the above mentioned positions agree that there is L1 transfer at initial and transitional states, our hypothesis is indistinguishable from them. However, we assume that, even if gender is not present in the L1 no radical differences should be found between the [-gender] and the groups who have gender feature in their L1 (when both possible negative L1 transfer considered).

3.2. Gender acquisition in L1

A brief overview of key research in L1 gender acquisition may contribute to understanding the acquisition process of an L2. Different studies have investigated the development of gender acquisition in first languages related to the influence of semantic, morphological and syntactic cues. Children appear to show awareness of gender-marked forms around the age of three. One of the main conclusions reached is that there is a strong tendency in relying on morphophonological rather than on semantic cues (MacWhinney, 1978; Karmiloff-Smith, 1979; Pérez-Pereira 1991). The results of such studies may serve for discussion with those of L2 learners at advanced beginner's level if similarities were to be found. We will briefly review some relevant studies related to the L1 gender assignment in French, Spanish and German.

Karmiloff-Smith (1979) tested the ability of 341 monolingual French children to investigate the influence of phonological properties of the noun or the indefinite article to assign gender. The participants were presented pictures of invented nouns for persons, animals and objects. The information was presented in three different ways: 1) matching indefinite article and the noun cues, 2) no gender cue in the determiner (for example a number) followed by the noun or 3) inconsistent gender cues on the indefinite article and the noun. The responses to the gender assignment task showed that all the children produced correct definite articles when indefinite articles and nouns had matching cues. When there was no cue in the determiner or when there was a clash between the indefinite article and the noun, the youngest participants (3 years old) selected gender-marked articles based on the phonological shape of the noun. On the other hand, the older the age of the participants, the higher the tendency to use the indefinite article in order to

determine the gender. This suggests that at an early age gender selection is made on the basis of the phonological shape of the noun while attention to the semantic referents and syntactic cues seem to increase with age.

Fewer errors are found in children acquiring Spanish as their first language. Studies in L1 have revealed that the realization of gender marking, agreement between the article and the noun, appears to be acquired by the age of three (Hernández Piña, 1984; Mariscal, 1996, 2001). Pérez-Pereira (1991) studied the acquisition of gender by L1 Spanish children aged between three and eight using a methodology very similar to Karmiloff-Smith's (1979). He obtained similar results: younger children rely more on formal properties of nouns than on semantic cues differing from the formal ones.

In order to examine the effect of phonetic endings in German, Mills (1986) examined previous studies and compared them to her experimental tasks. She suggests that German children build up connections between the article and the noun around the age of 3. She reports that it is also common that children omit the articles when they are unsure of the correct article and make fewer errors with feminine gender nouns, and that they follow phonetic rules until the age of 8.

Although gender assignment and agreement for L2 learners seem to pose a challenge at different stages of the learning process (Montrul et al. 2008, White et al. 2002; 2004, Hawkins & Franceschina 2004), L1 and L2 show similar development in some aspects of gender acquisition. For example, L1 speakers master noun-article agreement before the noun-adjective agreement (Müller, 1990; Dewaele & Veronique, 2000) as well as L2 learners (Bartning 2000; Hawkins, 1998; Sabourin 2003; cf. Foucart 2008). The present study examines the performance of gender assignment in the first

stage of agreement (definite article-noun) in an advanced-beginners level to determine the degree of mastery; if mastery is not achieved, we will try to detect the source of error: preference for morphophonological cues or degree of L1 transfer.

3.3. Previous findings on L2

In the context of investigating the L2 acquisition, some research has been done in the last decade in order to measure the underlying grammatical representation of DPs with offline and online techniques (Hawkins, 1998; Hawkins & Franceschina 2004; Bruhn de Garavito & White, 2002; Sabourin et al. 2006; Foucart, 2008; Behney 2011; Alarcón, 2011).

Several studies have tested the FFFH hypothesis that claims that if uninterpretable features are not present in the L1, they are not attainable at high proficiency level, (Hawkins, 1998; Hawkins & Franceschina 2004; Franceschina, 2001, 2005). They predict that, after the CP, if [*u*gender] feature is absent in the L1, learners cannot attain the agreement checking feature. These studies support the FFFH hypothesis proving that the native language of the learner has an important impact in L2 attainment.

Hawkins (1998) investigated the assumption with English native speakers from the UK and Canada who were L2 French proficiency learners who had spent at least six months in an immersion program. The test was an oral elicited task in which participants described a film. The results showed an overall error rate of 9% for definite articles and 19% for indefinite articles. An analysis of the individual performance of use of articles show that there is a significant difference between overgeneralized feminine articles (*fem Masc) and overgeneralized masculine articles (*masc Fem) for all groups, except the group who had secondary education in a French immersion program, who were the

participants from Canada. Hawkins (1998) suggests that English speakers select the article on the basis of noun phonology. This implies that the process even at high proficiency levels would be similar to L1 speakers' behavior at first stages of development (Karmiloff-Smith, 1979).

Franceschina (2001) studies the acquisition of gender in L2 Spanish in a L1 English speaker. The participant had lived in L2 immersion for a total of 25 years (last 19 uninterrupted). The data was gathered during 94 hours of informal conversations with the researcher. The results reveal that gender is quite problematic and an overgeneralization of masculine form in feminine contexts. Regarding article noun agreement, the overall error rate is 94.20% and the overgeneralization of masculine form in feminine context is 83.3% *vs.* the use of feminine in masculine contexts (16.7%). The author suggests that the participant may have successfully learned the noun form but not acquired the full functional specification of the Spanish DP in the target forms which would also explain why he resorts to the default use of masculine.

Another empirical study carried out by Hawkins & Franceschina (2004) investigated the L2 acquisition of gender concord within the DP. Six proficiency L2 Spanish speakers with considerable immersion exposure from two different L1 backgrounds (English and Italian) were tested. The number of errors in D-N concord was relatively small. They explain that extensive exposure to the L2 may enable to learn exceptions to the phonological patterns used as a basis for D selection. This would contrast with the concord based on 'checking' of languages with the [*u*gender] feature.

Franceschina (2005) findings also support this hypothesis. The participants are 110 native and L2 Spanish near-native speakers from different linguistic backgrounds

who started learning Spanish after CP. They were classified according to the functional gender feature in their L1 ([+gender]; [-gender]). The subjects performed a range of written and oral tasks designed to elicit production and interpretation data about the acquisition of Spanish gender. In her results, she observes that participants whose L1 had grammatical gender performed significantly better than those whose L1 did not have gender. Her results yield the conclusion that even if L1 and L2 are constrained by UG, CP determines the use of the functional features.

This contrasts with Bruhn de Garavito & White (2002) who suggest that problems with L2 gender are not related to the presence or absence of gender feature in the L1. Bruhn de Garavito & White (2002) investigated the L2 acquisition of Spanish DPs in first and second year high school L1 French students. The participants were two groups: one of low profiency level (Group 1) and the other one of low intermediate level (Group 2). The test was a production task aimed at eliciting oral naturalistic data by describing cards to the experimenter. The results revealed an overall high accuracy on gender marking on determiners, particularly of definite articles (above 85%). They compared their results to Hawkins (1998a,1998b) and found the results for French-speaking learners of L2 Spanish and English-speaking learners of L2 French were very similar in that a) error rates were significantly higher on indefinite than definite DPs and b) performance improved with increasing level (see Table 7).

Table 7

Error rates for article noun gender concord for definite DPs (adapted from Bruhn de Garavito & White, 2002, p. 161)

Spanish L2 (French L1)	Definite DPs	Indefinite DPs
Group 1 (n=30)	68/468 (14.5%)	97/415 (23%)
Group 2 (n=12)	19/241 (8%)	29/190 (14%)
French L2 (English L1)		
Hawkins 1 (n=10)	23/212 (11%)	42/155 (27%)
Hawkins 2 (n=10)	16/176 (9%)	34/154 (22%)
Hawkins 3 (n=10)	16/221 (7%)	29/211 (14%)

The authors also point out two other results regarding definite DPs. One is the significant difference between overgeneralized feminine articles (*i.e.,* feminine article for masculine nouns) and overgeneralized masculine articles (*i.e.*, masculine articles for feminine nouns) in Group 1 ($x^2 = 13.963$, $p < .001$) but not in Group 2. Another unexpected result is that the participants were less accurate on natural gender (error rate Group 1: 24.7%; Group 2: 15%) than on grammatical gender (error rate Group 1: 15.6%; Group 2: 10%). We will discuss Bruhn de Garavito and White's results in more detail when we present the results of the present study. Although the authors agree that the behavior of their study and those of Hawkins are similar in the case of definite DPs, an important difference may be noted. Their results suggest that article noun concord is correctly realized earlier for L1 with the strong feature [*u*gender] than for L1 without this feature since Hawkins participants with high proficiency of the L2.

White et al. (2004) findings' support the FT/FA hypothesis. The subjects of the experiment were L2 Spanish speakers of L1 French and English and a control group of Spanish native speakers. The subjects were classified into three levels of proficiency (low, intermediate and advanced). Four tasks were designed to investigate the acquisition of Spanish gender and number agreement for determiners and adjectives: two oral production tasks, a picture identification task, and a vocabulary test. Their results of advanced English and French learners of Spanish showed that both groups had no significant differences in their comprehension and production performance. Although they do not provide percentages for different determiners (e.g. definite/indefinite articles), the overall accurate responses on Det-N gender agreement in the production tasks are very high in all groups. The results among L1 English range among 87.05% to over 95% and for the L1 French from 83.05% to over 99%. For low proficiency groups, English speakers (87.88%) were more accurate than French speakers (83.05%). No significant difference was found for effect for L1.

For the vocabulary task, the subjects were supplied a picture and were asked to provide a lexical item (a form of the form of the article (el/la) was provided. The results show correct gender assignment in general. Gender accuracy on masculine nouns among L1 English ranged from 88.18% to 96.51% and from 97.24% to 95.52% for French L1. They also considered the possible L1 influence for French speakers. Despite the concurrence of gender in Spanish and French in the majority of the targeted nouns in the vocabulary task, L1 influence affected French speakers' performance when gender differs in both languages. We will examine more in detail this results comparing them to our results in chapter 6.

Sabourin et al. (2006) examined L2 knowledge of the Dutch grammatical system in German, English and Romance language speakers (French, Italian and Spanish). The participants had a reasonable level of proficiency. The effect of familiarity on the lexical knowledge was investigated by comparing nouns of different frequencies; half of the nouns were high frequency and the other half middle frequency. Gender was also taken into account: half of the words were of common gender and half were of neuter gender (*de* and *het* respectively in Dutch). All groups performed above 80%, a finding which supports Franceschina's (2005) conclusion that learning gender at the lexical level is possible. Despite this, the presence or absence of the gender feature (surface and deep transfer) in the learner's L1 seems to have an effect on the gender assignment learning process since the groups with the gender feature performed better than the English group. The results for frequency followed the same pattern. However, this selection did not consider the gender of the words in the different L1, which could have been another variable.

Consistent with account in the L2 minimalist literature, Ayoun (2007) used two different groups: French native speakers and L1 English speakers learning French as L2. They had three levels of proficiency and 80% of the participants were women. The test consisted of grammaticality judgment task and a production task. The results from the production task show lower percentages of errors in determiner-noun agreement than in adjective-noun agreement. The determiner-noun agreement error rates decreases as proficiency level increases (Low: 5.1%; Intermediate 3.9%; advanced: 1.5%). The author concludes that the high accuracy of determiner/noun agreement shows that the participants can assign the proper gender to a large number of lexical items. Furthermore,

she states that ‘it appears that these L2 learners have acquired the [±masc] gender feature in nominal phrases, challenging the Failed Feature Hypothesis (e.g. Hawkins & Chan 1997)’ suggesting that the findings may indicate successful parameter resetting of the [*u*gender] feature

Similarly, Alarcón (2010) adopts the theoretical assumption that L2 Spanish learners can acquire the gender uninterpretable feature allowing them to map form and function in the L2 as demonstrated by White et al. (2004). She investigates gender assignment and agreement taking into account the effects of morphological marking, animacy and gender. The participants were 107 English speaking learners of Spanish at three proficiency levels. In order measure the acquisition of this feature as part of the lexical entry and as a syntactic property, she uses two tasks: a gap-filling exercise in which the students had to select the article *el/la/los/las* and a constrained written production activity in which students were asked to produce an appropriate adjective. An additional vocabulary check is used to ensure lexical familiarity. Overall, the accuracy of the participants increased with proficiency level (Low-intermediate: 75%; High-intermediate 84.42%; Advanced: 88.24%) with a significant difference among the three groups. The difference between the first two groups was significant; however, no significant difference was found between the two higher levels.

The overall results show that morphology has an important effect in accuracy on gender agreement, that is, overt nouns were responded to significantly better than non-overt nouns. Regarding animacy, the difference in accuracy for semantic than with non-semantic nouns was significant. With respect to gender, learners were more accurate with masculine than with feminine nouns ($p < .001$). The results for gender assignment and

agreement support the claim that gender assignment precedes agreement in acquisition (Bruhn de Garavito & White, 2002). According to the author, the findings demonstrate that the L2 learners exhibited some problems with the syntactic realization of gender morphology rather than with lexical gender knowledge which leads her to conclude that L2 gender acquisition is a mapping problem in the interlanguage (Lardiere, 2000).

Despite the contradictory results presented in this section, the different approaches agree on the presence of L1 influence at initial learning stages and the increase of gender assignment and agreement accuracy in later stages of development (White et al., 2004; Dewaele & Véronique, 2001). Also relevant to the current research on gender acquisition is the evidence from L2 gender processing. In the next section we will review some recent studies that have contributed to detect the processing effects of underlying grammatical features.

3.4. Online evidence from L2 gender processing

In order to examine the online processing of gender agreement, several recent studies have used eye-movement recording and Event-Related Potentials (ERPs) to measure the brain response to a cognitive event.

"ERP techniques, which monitor neuronal activity, are relevant for investigating language processes because the two most studied peaks in electrical brain activity that have been identified correspond to semantic and syntactic anomalies when hearing or seeing a word, suggesting that semantic or syntactic processes are independent of each other" (Field, 2004; cited in Alarcón 2009, p. 814). ERP signals consist of positive and negative peaks related to the stimulus processing. Below some explanations of components in language-related ERPs are provided:

a) **N400s**. It is a negative component, usually involved in visual semantic and lexical. "Generally, the N400 reflects meaning congruence between a word and its previous context ... When a word is incongruent with its context it produces a negative-going wave peaking at about 400 milliseconds after the onset of a word; a congruent word produces a reduced N400 effect (less negative amplitude)" (Balass, 2011, p. 20).

b) **ELAN.** It is an "anterior negativity that occurs in the 150–250 ms latency range, is often lateralized over the left hemisphere and is assumed to reflect syntactic-structure building that occurs extremely rapidly" (e.g. Hahne and Friederici, 1999; cited in van Hell & Tokowicz, 2008 p. 46)

c) **LAN or Left Anterior Negativities**. It is interpreted as an effect of syntactic structure building. LAN occurs 300-500 ms from the word onset. Generally, LANs are elicited in word category and number agreement violations (Neville et al., 1991; Friederici, 2002; cited in Steinhauer & Connolly, 2008). LAN effects haven been observed in languages in which the grammatical relations rely to a great extent on morphosyntactic information (Penke et al.,1997; Angrilli et al. 2002; Silva-Pereyra and Carreiras, 2007; cited in Friederici & Weissenborn, 2006).

d) **P600.** It is a positive component is usually related to syntactic error detention. The waveform peaks at approximately 600 ms after the presentation of the stimuli. Different studies have revealed a P600 effect in response to gender agreement violations in a sentence (Foucart & Frenck-Mestre, 2011).

Although recent studies have investigated gender acquisition from this approach, it is important to compare L2 learners from different L1 backgrounds in ERP studies. Only few studies have investigated syntactic processing, opening new fields of research.

Sabourin (2003) use an online Electroencephalogram measurement (EEG) to investigate the differences among L2 Dutch learners that were native speakers of German, English and Romance languages (i.e. Spanish, Italian, French and Portuguese). German has a gender system similar to Dutch; Romance languages have gender systems but they differ considerably from Dutch; English has no grammatical gender system. The participants were presented a grammaticality judgment task of gender agreement. The results showed that the German group was the closest to the control group, followed by the Romance and the English group in that order. The author investigated verb feature agreement and syntactic gender agreement. Interestingly, the group of native speakers and the German group show a P600 effect to ungrammatical nouns although the effect in the second group is smaller than in the control group. The Romance group does not show frontal negativity but not a P600 effect. The English speakers do not show any P600 or frontal negativity. Sabourin (2003) conclude that these results are explained by the L1 transfer of the absence of the gender feature by late learners. Later, Sabourin & Stowe (2008) confirmed that the presence of the grammatical gender feature and lexical gender overlapping of L1 and L2 is required for automatic gender processing.

In another ERP study, Tokowicz and MacWhinney (2005) investigated the sensitivity to grammatical violations among English-Spanish L2 learners in their first four semesters of university-level Spanish. The researchers use an ERP in a grammaticality reading judgment task. The learners show P600 response to similar L1/L2 constructions (determiner number agreement) but not for different constructions (*i.e.,* determiner gender agreement). Their findings are consistent with the initial assumption that learners would not be sensitive to L2 constructions that are different from their L1 at

the beginning levels and that they would be sensitive to violations of similar L1 and L2 constructions.

A recent study by Foucart & Frenck-Mestre (2011) also reports different effects between L2 learners of French (L1 German) and native speakers in processing gender. ERP and eye-tracking experiments were used to reveal the sensitivity to gender agreement manipulations (Det-N, pre-posed adjective and post-posed adjective). Both groups revealed a P600 effect between the noun and the post-posed adjectives. For pre pre-posed adjectives, a phenomenon less frequent in French, native speakers showed a P600 whereas an N400 was triggered in L2 learners. In line with Tokowiwz and MacWhinney (2005) the authors conclude that L2 learners have integrated post-posed adjectives but not pre-posed adjectives at this level and suggest that such processing should achieve native-like performance with increased proficiency[5].

In this section, we have reviewed offline and online studies showing evidence of the degree of accuracy and the different cognitive processes involved in L2 gender acquisition. We now turn to the research questions that motivate this study and the expected outcomes involving Spanish L2 learners of three different L1 backgrounds.

3.5. The Study: Research questions and Possible Outcomes

Within the theoretical frameworks of acquisition of grammatical features L2, the full transfer hypothesis and the representational deficit hypothesis usually apply to initial and endstate grammars. Following Lardiere (2000), it is important to examine when and how that knowledge has been acquired. Thus, the aim of this study is to examine an aspect of the interlanguage of English, French and German speakers learning Spanish as a

[5] For a more exhaustive review of ERP studies addressing in L2 learners, see van Hell & Tokowicz (2010) and Morgan Short et al. (2010).

L2 or L3 at a similar level of proficiency in order to determine whether English learners have more difficulties representing gender features than French and German learners due to their L1 gender systems. Three main differences among learners are tested, that is, the nature of the gender feature in the L1, the morphological similarity between the L1 and the L2 along with possible positive or negative L1 gender transfer effects in German and French speakers. When comparing learners' performance under the same conditions, the follow research questions arise:

a) To what degree is L2 grammatical gender acquisition influenced by the presence or absence of an abstract syntactic feature, such as grammatical gender in the L1? This factor may indicate whether learners who do not share the same L1 acquire gender similarly. If they do not, detailed analysis may indicate where significant differences may be found.

b) Do German and French groups perform better on assigning grammatical gender to cognates than non-cognates? If considered under positive and negative influence separately, do cognate nouns have higher accuracy rates than non-cognate nouns?

c) Finally, Is L1 transfer a greater factor than frequency in gender assignment at this stage in the learners' interlanguage? While different studies have included adults from different L1 backgrounds (e.g. White et. al, 2004,); others have included noun categories (e.g. Alarcón, 2011) or frequency (e.g. Sabourin et. al 2006) but no previous study to our knowledge has examined the interference of possible positive and negative L1 transfer effects in L2 gender assignment and agreement at beginners' or intermediate levels.

The following are the expected outcomes of the present study:

1. For nouns with positive L1 transfer, the EN group will perform lower than the GE and FR groups.
2. For nouns with negative L1 transfer, the EN group will perform above the FR and GE groups.
3. For cognate/non cognate nouns: The three groups will perform better on cognate than non-cognate nouns.
4. For overt/non-overt nouns: The three groups will show higher accuracy for overt than for non-overt nouns.

To summarize, L1 effects are expected in the case of learners with possible positive and negative gender transfer. For the group whose L1 lacks gender, performance will be lower when the other groups have positive transfer and higher when negative transfer is expected.

4. Methodology

This study analyzes the extent to which the presence or absence of the gender feature in the L1 and the morphological similarities between different languages constitutes the initial "departure point" for the learner's acquisition and representation of this feature in the L2. The presence of gender feature is a relevant factor in understanding the implications of UG constraints in the L2 in initial and intermediate states of second language learning. In addition, the similarity between gender systems can give us further information about when and how the transfer of L1 features arises in this process. Thus, to quantify the degree of L1 transfer in gender assignment, previous lexical knowledge of the nouns being tested was ensured. The study includes data from three groups with three different L1 backgrounds in two written recognition tasks. The participants, linguistic cues, instrument and data analysis used for the study will be described in the following sections.

4.1. Participants

To examine the state of gender acquisition of nouns with respect (non-) convergence to the feature and the feature strength in the target language, three different groups of non- native speakers learning Spanish as a second language were tested in this study. Initially, 175 participants with English (L1), 72 with German (L1) and 65 with French (L1) were tested. From each of these groups, heritage learners, students older than 30 years old and students with regular contact with Spanish speakers were excluded as will be explained below. As a result, for the present study, there participants included are 136 English (L1), 47 German (L1), and 46 French (L1). The English group (EN group) consists of college students enrolled in their third semester courses of Spanish as a second

language in the University of Houston at the time of the study. They can be classified as Novice High according to American Council on the Teaching of Foreign Languages proficiency guidelines (ACTFL). The German group (GE group) consists of twelfth grade[6] students in their second year of Spanish in *Ludwig Erhard Schule* in Münster, Germany; the French group (FR group) consists of twelfth grade[7] students in their second year of Spanish in *Lycée Montesquieu* in Herblay, *Île-de-France,* France. The GE group and the FR group can be classified as A2 according to the Reference Level Descriptions for Spanish developed by the *Instituto Cervantes* based on the Common European Framework of Reference for Languages (CEFR). Despite the different frameworks and standards, the selection of the participants was aimed at guaranteeing some degree of homogeneity in order to facilitate comparison and pose probabilistic questions. All participants were post-puberty adults immersed in an academic institution, who were at a Novice High/A2 level of language proficiency in Spanish. Information on the tested participants as well as information on the mean age can be seen in Table 8.

Table 8

Participants for the study: Number of Participants by L1 Group and Mean Age

First language	Mean Age
English (*N* =136)	23.4 yrs
German (*N* = 47)	17.6 yrs
French (*N* = 46)	16.3 yrs

[6] *Zwölfte Klasse* according to the German education system.
[7] *Première année* according to French education system.

However, there are varying social conditions that affect the three groups: in Europe, learning a second language is mandatory in education systems from an early age whereas in the United States, many students start learning a second language in middle school, high school, or even at a college level. Although all the participants are at a similar level in Spanish, their first age of exposure to a second language was different, and therefore, may have cognitive implications in this process. In order to maintain an age range not larger than 15 years, two participants who reported being older than 30 were excluded from the study.

A short language background questionnaire in their L1 was given to the students in order to determine their level and amount of previous Spanish classes, other experiences in Spanish (trips, study abroad programs, etc) as well as to identify students with a Heritage Language. For some German and French speaking students, Spanish is their third language (L3) and English is their second language. According to White et al. (2004), FFFH does not distinguish between L2 and L3 acquisition as far as predictions are concerned: the non-native acquisition of gender will be problematic if the L1 lacks gender and will not be problematic if L1 has gender. Students who reported being heritage speakers or having direct relatives, such as parents or grandparents, who speak other languages at home different from the targeted L1 were excluded from the study.

Another factor to take into account is the degree of contact with the target language. In the United States, Houston has the third highest percentage of Hispanic population (43.8% according to 2010 US Census[8]). This strong Hispanic presence may have implications in the performance of the EN group. In order to control the variable of the amount of exposure to the target language, students who reported significant

[8] Information extracted from the US Census Bureau official webpage: http://2010.census.gov

experiences such as vacations for more than two consecutive weeks in a Spanish-speaking country or regular contact with Spanish speakers were excluded. Finally, students who did not respond to more than 80% of the tasks were not included in the study.

4.2. Materials

The instrument was designed to elicit data on gender assignment and vocabulary knowledge. Initially, 81 nouns were tested; however, one was excluded due to an error in the item design leaving a total of 80 nouns for the analysis; 49 were masculine and 31 were feminine. To avoid possible effects of number, all nouns were singular forms. The task design was based on a similar design used by Alarcón (2010) but was modified according to the parameters of this study. The experimental tasks of the present investigation were presented simultaneously. The test consisted of two multiple choice tasks. The first task consisted of selecting the masculine or feminine definite article (*el/la*) for each Spanish noun. The second one consisted of choosing the word in their L1 that best matched the one in Spanish. The instructions were given in their L1 language. In order to investigate their level of gender acquisition and possible L1 transfer, multiple criteria were taken into account when selecting the nouns:

a) Frequency. In order to ensure lexical familiarity, nouns were selected based on *A Frequency Dictionary of Spanish: Core vocabulary for Learners* (Davies 2006). Out of 81 nouns, 46 were within the 1,000 most frequent words; 19 within 1,000-3,000 words; 7 within 3,000-5,000 and 7 of them did not belong to the five-thousand most frequent words. From these seven words, six were cognate words and one was included for being

usually listed in the vocabulary related to food of first year Spanish books (*mantequilla*/'butter').

b) Cognate words. For every morphological ending, a frequent word and a cognate word were selected when possible. Cognates were selected for having a possible stronger L1 transfer influence. The majority of the cognates were among the most frequent 5,000 words, and only six were of lower frequency. Although they were all expected to be recognizable, it is quite possible that the relative frequencies also had an effect on the selection of gender for each word. Table 9 reflects the distribution of cognate and non-cognate words by frequency.

Table 9

Distribution of cognate (CG) and not-cognate (Non-CG) words by frequency

Frequency	Non-CG	CG	Total
0-1,000	29	17	46
1,000-2,000	7	4	11
2,000-3,000	3	7	10
3,000-4,000	3	2	5
4,000-5,000	1	1	2
More than 5,000	1	6	7

Most of the words were cognates in all four languages (e.g. *asteroide / Asteroid / asteroïd /* asteroid). When it is was not possible to find cognate words in all of them,

Spanish, French and English were given priority since German participants have a wide vocabulary of English as L2[9] and were expected to recognize them.

c) Possible combinations. The present study addresses two types of nouns (semantic and non-semantic), two types of endings (overt and non-overt) and deceptive endings (*i.e.*,*-o* for feminine; *-a* for masculine). Next, we present the five possible combinations followed by an example:

(1) Semantic overt: *ingeniero* 'engineer.MASC.'

(2) Semantic non-overt: *mujer* 'woman.FEM'

(3) Non semantic overt: *palabra* 'word.FEM'

(4) Non-semantic non-overt: *tomate* 'tomato.MASC'

(5) Non-semantic deceptive: *día* 'day. MASC'

Since all four languages have semantic gender, only eight semantic words were included: 4 overt and 4 non-overt, with two for each gender. Regarding the ending cue, more non-overt than overt nouns were tested. The distribution of items included in each category is displayed in table Table 10. The complete list of items by noun classes and ending cue can be found in Appendix A.

Table 10

Number of masculine and feminine nouns in each category

Semantic				Non-semantic					
Overt		Non-overt		Overt		Non-overt		Deceptive	
Masc	Fem	Masc	Fem	Masc	Fem	Masc	Fem	Masc	Fem
(2)	(2)	(2)	(2)	(8)	(6)	(32)	(19)	(5)	(2)

[9] English as a Second Language is mandatory in Germany since fifth grade.

For non-semantic words, the same overt/non-overt distinction was made. Within non-overt category, the selection of word endings was based on a ranking of a count of all nouns in Spanish and their endings (Bull, 1965). In some exceptional cases, a non-frequent word or cognate was found for some of the less frequent endings of non-semantic words (see Tables 11 and 12).

Table 11

Number of nouns in masculine endings (adapted from Bull, 1965) and number of words included in the study (in parenthesis)

2,100-1,000 instances	1,000-300 instances	Less than 300 instances
-e (7)	*-l* (6)	*- a* (5)
-r (7)	*-s*[a] (4)	*-i* (1)
-n (7)		

Note. [a] Except for *-sis*, etc.

Table 12

Number of nouns in feminine endings (adapted from Bull, 1965) and number of words included in the study in parenthesis

2100 to 1000 instances	1000 to 300 instances	Less than 300 instances
- ión (4)	*-d* (5)	*-isis,-itis* (3)
		-e (7)
		-o (2)

d) Possible L1 Transfer. Nouns were controlled across all the above-mentioned criteria and possible L1 gender transfer in the languages that have the gender feature. Each type of morphological ending in Spanish had four possible combinations of concurrence and non-concurrence in French and German. For example, if a noun ended in *–o,* eight words were selected: two (usually a cognate and a non-cognate word) that matched with the gender of the equivalent word in German and French, two that did not match with the gender of the equivalent word neither in German nor in French, two that matched in German and not in French and, finally, two that matched in French and not in German. Concurrence will be referred to as positive L1 transfer and non-concurrence as negative L1 transfer. Table 13 provides an example of the pattern that was used:

Table 13

Example of possible L1 transfer combination design with a non-semantic word with *–o* ending in Spanish (ES), French (FR) and German (GE)

Combination	**Non-semantic words with -o ending**	
	Non-cognate	**Cognate**
Gender concurrence in ES, FR, and GE		
ES	(m) *camino* (road)	(m) *cuerpo* (body)
FR	(m) *chemin*	(m) *corps*
GE	(m) *Farhweg*	(m) *Körper*
No gender concurrence		
ES	(m) *vestido* (dress)	(m) *minuto* (minute)
FR	(f) *robe*	(f) *minute*
GE	(n) *Kleid*	(f) *Minute*
Gender concurrence in ES and GE		
ES	(m) *anillo* (ring)	(m) *consumo* (consumption)
FR	(f) *bague*	(f) *consommation*
GE	(m) *Ring*	(m) *Konsum*
Gender concurrence in ES and FR		
ES	(m) *mundo* (world)	(m) *ejemplo* (example)
FR	(m) *monde*	(m) *exemple*
GE	(f) *Welt*	(n) *Beispiel*

However, for some categories, no frequent words were found with one of both possible L1 transfer effects. It was more difficult to find feminine nouns with possible negative L1 transfer. Sometimes this was due to the romanic origin of the words, such as words ending in *–ión*, usually feminine in Spanish, French and German. Therefore, once all the data was collected, careful selection is needed for the analysis of the results. The criteria for the data analysis are explained in section 4.4.

On the other hand, the second task consisted of a multiple-choice activity. Students had to select one of three words in their L1 that appeared to the right of the targeted word in Spanish. The distractors were selected from the same semantic field, usually a head word or hypernym and an antonymous word or a hyponym, as shown in the following examples for *corazón* 'heart' and *carne* 'meat':

Figure 1

Examples of tasks display

el / la	corazón	a)	artery	b)	body	c)	heart
el / la	carne	a)	food	b)	fish	c)	meat

The simultaneous presentation of both tasks was motivated by practical reasons due to the amount of nouns. The instrument for each L1 group can be found in Appendix B, C, and D.

4.3. Procedures

The study was piloted at the beginning of Fall 2013 with 27 students enrolled in the same class as the intended participants at the University of Houston and with 12 students of the same level attending high school in Germany. After some corrections

regarding the distractors, the final version was taken by the previously described participants. A total of 14 classes participated in the study in three different countries. The researcher introduced herself in all the classes participating in the study at the University of Houston and gave instructions about how to fill out the background questionnaire and complete the tasks. For the classes in Germany and France, their corresponding instructors were given precise specifications about how to present the instructions. Participants were given approximately 15 minutes to complete the tasks, and instructions were given in the corresponding L1. They were asked to fill out the background questionnaire, to make *el* or *la* judgment for each noun, and to circle the word in their L1 that best matched the word in Spanish. The instructor asked students to take the test in exchange for additional points in the previous test according to the percentage of correct answers (a few points for 50% correct answers and more points for over 75% correct). Nouns were presented in a random order. Once all the data were collected, the participants were classified according to their profile as L2/HL. For the present study, on L2 students results will be considered.

4. 4. Data analysis

Each participant's data was entered with an identification number into a Microsoft Excel 2010 file. Because the purpose of the study is to measure the degree of L1 transfer in languages that have grammatical gender, lexical knowledge was verified in the three groups. The data was coded in the following way: first, all incorrect and null responses in the lexical knowledge task per student and word were excluded. Second, only correct responses from the lexical knowledge were matched with the results from the article selection task. Thus, every word has a different number of responses.

Once all data was coded, overall accuracy rates of the 80 nouns were calculated by gender, frequency, morphological similarity and noun ending for each group. However, the complete list of nouns is not equally distributed between nouns with possible positive and negative L1 transfer. Therefore, the second analysis will focus on a group of 24 selected items: 14 masculine nouns and 10 feminine nouns. For a balanced analysis of these results, two nouns (one with positive and one with negative L1 transfer) were selected according to noun class, morphological similarity, and ending cue. Since semantic nouns only have positive L1 transfer, they have not been included in the second analysis. Table 14 shows an example of the words selected for nouns ending in *–o*.

Table 14

Selected masculine overt nouns: cognates (CG) and non-cognates (non-CG); positive and negative transfer

Non-CG		CG	
+ transfer	- transfer	+ transfer	- transfer
camino	*vestido*	*cuerpo*	*minuto*
'road'	*'dress'*	*'body'*	*'minute'*

As previously mentioned, sometimes a single word with positive or negative transfer in both languages was not found. In those cases, a different word for each L1 group was selected preserving the same ending cue. For instance, no frequent noun ending in *–a* with positive transfer in German and French was found. However, casa 'house.FEM' is feminine in French but not in German whereas *mantequilla* 'butter.FEM' is feminine in German but not French. For the analysis of nouns ending in *–a* with positive

transfer, the results for *casa* from the FR group were compared to the results for *mantequilla* from the GE group. To compare them with the EN group, the average of *casa* and *mantequilla* was calculated.

Sometimes, no word in either language was found with one of the two possible transfer effects. In those cases, the variable was considered empty. For example, for non-overt endings, *-ión* did not fulfill the requirements and was not included while *–ad* was included in the results for non-cognates but not for cognates, since no word with negative transfer was found. These examples are more graphically illustrated in Table 15.

Table 15

Examples of non-overt nouns available for *–ión* and *–ad* endings with positive (+TR) and negative transfer (-TR)

"-ión"				*"-ad"*			
Non-CG		CG		Non-CG		CG	
+TR	-TR	+TR	-TR	+TR	-TR	+TR	-TR
No word	*No word*	*situación*	*No word*	*ciudad*	*edad*	*realidad*	*No word*

Consequently, the results will be compared among groups for each variable and not by gender when the number of nouns in the variables is not equally distributed. This will be indicated in the results. The classification for the selected items can be found in Appendix E.

5. Results

5.1. Overall results

As previously mentioned, only correct responses in the lexical task were included. If a participant assigned the correct article to a noun but did not know the meaning of the word, the response was omitted from the analysis. Therefore, the means and standard deviations for gender assignment have been calculated considering the number of responses for each item[10]. Table 16 displays the overall means and standard deviations along with the percentages divided by gender. The results indicate that the French group (FR group) achieved the best scores (87%) followed by the English group (EN group) and the German group (GE group) who obtained the same overall accuracy rates (81%). Breaking down the overall means into masculine and feminine shows that the FR group responded more accurately masculine nouns followed by the EN group and GE group, respectively; for feminine nouns, the FR group obtained the best results, followed by the GE and the FR groups. The results for the complete list of 80 items presented to the participants can be found in Appendix F.

[10] Due to the nature of the study, there were differences in the number of responses for each participant and noun. Given that all the variables were not equally distributed, the results will be presented in percentages to allow comparisons among groups and will not run a statistical analysis with a software package such as SPSS.

Table 16

Overall and by gender means and standard deviations for the three L1 groups in percentages

	Overall Mean	Overall SD	Mean Masc	SD Masc	Mean Fem	SD Fem
FR group	87.73	3.66	86.92	5.51	89.02	4.82
GE group	80.92	5.01	81.14	6.43	80.62	8.37
EN group	80.53	4.21	83.93	7.19	74.98	8.24

The above percentages include all selected nouns. However, this list includes more non-overt than overt nouns. For example, for masculine nouns, eight were overt and thirty-two were non-overt (excluding deceptive nouns, such as *día*/'day.MASC' and *mano*/'hand.FEM'). Thus, an average for each category was calculated. In general, the French learners produced more accurate responses (86.96%) followed by the German group (82.49%) and the EN group (80.67%). Masculine nouns were responded almost equally well by the FR and EN groups performing above the GE group. Feminine nouns yielded more varied results ranging from 72.51 % to 83.70%. The FR group showed the best performance on feminine nouns, followed by the GE and the EN groups. These results are presented in Table 17.

Table 17

Accuracy means of all nouns by gender calculated from the overt/non-overt percentages

	Masc	Fem	Mean
FR group	90.22%	83.70%	86.96%
GE group	85.97%	79.02%	82.49%
EN group	88.83%	72.51%	80.67%

5.1.1. Results according to natural (semantic nouns) and grammatical gender (non-semantic nouns)

In general, all groups were more accurate with semantic than non-semantic nouns. All groups performed above 95% for semantic nouns and below 88% for non-semantic nouns. The results show a higher performance on masculine than feminine referents in the three groups.

Table 18

Overall accuracy rates for semantic and non-semantic nouns and divided by gender

	Semantic			Non-semantic		
	Masc	Fem	Mean	Masc	Fem	Mean
FR group	98%	94%	96%	90%	84%	87%
GE group	99%	91%	95%	86%	79%	82%
EN group	99%	93%	96%	89%	73%	81%

Within semantic nouns, overt and non-overt endings were analyzed. As shown in Table 19, the FR group shows similar performance regardless of the ending cue whereas

GE and EN groups are more accurate with overt than non-overt nouns and with masculine than feminine.

Table 19

Correct gender assignment for overt and non-overt semantic nouns

	Overt			Non-overt			Total
	Masc	Fem	Mean	Masc	Fem	Mean	
FR group	96%	95%	96%	100%	92%	96%	96%
GE group	100%	99%	99%	99%	83%	91%	95%
EN group	98%	97%	97%	100%	89%	94%	96%

Non-semantic nouns reveal lower accuracy rates with respect to semantic nouns for all groups (FR group: 87%; GE group: 83%; EN group: 81%). Within non-semantic nouns, the results include overt and non-overt nouns, as presented in Table 20. Overt nouns show a very high accuracy rate for the three groups. Again, breaking down the results by gender indicates that all groups have slightly more difficulties with feminine than masculine nouns. On the other hand, non-overt nouns had a negative impact in all groups decreasing their ability to correctly assign gender. It is especially noticeable among the German and English groups, each one scoring 27% below their performance on overt nouns whereas just 16% difference was observed for the French group.

Table 20

Overall accuracy rates for non-semantic overt and non-overt nouns

	Overt			Non-overt			Total
	Masc	Fem	Mean	Masc	Fem	Mean	
FR group	95%	94%	95%	85%	73%	79%	87%
GE group	96%	95%	96%	76%	63%	69%	83%
EN group	96%	93%	94%	82%	52%	67%	81%

Furthermore, the results for each word were classified according to the terminal phoneme. For example, the ending *–n* includes the average of the accuracy rates for nouns, such as *corazón* 'heart', *origen* 'origin' or *fin* 'end'. All words and percentages by non-overt terminal phoneme can be found in Appendix G. For the targeted masculine non-overt cues (*"-e", "-r". "-n", "-l", "-s"* and "*–i"*), German and French speakers showed the worst performance on *"-e"* as in *tomate*/'tomato' and *pie*/'foot' whereas the English speakers scored above both groups (FR group: 73%; GE group: 70%; EN group: 79%). In contrast, the EN group, ―with no L1 transfer―, seems to associate *"-e"* to masculine rather than to feminine since the accuracy for feminine nouns ending in *"-e"* decreases to 63%. The best performance for all groups was for *"-i"*, however, only one word with this ending (*taxi*/'taxi') was tested. The next highest accuracy varies among groups: *"-s"* as in *mes*/'month' and *país*/'country' for French speakers, *"-n"* as in *examen*/'exam' and *fin*/'end' for German speakers, and *"-r" as in color*/'color' *or lugar*/'place' for English speakers. These results are shown in Table 21.

Table 21

Accuracy rates for non-semantic, non-overt masculine nouns by terminal phoneme

	Masc						
	–e	*–r*	*–n*	*–l*	*–s*	*–i*	Mean
FR group	73%	74%	85%	86%	93%	100%	85%
GE group	70%	69%	79%	76%	72%	89%	76%
EN group	79%	85%	77%	84%	75%	92%	82%

For feminine nouns, the most successful ending is *"–ad"*, as in *ciudad*/'city' or *realidad*/'reality'. The next *"-ión"*, as in *television*/'television' or *situación*/'situation', for the three groups. However, French and German learners were more accurate than the English group probably due to L1 gender transfer effects in the two first groups. For now, it is important to note that the French group also shows the highest rates for both endings. On the contrary, *"-d"*, as in *pared*/'wall' and *sed*/'thirst', appears to be the most difficult ending cue for all groups. Table 22 presents the results for the feminine ending cues tested. A possible explanation for these results with regards to L1 gender transfer and rules for assignment in French and German will be further discussed in chapter 6.

Table 22

Accuracy rates for non-semantic, non-overt feminine nouns by their terminal phoneme

	Fem					
	–e	*–ión*	*–ad*	*–is*	*–d*	Mean
FR group	78%	97%	94%	66%	31%	73%
GE group	63%	77%	89%	60%	27%	63%
EN group	63%	66%	76%	23%	32%	52%

Finally, as previously mentioned, deceptive nouns were tested. Given that *"–o"* and *"–a"* are overt ending cues but in this case are referring to the opposite gender, the results for the deceptive nouns were analyzed separately. The percentages show overall difficulties with gender assignment with this type of words, except for the French learners who scored 90% for feminine nouns. Transfer effects will be addressed more specifically in the discussion of the results. The results for the English learners indicate that they find it problematic to assign the opposite gender to an overt cue. Thus, the EN group's accuracy rate for feminine nouns ending in *"-o"* is only 26% and for masculine nouns ending in *"-a"* is 33%. The percentages for each deceptive noun by L1 group are shown in Tables 23 and 24.

Table 23

Accuracy rates for deceptive masculine nouns by L1 group

	Deceptive *–a*					
	problema	*mapa*	*sofá*	*día*	*planeta*	Mean
FR group	67%	22%	96%	89%	9%	56%
GE group	34%	2%	19%	83%	9%	29%
EN group	15%	33%	11%	65%	4%	26%

Table 24

Accuracy rates for deceptive feminine nouns by L1 group

	Deceptive *–o*		
	foto	*mano*	Mean
FR group	89%	91%	90%
GE group	43%	14%	28%
EN group	37%	30%	33%

The results presented in this section account for all the words tested without considering possible L1 transfer effects. To optimize the comparisons among groups, after initial analysis of all the data, representative items were selected and analyzed. Thus, the next section focuses on the relationship between gender assignment and L1 gender influence. The overall results will serve as a reference point for later comparison with the group of selected nouns under equal distribution of possible positive and negative L1 transfer effects.

5.2. Interaction between L1 transfer effects and three variables: gender, morphological similarity (cognates and non-cognates) and ending cue (overt/non-overt)

To address the research question regarding the extent of influence from the L1, the data was analyzed under the equal distribution of words with possible positive and negative transfer effects among the three variables under investigation: gender (masculine/feminine), morphological similarity (cognate/non-cognate) and word ending (overt/non-overt). The results of 24 nouns (14 masculine and 10 feminine) combining these variables are presented in this section.

5.2.1. Interaction of L1 transfer and gender.

Before looking into the overall results, it is important to note that the accuracy rates are not meant to be compared between masculine and feminine but among L1 groups. Masculine nouns include all variables, however, no frequent feminine cognate non-overt nouns were found for the study. Therefore, feminine nouns do not fulfill all conditions and the results are not comparable to the overall masculine rates. The results will be analyzed comparing the three different L1 groups within each gender.

As previously noted, semantic nouns have not been included in this analysis because the three languages involved in the study have natural gender and only positive L1 transfer is possible. In general, the three groups reveal close accuracy rates. French and German speakers perform slightly above the English group. Table 25 displays accuracy means and standard deviations for masculine and feminine selected nouns for each group.

Table 25

Accuracy means and standard deviations for selected nouns by gender and L1 in percentages

	Mean	SD	Mean Masc	SD Masc	Mean Fem	SD Fem
FR group	90.60	5.05	86.00	8.80	96.55	5.69
GE group	90.17	6.55	87.20	10.08	93.98	7.96
EN group	88.82	7.55	88.07	10.97	89.86	8.95

As in the overall results, the results by gender taking into account the average for the overt *vs.* non-overt nouns were calculated for the selected nouns. The results show the same tendency but the range among groups decreases 2%. As shown in Table 26, the EN group was the most successful with masculine nouns, followed by the FR and the GE groups under equal distribution of L1 transfer effects. For feminine nouns, the FR group showed the highest accuracy rates, followed by the GE and the EN group.

Table 26

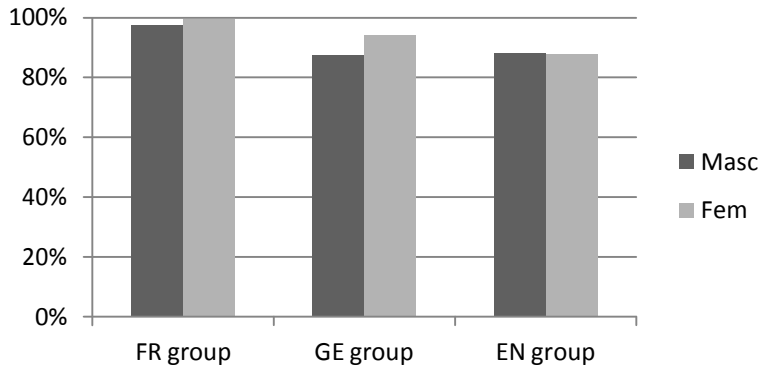
Accuracy rates of selected nouns by gender calculated from the overt/non-overt percentages

	Masc	Fem	Mean
FR group	85.76%	94.54%	90.15%
GE group	85.29%	90.77%	88.03%
EN group	87.90%	84.52%	86.21%

Interaction of positive L1 transfer and gender. The means for each group did not reveal clear differences between the groups who had positive transference in their L1 and the EN group. As presented in Figure 1, the FR group showed the highest performance on masculine and feminine nouns. The GE group showed a stronger positive L1 transfer effect and scored above the EN group for feminine nouns. However, the GE group showed more errors for masculine nouns despite the positive transfer.

Figure 2

Accuracy rates for non-semantic nouns and positive transfer by gender



For a more detailed analysis, the accuracy rates for each non-semantic masculine and feminine noun with positive transfer can be found in Tables 27 and 28. The results for the GE group for masculine nouns reveal that their low score is mainly due to the performance of the word *lugar* 'place.MASC' (38%).

Table 27

Accuracy rates for non-semantic masculine nouns with positive transfer

	camino	*cuerpo*	Mean overt	*lugar*	*carácter*	*corazón (FR)* *cinturón (GE)* *both (EN)*	*tren*	Mean non-overt
FR group	100%	100%	100%	93%	98%	92%	98%	95%
GE group	100%	100%	100%	38%	77%	91%	94%	75%
EN group	97%	97%	97%	81%	75%	76%	86%	79%

On the other hand, the results for feminine nouns seem stable in the GE and the FR groups scoring above 90%. The EN group shows a lower percentage on the noun idea (71%) despite being an overt noun. These results for noun ending variable are further discussed in the following chapter.

Table 28

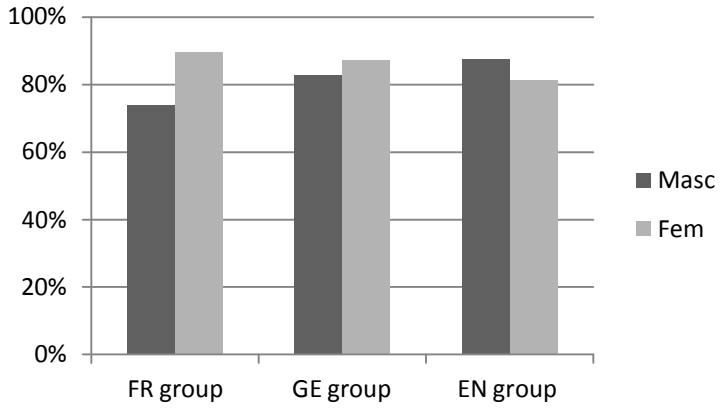
Accuracy rates for non-semantic feminine nouns with positive transfer

	casa (FR) *mantequilla (GE)* *both (EN)*	*idea, historia*	Mean overt	*ciudad*	*noche*	Mean non-overt
FR group	100%	98%	99%	100%	100%	100%
GE group	95%	98%	96%	93%	91%	92%
EN group	99%	85%	92%	84%	83%	84%

Interaction of negative L1 transfer and gender. The scores for negative transfer by gender are presented in Figure 2. Negative L1 transfer effects were found for masculine nouns but not for feminine nouns. The results show that FR and GE groups perform below the EN group. No strong negative L1 transfer effects were found for feminine nouns for these groups above the EN group. The difference among groups is more noticeable for feminine than for masculine nouns.

Figure 3

Accuracy rates for non-semantic nouns and negative transfer by gender



The results for each non-semantic masculine and feminine noun with negative transfer are displayed in Tables 29 and 30. The accuracy rates indicate that the FR and GE groups had more difficulties assigning the correct article to words ending in "–r", specially "–or", such as valor/'value' and color/'color'. The EN group shows similar percentages for all the non-overt nouns tested.

Table 29

Accuracy rates for non-semantic masculine nouns with negative transfer

	vestido	*minuto*	Mean overt	*valor* (FR) *amor* (GE) both (EN)	*color*	*fin*	*origen*	Mean non-overt
FR group	96%	91%	94%	23%	53%	70%	70%	54%
GE group	91%	93%	92%	57%	70%	80%	87%	74%
EN group	87%	98%	93%	82%	89%	84%	75%	83%

No strong effect of negative L1 transfer was found on feminine nouns. The GE and FR groups achieved a similarly high performance on overt and non-overt nouns whereas the EN group showed lower accuracy rates with non-overt nouns.

Table 30

Accuracy rates for non-semantic feminine nouns with negative transfer

	palabra	*tostada*	Mean overt	*edad*	*tarde*	Mean non-overt
FR group	89%	86%	88%	83%	100%	92%
GE group	90%	89%	90%	86%	84%	85%
EN group	94%	95%	95%	61%	75%	68%

5.3. Interaction of L1 and morphological similarity (cognates/non-cognates)

The interaction between cognates and non-cognates shows that the three groups performed better on masculine cognate nouns, such as *minuto*/'minute' and *carácter*/'character' than on non-cognates, such as *vestido*/'dress' and *corazón*/'heart'. For feminine nouns, only results for cognate nouns with positive L1 transfer are provided, such as *realidad*/'reality' and *clase*/'class'. The FR group obtained almost the same accuracy rate; the GE group performed equally well, and the EN group showed the same percentage of difference of 3% cognates over non-cognates as for masculine nouns. These results are shown in Table 31.

Table 31

Overall accuracy rates by morphological similarity, gender and L1

	Cognates		Non-cognates	
	Masc	Fem	Masc	Fem
		only with positive L1 transfer		only with positive L1 transfer
FR group	88%	99%	84%	100%
GE group	89%	92%	81%	92%
EN group	89%	86%	86%	83%

a) Interaction of positive transfer and morphological similarity (cognates).

The results indicate that the German and French learners performed considerably better than the English learners when there was gender concurrence with their L1, as presented in Table 32. The FR and GE groups were more accurate with masculine nouns, such as

carácter/‘character’ or *tren*/‘train’ and with feminine nouns, such as *idea*/‘idea’ or *clase*/‘class’ than the EN group. Moreover, the results show that there is a slight advantage for overt nouns as opposed to non-overt nous for the FR group and a moderate advantage for the GE group. The EN group is more accurate with overt than non-overt masculine nouns; however, they obtained higher rates for non-overt than for overt feminine nouns.

Table 32

Accuracy rates for non-semantic, cognate nouns with positive transfer by gender and L1

	COGNATES						
	Masc			Fem			Total
	“-o”	*"-r", "-n"*	Mean	*"-a"*	*"-d”, "-e"*	Mean	
FR group	100%	98%	99%	98%	99%	98%	98,5%
GE group	100%	85%	93%	98%	92%	95%	94,0%
EN group	97%	81%	89%	85%	86%	86%	87,5%

b) Interaction of positive L1 transfer and no morphological similarity (non-cognates). The findings for non-cognate nouns with positive transfer show higher accuracy rates for the FR and the GE groups than for the EN group. However, there is one exception regarding masculine nouns. The results for the GE group are lower than the EN group due to the score on the noun *lugar/*‘place’, as shown on Table 33. Other non-cognate nouns with positive transfer include *camino*/‘road’, *corazón*/‘heart’, *cinturón*/‘belt, or *ciudad*/‘city’ or *clase*/‘class’.

Table 33

Accuracy rates for non-semantic, non-cognates with positive transfer by gender and L1 group

	Non-cognates						
	Masc			Fem			Total
	"-o"	"-r", "-n"	Mean	"-a"	"-d", "-e"	Mean	
FR group	100%	93%	96%	100%	100%	100%	98%
GE group	100%	65%	82%	95%	92%	94%	88%
EN group	97%	78%	88%	99%	83%	91%	90%

c) Interaction of negative transfer and cognates. A comparison among groups for nouns with negative L1 transfer effect shows that the EN group performed above GE and FR groups, as presented in Table 34. This is true for overt and non-overt masculine nouns, such as *minuto*/'minute', *color*/'color', and *origen*/'origin'. For feminine cognate nouns, no non-overt word with negative transfer was found. Therefore, only rates for the overt noun with negative transfer *tostada*/'toast' can be provided. The results indicate that the EN group was more accurate than the other groups despite the overt ending.

Table 34

Accuracy rates for non-semantic, cognates with negative transfer

	Cognates				
	Masc			Fem	Total
	"-o" minuto	*"-r", "-n"*	Total Masc	*"-a" tostada*	
FR group	91%	54%	73%	86%	80%
GE group	93%	74%	84%	89%	86%
EN group	98%	81%	89%	95%	92%

d) Interaction of negative L1 transfer and non-cognates. The results reveal negative L1 transfer effects for masculine but not for feminine nouns in non-cognates. The FR and GE groups performed below the EN group for masculine nouns. In contrast, feminine nouns were performed better by the FR group (90%) followed by the German group and the EN group. The total and specific results for non-semantic/non-cognate nouns, such as *valor*/'value' or *amor*/'love' along with the results for overt nouns are shown in Table 35.

Table 35

Accuracy rates for non-semantic, non-cognates with negative transfer

	Non-cognates				
	Masc			Fem	Total
	vestido	"-r" and "-n"	Mean	*palabra*	
FR group	96%	59%	77%	89%	83%
GE group	91%	75%	83%	90%	86%
EN group	87%	84%	85%	94%	90%

5.4. Interaction of L1 and ending cue

The overall accuracy rates for overt and non-overt nouns are shown in Table 36. The results indicate that all groups were more accurate with overt than non-overt masculine nouns. On the other hand, the lack of feminine cognates with negative L1 transfer leaves the variable empty and therefore, only comparison between non-cognate nouns is possible. In this case, feminine overt nouns yielded better results than non-overt nouns.

Table 36

Accuracy rates of total overt and non-overt nouns under the same conditions

	Overt			Non-overt		
	Masc	Fem (non-cognates)	Mean	Masc	Fem (non-cognates)	Mean
FR group	97%	95%	96%	75%	96%	85%
GE group	96%	93%	94%	74%	89%	81%
EN group	95%	97%	96%	81%	76%	78%

a) Interaction of L1 positive transfer and overt ending. In general, the accuracy rates for positive L1 transfer and overt morphology is very high for the three groups, performing above 90%. All groups were more accurate with masculine than with feminine nouns. In general, the French and German groups achieved higher accuracy rates than the English group. For masculine nouns, the FR and GE groups scored 100% and the EN group slightly behind with 97%. For feminine nouns the FR group showed the highest performance (99%) followed by the GE group (97%) and the EN group (90%). These results can be found in Table 37.

Table 37

Accuracy rates for non-semantic, overt and positive transfer by gender and L1group

	OVERT					
	Masc			Fem		
				mantequilla (GE)		
	camino	*cuerpo*	Mean	*casa* (FR) both (EN)	*idea*, *historia*	Mean
FR group	100%	100%	100%	100%	98%	99%
GE group	100%	100%	100%	95%	98%	97%
EN group	97%	97%	97%	99%	85%	92%

b) Interaction of positive L1 transfer and non-overt ending. The results of non-overt nouns with positive L1 transfer show no clear strong effects for the French and German groups with respect to the English speakers. As shown in Table 38, the FR group performed the best of the three groups for masculine (95%) and feminine nouns (100%). The positive transfer did not have such a strong influence in the article selection for the GE group since it performed below the EN group for masculine nouns (GE: 75%; EN: 79%). A closer analysis of the results reveals again that, the noun *lugar/*'place' is what causes lower accuracy rates among German speakers.

Table 38

Accuracy rates for non-semantic, non-overt nouns with positive L1 transfer by gender and L1 group

	NON-OVERT							
	Masc					Fem		
			corazón (FR) *cinturón (GE)*					
	lugar	*carácter*	*both (EN)*	*tren*	Mean	*ciudad*	*noche*	Mean
FR group	93%	98%	92%	98%	95%	100%	100%	100%
GE group	38%	77%	91%	94%	75%	93%	91%	92%
EN group	81%	75%	76%	86%	79%	84%	83%	83%

c) Interaction of negative transfer and overt morphology. The results indicate negative L1 transfer effects for feminine nouns for French and German groups. However, no strong effect was found for masculine nouns. As presented in Table 39, French and German groups performed below the English group for masculine nouns but not for feminine nouns. Masculine nouns display a higher accuracy rate for the FR and GE groups as opposed to feminine. Conversely, the EN group obtained higher rates on feminine than masculine nouns.

Table 39

Accuracy rates for non-semantic, overt and negative L1 transfer by gender and L1 group

	Overt					
	Masc			Fem		
	vestido	*minuto*	Mean	*palabra*	*tostada*	Mean
FR group	96%	91%	93%	89%	86%	88%
GE group	91%	93%	92%	90%	89%	89%
EN group	87%	98%	92%	94%	95%	94%

d) Interaction of negative transfer and non-overt morphology. The findings for the interaction of negative L1 transfer and non-overt morphology are varied. For masculine nouns, the French and German groups performed below the English group. Feminine nouns did not show negative effects in non-overt nouns with the GE and FR groups performing above the EN group. These results can be found in Table 40.

Table 40

Accuracy rates for non-semantic, non-overt and negative transfer

	NON-OVERT							
		Masc				Fem		
	valor (FR) *amor* (GE) *both* (EN)	*color*	*fin*	*origen*	Total	*edad*	*tarde*	Total
FR group	23%	53%	70%	70%	54%	83%	100%	91%
GE group	57%	70%	80%	87%	74%	86%	84%	85%
EN group	82%	89%	84%	75%	83%	61%	75%	68%

6. Discussion

Several studies have evidenced that Critical Period constrains L2 language learning supporting the failed functional features hypothesis (Hawkins & Chan, 1997; Hawkins & Franceschina, 2004). However, recent evidence on grammatical gender shows that even if L1 grammar influences L2 performance at initial stages, full access is possible regardless the status of the gender feature in the L1 at high proficiency levels (Schwartz & Sprouse 1996; White et al., 2004). Therefore, the majority of these studies have focused on early initial stages or on high proficiency L2 learners. The present study works backwards in order to understand how differences in the status of gender, positive and negative L1 gender transfer and morphological similarity may affect the development of the L2 Spanish gender system.

In light of the results presented in the chapter 5, the research questions and expected outcomes will be discussed in this chapter. The results suggest that gender assignment depends on several factors. Gender is easily assigned to animate nouns, which could probably be attributed to the presence of natural gender in all the languages involved in the study. The results for the total list of items as well as for the selected nouns analysis indicate that French learners are the most accurate in assigning gender to non-semantic nouns, followed by German and English learners. This may be due to the similarity among gender systems (surface transfer) since the [+Romance group] obtained better results that the [+gender] group. In addition, morphological similarity seems to facilitate gender assignment as demonstrated by the results for cognate nouns. Furthermore, ending cues are important for all groups when assigning gender, especially overt cues. The results for non-overt cues may be related to typical terminal phonemes in

the L1 and transfer effects. Finally, a more detailed analysis reveals that positive and negative L1 transfer affects gender assignment in [+Romance gender] and [+gender] groups whereas frequency and morphophonological factors may influence [-gender] learners' performance.

6.1. Overall Results

In order not to favor either gender concurrence or non-concurrence with the L2, the results for the total list of nouns and the selected nouns analysis have been compared. This is important because in the second analysis nouns were equally distributed by positive and negative transfer. The results of the complete list of items showed a high performance (above 85%) in each of the three groups. These results are in accordance with Bruhn de Garavito & White (2002) results for low intermediate L1 French learners of Spanish on gender agreement using definite DPs which reported 85% accuracy. Similarly, they are supported by Hawkins's (1998) results for L1 English proficiency learners of French for the same type of agreement in which 89% accuracy was noted.

The performance of the three groups showed that French learners were the most proficient, followed by German and English learners in that order. This was also true for the selected nouns' analysis. This is consistent with a study by Sabourin et al. (2006) of Dutch L2 gender acquisition by German, English, and Romance language L1 learners which supports that lexical assignment is facilitated by surface transfer. In other words, morphological similarity of gender realization between the L1 and L2 directly affects French learners' performance. However, these accuracy rates contrast with White et al. (2004) results on production of appropriate gender in DPs without adjectives for English and French low-intermediate learners of Spanish. It is important to note that this

comparison should be taken with caution given that, in White et al. (2004) study, oral tasks were used to measure the degree of accuracy. Consequently, the difference between L1 groups with grammatical gender and the English group possibly reflects that this feature in the L2 is acquired earlier when the grammatical feature is present in the L1 than when is absent. This is in accordance with recent studies on L2 processing in low-intermediate L1 English learners of Spanish (Tokowicz & MacWhinney, 2005) and in high proficiency learners of different L1 backgrounds (Sabourin 2003; Sabourin & Stowe, 2008; Dowens et al., 2010).

For the selected nouns analysis, it was predicted that under equal distribution of possible transfer effects the degree of accuracy among groups would be similar. The results showed that the range among groups decreased from 6.29% in the complete list of nouns to 3.94% in the selected nouns' analysis. This suggests that proficiency effects could be related to the distribution of positive or negative L1 transfer among learners with the gender feature in their L1. This finding demonstrates that if gender acquisition is to be measured, it is conceivable that both types of transfer effects come into play at this stage of the IL. Therefore, selecting words only by linguistic cues may not render reliable results when comparing learners with and without the gender feature in their L1.

6.2. Animacy and gender

Since natural gender is present in the three L1s but grammatical gender is not, the results for semantic *vs.* non-semantic nouns were compared. Clearly, semantic nouns are mastered before non-semantic nouns, as shown by the high accuracy rates of the three L1 groups for semantic words. All groups performed better on semantic than on non-semantic nouns and on overt than on non-overt cues. These findings are in accordance

with other studies on L2 gender acquisition (Alarcón, 2010), L2 gender processing (Sagarra & Herchensohn, 2011) and on L1 (Hernández-Piña, 1984). When the results of semantic nouns are broken down into overt and non-overt, performance is more evident for semantic overt nouns than for non-overt nouns. Despite this difference, accuracy on non-overt nouns was considerably high. This finding suggests that late L2 learners do not rely as much as children do on morphophonological cues when semantic cues are present (Karmiloff-Smith, 1979; Pérez-Pereira, 1991). In addition, the results for semantic non-overt nouns showed that all participants performed better with masculine than with feminine nouns; all groups were more accurate with *hombre* 'man' and *actor* 'actor' than with *mujer* 'woman' and *actriz* 'actress'. Thus, although the majority of learners give preference to animacy, morphology shows an effect on feminine nouns. Because the amount of input plays an important role in language acquisition (Krashen, 1982; White, 1989), it is possible that learners are more accurate with masculine nouns due to the redundancy rule of lexical class, at least at initial and low intermediate levels.

Considering the overall performance by gender, several differences arise. As shown in Table 2, the results of the total list of items reveal that all groups were more accurate with masculine than with feminine nouns (FR group: 90%, GE group: 86%; EN group: 89%). In the selected nouns analysis, the variable for cognate non-overt with negative transfer was empty and therefore, comparison between masculine and feminine is not possible (see 5.3). It is important to point out that in the overall analysis the French group was the most proficient whereas in the second analysis not only do all groups yield more similar results (FR group: 90%; GE group: 88%; EN group: 86%) but also the English group obtained the best results for masculine nouns as shown in Table 11. This

particular result suggests that the underlying process of gender acquisition may be similar for all L2 learners and that positive transfer seems to facilitate lexical encoding.

In order to check for transfer facilitation in gender assignment, transfer effects by gender were analyzed. As shown by the results of the second analysis, gender concurrence positively affects L1 learners with grammatical gender for masculine and feminine nouns. There is one exception for the German learners' performance on masculine nouns which is attributed to the word *lugar* "place.MASC" (FR group: 93%; GE group: 38%; EN group: 81%). This noun seems to be problematic for two reasons: first, it had one of the lowest scores in the lexical knowledge task; second, the percentage of correct article was very low. Despite having gender concurrence with the L2, it appears that German learners would be influenced by the vowel "-a-"present in the last syllable. This is supported by the results of *plan*/'plan.MASC', another noun with positive L1 transfer included in the total list of items (FR group: 100%; GE group: 64%; EN group: 55%). Except for this problematic item, the results for all other nouns with positive transfer, such as *cuerpo*/'body.MASC', *tren*/'train. MASC', *historia*/'history.FEM' or *ciudad*/'city.FEM' were well above the English group in accordance with prediction 1 (see Table 13). In contrast, the influence of negative transfer is not as evident as positive transfer. It seems that negative transfer affects masculine nouns whereas it does not strongly affect feminine nouns, such as *palabra*/'word.FEM', *edad*/'age.FEM' or *tarde*/'afternoon.FEM' (see Tables 14 and 15). A more detailed possible explanation for what causes the opposite effect as predicted for negative transfer and feminine nouns can be found in section 6.4.

To summarize, the presence of grammatical gender in the L1 seems to affect gender assignment at the advanced beginner's level. The overall results demonstrated that under unequal and equal distribution of positive and negative transfer, [+ Romance gender] obtained the best results, followed by [+gender] and [-gender]. A comparison between natural and grammatical gender results indicates that [-gender] learners generally find it more problematic to assign gender to non-semantic nouns than the other two L1 groups. However, a conclusive statement cannot be made given that, under equal distribution, it seems that the L1 groups with grammatical gender are more accurate with feminine than with masculine nouns. This may be due to transfer factors from gender and morphology in their L1 as will be addressed in the next research questions.

6.3. Effects of morphological similarity

Given that French and Spanish have similar gender and morphological systems, one of the purposes of this study was to test whether German and English participants would perform better on cognate than on non-cognate nouns under equal possible L1 transfer distribution. Despite the fact that for German learners some of the nouns were not direct cognates but secondary cognates (through English, their L2), the results indicate that the three groups perform better on cognate nouns such as *minuto*/'minute' and *carácter*/'character' than non-cognate nouns, such as *vestido*/'dress' and *corazón*/'heart'. This demonstrates that morphophonological similarity with the L2 generally enhances gender acquisition in accordance with prediction 3. As shown in Table 16, for masculine nouns, the three groups were almost equally accurate on cognate nouns (FR group: 88%; GE group: 89%; EN group: 89%). Thus, measuring gender acquisition under equal transfer distribution evidences similar results among groups.

With feminine nouns, the French group was the most accurate, followed by the German and the English group (FR group: 99%; GE group: 92%; EN group: 86%). However, the variable of cognate nouns with negative L1 transfer was empty due to the origin of the nouns (for *"–e"* and *"–ad"*) as will be later explained in the ending cues section. Therefore, cognate nouns could not be compared to non-cognate nouns under all conditions but exclusively under positive L1 transfer (see Table 16).

Considering [-gender] learners, morphological similarity has a positive impact on gender assignment at this level. This might be linked to the fact that cognate nouns facilitate L2 and L3 acquisition as have been reported by L3 studies (Hall et al., 2009) and in some word processing studies on bilingual learners (De Bleser et. al, 2003; Peeters et al., 2013). Presumably, this reflects why cognate nouns and their associated gender could be acquired earlier, at least for [-gender] learners. However, it could be argued that the relative ease or difficulty in assigning gender to Spanish nouns by French and German speakers is a consequence of the interaction between morphology and positive or negative L1 transfer.

6.3.1. Morphology and transfer effects.

Under positive L1 transfer, French and German groups performed better with cognate than non-cognates, reinforcing the notion that morphology helps in gender assignment for groups with grammatical gender in their L1. Interestingly, a comparison between both groups reveals that the difference between cognates and non-cognates is considerably smaller for the French group. This confirms that French shares lexical similarity with Spanish and therefore, francophone learners do not experience significant differences. Furthermore, French and German learners generally performed above the

English group in accordance with prediction 1. However, the non-overt noun *lugar 'place.MASC'* seems to pose a problem for German speakers despite its positive transfer, as previously explained in section 6.2. If we consider the results excluding the word *'lugar',* German learners would perform above the English group, as expected. Under negative L1 influence, the French and German groups performed similarly in cognate and non-cognate nouns. Furthermore, German and French learners performed below the English group in accordance with prediction 2. Although our participants were late L2 learners, this is in line with word recognition studies in bilingual speakers of Dutch and German in which cognate nouns with a different gender in the L1 were recognized more slowly than cognates with the same gender (Lemhöfer et al., 2008).

These results indicate that L1 transfer positively and negatively affects learners with the gender feature in their L1 in the process of gender acquisition. Therefore, it could be assumed that their degree of success may depend on the correlation of gender concurrence between both languages, as reported by Fondalis (2002). Given that gender correlation between French and Spanish is higher than between German and Spanish, French speakers would have more positive influence to transfer to the L2. In addition to gender transfer, morphological similarity among L1/L2 plays an important role in gender assignment at this stage of the IL, as we have demonstrated. These findings may suggest two important implications: that the presence of the gender feature in the L1 facilitates gender assignment; that gender acquisition is facilitated not only by "surface transfer" of the gender system but also by morphological similarity. Thus, we could speculate that if German and English shared a Romanic origin instead of Germanic, the performance of

the three groups of learners would be even closer between German and French learners, leaving English learners slightly behind due to the absence of gender feature in their L1.

6.4. Ending cues

Spanish uses semantic and morphophonological cues in order to assign gender to nouns (Corbett, 1991). Ending cues seem to be important in aiding learners to acquire grammatical gender. All participants showed high accuracy with overt cues (*-o/-a*) demonstrating that they have integrated this linguistic rule in their L2 gender system (FR group: 96%; GE group: 94%; EN group: 96%; see Table 21). Only the word *idea* "idea.FEM" seems to pose problems in the article selection task for a percentage of English learners (71%). Initially, one might think that when the learners see the word *idea* they are reading it with the English phonetic transcription | aɪɪdɪə |. This pronunciation is very similar to the Spanish pronunciation of *día* which could interfere with the overt gender assignment rule. However, the English group was not very accurate with the word *día* and therefore, the results may not be attributed to such phonological similarity. Therefore, the explanation remains unclear and further investigation is needed regarding possible phonological, semantic or other types of interferences. Apart from this problematic item, all groups were more accurate with overt than to non-overt cues in accordance with prediction 4. This was true for the total number of nouns as well as for the selected nouns. These results are consistent previous studies on L2 Spanish gender agreement for low-intermediate English speakers (Alarcón, 2010). Similarly, the positive effects of transparency have been previously confirmed in other L2 processing studies (Behney, 2011).

However, it appears that exceptions to the grammatical overt rule *–o/-a*, such as those represented by deceptive nouns, are not part of their mental lexicon at this stage unless positive transfer interferes. The majority of the English learners did not assign the correct article to words such as *problema*/ 'problem.MASC' or *mano*/'hand.FEM'. This is in accordance with the assumption that English speakers select articles on the basis of noun phonology (Hawkins, 1998). French and German learners' responses vary according to the type of L1 transfer. This explains the success of words with positive transfer like *día/*'day.MASC', *sofá* /'sofa.MASC', *foto* /'photo.FEM', and *mano* /'hand.FEM' for the French group. The German group showed opposite tendencies within the same type of transfer. In other words, when positive transfer was expected, as in *día* or *mano*, they correctly assigned masculine to *día* but not feminine to *mano*. This might be due to the fact that the word *día* is more frequent than *mano*. It seems that German speakers have learned the exceptions for the most frequent nouns and are not affected by positive transfer. Again, the same reaction was found for negative L1 transfer items for the German group. For example, the words *sofá* and *problema*, with negative transfer in German, were generally assigned the feminine article. In contrast with French learners, German learners tend to make use of the overt rule with deceptive nouns unless the noun is extremely frequent. That is, overt rules take precedence over any type of L1 transfer. This explains why German and English learners have similar results for deceptive nouns whereas French learners remain more dependent on L1 transfer.

Regarding non-overt cues, each of the word endings tested challenged French, German, and English L2 Spanish learners in different ways. According to the results from the total list of items, the French group was clearly the most proficient with non-overt

nouns followed by the German and English groups. To discuss the results of non-overt cues, we will refer to Clegg's (2011) list of frequent terminal phonemes and associated gender. The English group, with no grammatical gender, shows the highest accuracies for *–l, –r* and *–e* with masculine nouns, such as *sol*/'sun', *color*/ 'color' *ataque*/ 'attack', respectively. This is consistent with Clegg (2011) and Bull (1965) who listed *–e* and *–r* as the most frequent non-overt endings in Spanish. However, the French and the German groups differ from such tendencies. The degree of success may be explained by the interference of typical ending cues in their L1 as well as lexical transfer. A closer look at such endings may offer an explanation for the overall results. For instance, *–e* is a typical feminine ending cue in French (*e.g., lune* /'moon.FEM', *origine*/'origin.FEM', *attaque*/'attack.FEM', *tomate*/'tomato.FEM') and in German (*e.g., Ecke* /'corner.FEM', *Grenze* /'border.FEM', *Schade*/'shame.FEM', *Suche* /'search.FEM', *Küche* /'kitchen.FEM'). In Spanish, even though *–e* is considered a terminal phone associated to masculine gender as Bull (1965) and Clegg (2011) reported, 26.5% of the approximately 2,200 most frequent nouns ending in *–e* are feminine (Clegg, 2011, p. 307). This may explain why French and German learners encountered more difficulties in assigning masculine to nouns ending in *–e* than English learners.

As for the results of Spanish feminine ending cues, the differences among groups are most likely due to the common Latin origin of the nouns. The results for *–ión* were more accurate for German and French learners than for English learners. In French and in German the equivalent form of *–tion is* a typical ending for feminine gender. Consequently, French and German learners seem to appropriate the L1 morphology to their advantage. On the other hand, English learners were notably less accurate. This

contrasts with Cleggs' (2011) list of feminine terminal phonemes in which *–ión* is the most frequent non-overt ending for feminine nouns in Spanish. The suffix *-ción* is used to form nouns meaning action or result of a verb, in many cases, abstract nouns. It could be argued that at an advanced beginners' level, L2 learners' language skills are limited to "predictable topics necessary for survival in the target language culture, such as basic personal information…preferences and immediate needs" (ACTFL[11]) and therefore, learners are not familiar with abstract nouns, such as those ending in *–ión*. If this is true, then it is possible that learners resort to the default gender. Another explanation may be the influence of the presence of a stressed -ó- in the last syllable. Finally, one more difference should be noted: French learners are more accurate than German learners despite sharing the same suffix and gender with Spanish. In German, the suffix *–ion* is in competition with the suffix *–ung*, also one of the most productive suffixes in German for deriving nouns from verbs (Shin, 2001). One reason for the success of francophone learners may be that French words ending in *–tion* are more frequent in French than in German. Further analysis of frequency of this ending cue in both languages is needed in order to confirm this hypothesis as well as further research in word formation.

Another typical feminine non-overt cue tested was "*–ad",* as in *ciudad*/'city', *edad*/ 'age' or *realidad*/'reality'. In French, this suffix usually corresponds with feminine nouns ending in *–té* (*e.g., université*/'university', *securité*/'security'). Given the diachronic development of German, several suffixes are possible for words ending in "*–ad"* in Spanish such as, "*–tät", "–heit", "–keit"* and *"–schaft"* (*e.g., Universität*/'university', *Sicherheit*/'security', *Feutchtigkeit* /'humidity',

[11] ACTFL novice high proficiency description: http://actflproficiencyguidelines2012.org/

Freundschaft/'friendship'). Nevertheless, all these suffixes are typical feminine endings in German as well. The results for nouns ending in "*–ad"* showed that French and German learners were more accurate than the English group. This suggests that the association of the word with its gender in the L1 may facilitate French and German learners gender assignment of feminine nouns in Spanish. Despite being a non-overt ending, the last syllable contains an *"-a-"* followed by a "*-d"* (often not pronounced) which could lead English learners to assign the feminine gender to this ending, as demonstrated by their high accuracy rates. It should be noted that no overgeneralization of masculine was found for feminine ending cues among English speakers. This may indicate that gender assignment is successfully stored and that at the [*u*gender] 'feature checking' at the first stages of the definite DP is taking place in the IL of [- gender] learners.

6.4.1. Ending cues and transfer effects.

Although all groups in the selected nouns analysis were more accurate with overt than non-overt nouns, transfer effects were found. Under positive influence, it was expected that German and French learners would perform above the English group. This is true in all possible combinations (masculine/feminine/overt/non-overt) except for the German group concerning masculine non-cognate nouns (see Tables 22 and 23). The fact that German learners performed below the English group on masculine non-cognate nouns was mainly due to the problematic item under the "*–r"* terminal phoneme (*lugar*/'place.MASC'). As previously mentioned, despite sharing the same gender as in Spanish, there was a high error rate on this particular word. Without considering this

item, all other items showed better accuracy rates for German than English learners, according to prediction 1.

Contrary to prediction 2, negative transfer does not always negatively affect gender assignment. The results for masculine overt nouns, such as *vestido*/'dress.MASC' and *minuto*/'minute. MASC', revealed that German and French learners performed as well as the English group or slightly above (FR group: 93%; GE group: 92%; EN group: 92%; see Table 24). This suggests that French and German learners find it easier to overcome negative transfer with masculine overt nouns. Interestingly, the accuracy rates of the English group for *vestido* were not very high (FR group: 96%; GE group: 91%; EN group: 87%). A possible interpretation of this result is that *vestido* refers to a typical feminine piece of clothing and some learners may associate the item to the "semantic" referent, thus assigning it a feminine gender. For overt feminine nouns, such as *palabra*/'word.FEM' and *tostada* /'toast.FEM', the English group performed above the German and French groups as expected. Thus, it is possible that when learners go through a resetting of the gender of nouns with overt endings, the process starts with the unmarked gender and eventually applies it to the marked gender. Additional studies focusing on this particular phenomenon would be needed to reach further conclusions about L1 transfer effects and parameter resetting in the L2.

On the other hand, non-overt nouns under negative L1 influence yielded opposite results for masculine and feminine nouns (see Table 25). Negative L1 transfer considerably affects French and German learners for masculine nouns. According to prediction 2, both groups performed below the English learners (FR group: 54%; GE group: 74%; EN group: 83%). Contrary to the same prediction, the French and German

groups showed a high performance on feminine nouns despite negative L1 transfer (FR group: 91%; GE group: 85%; EN group: 68%). In this case, the English group was the least accurate at assigning correct feminine gender to non-overt nouns. This might have been a result of the specific non-overt endings tested in the selected nouns analysis. Given the difficulty to find feminine words with negative transfer, the only non-overt endings found with both types of transfer were "*–e"*, as in *tarde*/'afternoon' and *–ad*, as in *edad*/'age'. The high accuracy rates could be attributed to several factors, such as frequency of the items and the association of these two particular noun endings with feminine nouns in German and in French, as previously explained.

Therefore, gender assignment for words with overt ending cues seems to be acquired earlier than assignment for words with non-overt cues. Frequency and transparency has been shown to be an important pattern for facilitating the learning process. Furthermore, other factors such as the regularity of some common terminal phonemes in French, German, and Spanish might contribute to better performance among these L1 groups. Differences were also observed depending on the type of transfer. Negative L1 transfer shows some signs of being overcome in overt nouns while it seems to have stronger effects on masculine non-overt but not on feminine non-overt nouns. However, this conclusion should be taken with caution given that feminine nouns could not be tested in all possible variables. Finally, positive L1 transfer proved to aid learners in assigning gender when compared to the group without grammatical gender.

Our results in general would seem to indicate that although the presence or absence of the gender feature in the L1 may play a role in the success of gender assignment, other factors should be taken into account at an advanced beginner's level.

The first is possible L1 transfer effect, as the results demonstrate that gender concurrence facilitates gender acquisition. In turn, negative transfer results indicate that L2 learners are still using the L1 to assign gender to a word in the L2 at this stage of acquisition. As for the question of morphological similarity, all groups were more sensitive to cognate than non-cognate nouns. However, this is conditioned by the type of transfer from the learners' L1. Finally, the results also show that ending cues may have different effects depending on the reliability on the L1 or the L2. While transparency seems to enable earlier acquisition, typical morphological associations with gender in the L1 as well as frequency and phonology in the L2 may influence L2 gender assignment. Thus, all these factors are likely interrelated and affect how German, French and English L1 learners of Spanish develop their IL gender system.

7. Conclusions

The purpose of the present study was to examine the relationship between gender assignment and the degree of L1 transfer in English, German, and French L1 learners of Spanish. In this sense, L1 transfer has been considered in two ways: first, the presence or absence of the gender feature; second, the concurrence or non-concurrence of gender with the L2. In addition, morphological similarity was tested in order to analyze whether this particular factor influences in gender acquisition. The first two factors are interpreted in terms of L1 transfer and the third one in terms of proximity among the languages involved in the study.

Regarding the effect of the presence or absence of the gender feature in the L1, the overall accuracy rates revealed that its presence seems to accelerate the process of gender assignment in the L2. French learners were predicted to have the best results, as is known from previous studies using three different L1 groups (Sabourin et al., 2008; Behney, 2011). On the basis of these results, it was suggested that under equal distribution, no radical differences would be found. This assumption matched the results in that all L1 groups yielded similar accuracy rates, which could be interpreted as similar underlying processes of gender acquisition. Despite the slight advantage for the French and German groups, the results cannot conclusively support either the FFFH (Hawkins & Chan, 1997) or the FT/FA (Schwartz & Sprouse, 1994; 1996) at this stage of the IL. Furthermore, L1 transfer was predicted to positively and negatively impact German and French learners. Based on the results from this study, future studies on L2 gender acquisition should consider the distribution of positive and negative L1 transfer among the items tested.

Since it was assumed that positive and negative transfer would impact French and German learners, their performance was compared to the English group. The results confirm that positive L1 transfer facilitates gender acquisition with respect to the [-gender] group. This effect was present in all the variables tested: masculine/feminine, cognate/non-cognate and overt/non-overt nouns. Only one exception was found in the results of the German group for the noun *lugar*/'place.MASC'. As suggested in the discussion, it seems likely that German learners are more strongly influenced by morphophonological factors than by L1 transfer for endings containing "–a–" in the last syllable. In contrast, it was expected that negative L1 transfer would challenge French and German students, who would commit more errors than the English group. This was true for masculine nouns but not for feminine nouns, as predicted. In other words, English and German learners have the ability to overcome negative transfer with feminine nouns. In the discussion it was suggested that German and French learners follow the strategy of overgeneralization of typical morphophonological cues in their L1 (e.g. "*–e", "–ad"*) which is lexicalized and transferred to the L2. That is, they make use of analogy from their L1 and assign gender in the L2 similar to native speakers' intuitions with unknown words (Eddington, 2002). However, this does not seem to be supported for cognate nouns. The reason for this might be the correlation between feminine words with same origin and gender in Spanish, German, and French.

The previous explanation is closely related to the question of whether morphological similarity influences gender acquisition. The findings indicate that gender is generally more easily assigned when words share a common origin. However, [+Romance gender] and [+ gender] groups seem to be more accurate than [-gender]

group. This may reflect that the presence of the feature influences their ability to assign gender. More evidence from L2 and L3 processing would be needed to investigate the relationship between cognate nouns and gender acquisition at a cognitive level.

Concerning ending cues, all learners seem to make use of linguistic strategies. As predicted, there was consistent evidence for the overall success of overt nouns compared to non-overt nouns. Despite this, it was observed that French and German groups had more difficulties in assigning feminine gender under negative L1 transfer. The difference between masculine and feminine accuracy rates might be due to the fact that learners resort to the default gender to overcome transfer effects.

Few researchers have investigated the possible positive or negative L1 transfer effects of gender assignment at L2 initial and intermediate levels (White et al. 2004). The present results indicate that more research on gender transfer is needed to fully understand the development of an L2 gender system. This research would have benefited from an online measurement of reaction data, but technological inaccessibility in the different centers where the tasks were administered did not allow such a procedure. As a result, the process of collecting data from two of the countries was more complex due to logistical issues.

In sum, the results from the present study have shown some evidence of L1 transfer effects, morphological similarity and ending cues for each of the L1 groups involved. Although we have only studied gender assignment through one of the earliest feature-checking in the DP among L2 learners (Bartning, 2000), it is likely that L1 transfer influences in the development and processing of more difficult grammatical structures (Pienemann, 1998). Future research using event-related potential technology

may shed more light about how gender concurrence and non-concurrence with the L2 facilitates or inhibits agreement processes in learners with different L1 backgrounds and at different stages of the IL.

Finally, due to the fact that each of the language groups demonstrated their own particular strengths and weaknesses, different pedagogical interventions are recommended for each L1. The results show that both positive and negative transfer had an effect on gender acquisition and should be considered in developing SLA curriculum. Since English has no gender feature, it seems that the gender acquisition process requires slightly more time. This should be taken into account in the teaching of Spanish to native speakers of English. In addition to morphological instruction, more attention should be given to the gender of non-overt nouns. It is important to recognize that English speakers may need more input and practice than speakers whose native language contains the gender feature. For French speakers, special attention needs to be paid to nouns with possible negative transfer. This is also the case for German speakers. However, since there is less morphological similarity between German and the target language, these students tend to rely more heavily on morphophonological cues. In all cases, it is recommended that instructors mediate the possible instances of negative transfer through overt instruction. Similarly, it is also valuable to identify possible cases of positive transfer to enhance the process of gender acquisition. Given that each of the languages performed higher on cognate words, it is also evident that more vocabulary instruction would benefit gender acquisition.

Appendix A

Tasks Nouns and their classification: Noun class, ending cue and gender

Semantic				Non-semantic					
Overt		Non-overt		Overt		Non overt		Deceptive	
Masc	Fem	Masc	Fem	Masc	Fem	Masc	Fem	Masc	Fem
técnico	técnica	hombre	mujer	camino	historia	*see below*	*see below*	problema	foto
ingeniero	ingeniera	actor	actriz	anillo	palabra			mapa	mano
				minuto	idea			sofá	
				consumo	casa			día	
				mundo	tostada			planeta	
				vestido	mantequilla				
				ejemplo					
				cuerpo					

Non-semantic / Non-overt Masc					
(-e)	*(-r)*	*(-n)*	*(-l)*	*(-s)*	*(-i)*
ataque	amor	corazón	automóvil	mes	taxi
pie	valor	examen	sol	país	
chiste	color	origen	alcohol	autobús	
detalle	bar	tren	árbol	interés	
asteroide	lugar	cinturón	cereal		
aire	carácter	fin	papel		
tomate	error	plan			

Non-semantic /Non-overt Fem				
(-e)	*(-ción)*	*(-ad)*	*(-is)* crisis	*(-d)*
clase	habitación	realidad	sinopsis	pared
carne	situación	edad	bronquitis	sed
sangre	relación	ciudad		
tarde	televisión			
noche				
leche				
muerte				

Appendix B

Instrument for the English group

IMPORTANT: Please, complete the following short questionnaire:

Sex: Male / Female

Age:

Previous Spanish courses:

Other experiences in Spanish (trips, study abroad, etc.):

Do you speak other language(s) at home apart from English? If you do, specify:

Instructions:

1) Select the article **el** or **la** for each word in Spanish

2) Circle **the word in English** that best matches the word in Spanish

	ARTICLE		**ENGLISH**					
Example	*el / la*	*manzana*	*a)*	*onion*	*b)*	*apple*	*c)*	*food*
1	el / la	ataque	a)	conflict	b)	attack	c)	peace
2	el / la	realidad	a)	unreality	b)	reality	c)	existence
3	el / la	ingeniero	a)	job	b)	baker	c)	engineer
4	el / la	corazón	a)	artery	b)	body	c)	heart
5	el / la	carne	a)	food	b)	fish	c)	meat
6	el / la	hombre	a)	woman	b)	man	c)	person
7	el / la	camino	a)	road	b)	highway	c)	infrastructure
8	el / la	amor	a)	love	b)	feeling	c)	hate
9	el / la	automóvil	a)	automobile	b)	engine	c)	transportation
10	el / la	anillo	a)	ring	b)	finger	c)	jewelry
11	el / la	historia	a)	adventure	b)	story	c)	book
12	el / la	mapa	a)	geography	b)	map	c)	disorientation
13	el / la	mes	a)	month	b)	time	c)	day
14	el / la	minuto	a)	hour	b)	time	c)	minute
15	el / la	foto	a)	view	b)	photo	c)	text
16	el / la	pared	a)	room	b)	floor	c)	wall
17	el / la	habitación	a)	construction	b)	room	c)	garden
18	el / la	sol	a)	galaxy	b)	sun	c)	moon
19	el / la	clase	a)	school	b)	class	c)	break
20	el / la	país	a)	country	b)	city	c)	continent
21	el / la	alcohol	a)	drink	b)	water	c)	alcohol
22	el / la	consumo	a)	purchase	b)	saving	c)	consumption
23	el / la	plan	a)	improvisation	b)	plan	c)	future
24	el / la	tomate	a)	vegetable	b)	seed	c)	tomato
25	el / la	chiste	a)	joke	b)	fun	c)	laughter

26	el / la	situación	a)	problem	b)	situation	c)	circumstance
27	el / la	examen	a)	exercise	b)	exam	c)	information
28	el / la	bronquitis	a)	illness	b)	lung	c)	bronchitis
29	el / la	sangre	a)	vein	b)	fluid	c)	blood
30	el / la	mantequilla	a)	butter	b)	oil	c)	food
31	el / la	sed	a)	feeling	b)	thirst	c)	water
32	el / la	detalle	a)	example	b)	entirety	c)	detail
33	el / la	técnico	a)	technician	b)	profession	c)	artisan
34	el / la	mundo	a)	star	b)	world	c)	universe
35	el / la	valor	a)	total	b)	value	c)	wothlessness
36	el / la	sofá	a)	sofa	b)	furniture	c)	chair
37	el / la	mujer	a)	person	b)	woman	c)	man
38	el / la	relación	a)	interruption	b)	connection	c)	relationship
39	el / la	palabra	a)	silence	b)	text	c)	word
40	el / la	idea	a)	knowledge	b)	nonsense	c)	idea
41	el / la	actriz	a)	actress	b)	singer	c)	artist
42	el / la	técnica	a)	technician	b)	profession	c)	artisan
43	el / la	cuenta	a)	figure	b)	account	c)	debt
44	el / la	autobús	a)	transportation	b)	seat	c)	bus
45	el / la	tarde	a)	morning	b)	day	c)	afternoon
46	el / la	origen	a)	destination	b)	trip	c)	origin
47	el / la	actor	a)	profession	b)	writer	c)	actor
48	el / la	noche	a)	day	b)	time	c)	night
49	el / la	vestido	a)	seam	b)	dress	c)	clothing
50	el / la	ejemplo	a)	exception	b)	classification	c)	example
51	el / la	cereal	a)	wheat	b)	food	c)	cereal
52	el / la	árbol	a)	tree	b)	flora	c)	branch
53	el / la	bar	a)	library	b)	bar	c)	place
54	el / la	edad	a)	age	b)	life	c)	youth
55	el / la	leche	a)	wine	b)	milk	c)	drink
56	el / la	asteroide	a)	universe	b)	star	c)	asteroid
57	el / la	carácter	a)	character	b)	weakness	c)	behavior
58	el / la	tren	a)	transportation	b)	car	c)	train
59	el / la	lugar	a)	corner	b)	place	c)	room
60	el / la	taxi	a)	taxi	b)	transportation	c)	fare
61	el / la	casa	a)	house	b)	room	c)	construction
62	el / la	tostada	a)	food	b)	jam	c)	toast
63	el / la	ciudad	a)	region	b)	village	c)	city
64	el / la	televisión	a)	newspaper	b)	media	c)	television
65	el / la	problema	a)	cause	b)	problem	c)	solution
66	el / la	día	a)	time	b)	night	c)	day

67	el / la	muerte	a)	death	b)	life	c)	to be
68	el / la	cinturón	a)	garment	b)	belt	c)	suspenders
69	el / la	crisis	a)	prosperity	b)	crisis	c)	situation
70	el / la	papel	a)	ink	b)	paper	c)	tree
71	el / la	error	a)	correctness	b)	result	c)	error
72	el / la	ingeniera	a)	job	b)	baker	c)	engineer
73	el / la	pie	a)	head	b)	foot	c)	body
74	el / la	mano	a)	foot	b)	hand	c)	body
75	el / la	planeta	a)	planet	b)	satellite	c)	universe
76	el / la	cuerpo	a)	hand	b)	body	c)	presence
77	el / la	interés	a)	apathy	b)	interest	c)	attitude
78	el / la	sinopsis	a)	synopsis	b)	text	c)	word
79	el / la	fin	a)	story	b)	end	c)	beginning
80	el / la	color	a)	color	b)	perception	c)	shade
81	el / la	aire	a)	element	b)	air	c)	fire

Appendix C

Instrument for the German group

WICHTIG: Bitte, ergänzen Sie den folgenden Fragenbogen:

Geschlecht: Mann / Frau

Alter:

Vorherige Spanische Kurse:

Andere Erfahrungen auf Spanisch (Reise, Schüleraustausch, usw.):

Sprechen Sie andere Sprachen zu Hause abgesehen von Deutsch? Wenn ja, bitte erläutern.

Anweisungen:

1) Wählen Sie den Artikel **el** oder **la** aus für jedes Wort auf Spanisch

2) Wählen Sie **das deutsche Wort**, dass am besten das Spanisch passt.

		DEUTSCH					
el / la	*manzana*	*a)*	*Zwiebel*	*b)*	*Apfel*	*c)*	*Essen*
el / la	ataque	a)	Konflikt	b)	Attacke	c)	Frieden
el / la	realidad	a)	Unwirklichkeit	b)	Wirklichkeit	c)	Existenz
el / la	ingeniero	a)	Arbeit	b)	Bäcker	c)	Ingenieur
el / la	corazón	a)	Arterie	b)	Körper	c)	Herz
el / la	carne	a)	Essen	b)	Fisch	c)	Fleisch
el / la	hombre	a)	Frau	b)	Mann	c)	Person
el / la	camino	a)	Fahrweg	b)	Autobahn	c)	Infrastruktur
el / la	amor	a)	Liebe	b)	Gefühl	c)	Haß
el / la	automóvil	a)	Auto	b)	Motor	c)	Transport
el / la	anillo	a)	Ring	b)	Finger	c)	Schmuck
el / la	historia	a)	Abenteuer	b)	Geschichte	c)	Buch
el / la	mapa	a)	Geographie	b)	Landkarte	c)	Verwirrung
el / la	mes	a)	Monat	b)	Zeit	c)	Tag
el / la	minuto	a)	Stunde	b)	Zeit	c)	Minute
el / la	foto	a)	Sicht	b)	Foto	c)	Text
el / la	pared	a)	Zimmer	b)	Boden	c)	Wand
el / la	habitación	a)	Bau	b)	Zimmer	c)	Garten
el / la	sol	a)	Galaxie	b)	Sonne	c)	Mond
el / la	clase	a)	Schule	b)	Klasse	c)	Pause
el / la	país	a)	Land	b)	Stadt	c)	Kontinent
el / la	alcohol	a)	Getränk	b)	Wasser	c)	Alkohol
el / la	consumo	a)	Kauf	b)	Ersparnis	c)	Konsum
el / la	plan	a)	Improvisation	b)	Plan	c)	Zukunft
el / la	tomate	a)	Gemüse	b)	Samen	c)	Tomate

el / la	chiste	a)	Witz	b)	Spaß	c)	Lachen
el / la	situación	a)	Problem	b)	Situation	c)	Umstand
el / la	examen	a)	Übung	b)	Examen	c)	Auskunft
el / la	bronquitis	a)	Krankheit	b)	Lunge	c)	Bronchitis
el / la	sangre	a)	Ader	b)	Flüssigkeit	c)	Blut
el / la	mantequilla	a)	Butter	b)	Öl	c)	Essen
el / la	sed	a)	Empfindung	b)	Durst	c)	Wasser
el / la	detalle	a)	Beispiel	b)	Gesamtheit	c)	Detail
el / la	técnico	a)	Techniker	b)	Beruf	c)	Kunsthandwerker
el / la	mundo	a)	Stern	b)	Welt	c)	Universum
el / la	valor	a)	Ganze	b)	Wert	c)	Nutzlosigkeit
el / la	sofá	a)	Sofa	b)	Möbel	c)	Stuhl
el / la	mujer	a)	Person	b)	Frau	c)	Mann
el / la	relación	a)	Unterbrechung	b)	Verbindung	c)	Beziehung
el / la	palabra	a)	Ruhe	b)	Text	c)	Wort
el / la	idea	a)	denken	b)	Unsinn	c)	Idee
el / la	actriz	a)	Schauspielerin	b)	Sängerin	c)	Künstlerin
el / la	técnica	a)	Technikerin	b)	Beruf	c)	Handwerker
el / la	cuenta	a)	Ziffer	b)	Konto	c)	Schuld
el / la	autobús	a)	Transport	b)	Sitz	c)	Bus
el / la	tarde	a)	Morgen	b)	Tag	c)	Nachmittag
el / la	origen	a)	Reiseziel	b)	Reise	c)	Herkunft
el / la	actor	a)	Beruf	b)	Schriftsteller	c)	Schauspieler
el / la	noche	a)	Tag	b)	Zeit	c)	Nacht
el / la	vestido	a)	Naht	b)	Kleid	c)	Kleidung
el / la	ejemplo	a)	Ausnahme	b)	Klassifikation	c)	Beispiel
el / la	cereal	a)	Weizen	b)	Essen	c)	Getreide
el / la	árbol	a)	Baum	b)	Flora	c)	Ast
el / la	bar	a)	Bibliothek	b)	Bar	c)	Ort
el / la	edad	a)	Alter	b)	Leben	c)	Jugend
el / la	leche	a)	Wein	b)	Milch	c)	Getränk
el / la	asteroide	a)	Universum	b)	Stern	c)	Asteroid
el / la	carácter	a)	Charakter	b)	Schwäche	c)	Verhältnis
el / la	tren	a)	Transport	b)	Auto	c)	Zug
el / la	lugar	a)	Ecke	b)	Ort	c)	Zimmer
el / la	taxi	a)	Taxi	b)	Transport	c)	Fahrpreis
el / la	casa	a)	Haus	b)	Zimmer	c)	Bau
el / la	tostada	a)	Essen	b)	Marmelade	c)	Toast
el / la	ciudad	a)	Gebiet	b)	Dorf	c)	Stadt
el / la	televisión	a)	Zeitung	b)	Massenmedien	c)	Fernsehen
el / la	problema	a)	Ursache	b)	Problem	c)	Lösung

el / la	día	a)	Zeit	b)	Nacht	c)	Tag
el / la	muerte	a)	Tod	b)	Leben	c)	sein
el / la	cinturón	a)	Kleidungsstück	b)	Gürtel	c)	Hosenträger
el / la	crisis	a)	Wohlstand	b)	Krise	c)	Lage
el / la	papel	a)	Tusche	b)	Papier	c)	Baum
el / la	error	a)	Richtigkeit	b)	Ergebnis	c)	Irrtum
el / la	ingeniera	a)	Arbeit	b)	Bäcker	c)	Ingenieurin
el / la	pie	a)	Kopf	b)	Fuß	c)	Körper
el / la	mano	a)	Fuß	b)	Hand	c)	Körper
el / la	planeta	a)	Planet	b)	Satellit	c)	Universum
el / la	cuerpo	a)	Hand	b)	Körper	c)	Gegenwart
el / la	interés	a)	Apathie	b)	Interesse	c)	Haltung
el / la	sinopsis	a)	Synopsis	b)	Text	c)	Wort
el / la	fin	a)	Geschichte	b)	Ende	c)	Beginn
el / la	color	a)	Farbe	b)	Wahrnehmung	c)	Ton
el / la	aire	a)	Element	b)	Luft	c)	Feuer

Appendix D

Instrument for the French group

IMPORTANT : Complétez le questionnaire suivant, s'il vous plaît :

Sexe : Homme / Femme

Age:

Cours d'espagnol précédents :

Autres expériences en espagnol (voyages, études à l'étranger) :

Parlez-vous d'autres langues chez vous à part le français ? Si la réponse est affirmative, spécifiez, s'il vous plaît.

Instructions:

1) Sélectionnez l'article **le** ou **la** pour chaque mot en espagnol

2) Sélectionnez **le mot en français** qui se correspond avec le mot en espagnol

		FRANÇAIS				
el / la	*manzana*	*a)*	*ognion*	*b)*	*pomme*	*c)*	*nourriture*
el / la	ataque	a)	conflit	b)	attaque	c)	paix
el / la	realidad	a)	irréalité	b)	réalité	c)	existence
el / la	ingeniero	a)	emploi	b)	boulanger	c)	ingénieur
el / la	corazón	a)	artère	b)	corps	c)	cœur
el / la	carne	a)	nourriture	b)	poisson	c)	viande
el / la	hombre	a)	femme	b)	homme	c)	personne
el / la	camino	a)	chemin	b)	autoroute	c)	infrastructure
el / la	amor	a)	amour	b)	sentiment	c)	haine
el / la	automóvil	a)	automobile	b)	moteur	c)	transport
el / la	anillo	a)	bague	b)	doigt	c)	bijoux
el / la	historia	a)	aventure	b)	histoire	c)	livre
el / la	mapa	a)	géographie	b)	carte	c)	désorientation
el / la	mes	a)	mois	b)	temps	c)	jour
el / la	minuto	a)	heure	b)	temps	c)	minute
el / la	foto	a)	vue	b)	photo	c)	texte
el / la	pared	a)	chambre	b)	sol	c)	mur
el / la	habitación	a)	construction	b)	chambre	c)	jardin
el / la	sol	a)	galaxie	b)	soleil	c)	lune
el / la	clase	a)	école	b)	classe	c)	pause
el / la	país	a)	pays	b)	ville	c)	continent
el / la	alcohol	a)	boisson	b)	eau	c)	alcool
el / la	consumo	a)	achat	b)	épargne	c)	consommation
el / la	plan	a)	improvisation	b)	plan	c)	avenir
el / la	tomate	a)	légume	b)	graine	c)	tomate
el / la	chiste	a)	blague	b)	amusement	c)	rire

el / la	situación	a)	problème	b)	situation	c)	circonstance
el / la	examen	a)	exercice	b)	examen	c)	renseignement
el / la	bronquitis	a)	maladie	b)	poumon	c)	bronchite
el / la	sangre	a)	veine	b)	liquide	c)	sang
el / la	mantequilla	a)	beurre	b)	huile	c)	nourriture
el / la	sed	a)	sensation	b)	soif	c)	eau
el / la	detalle	a)	exemple	b)	ensemble	c)	détail el
/ la	técnico	a)	technicien	b)	profession	c)	artisan
el / la	mundo	a)	étoile	b)	monde	c)	univers
el / la	valor	a)	total	b)	valeur	c)	inutilité
el / la	sofá	a)	canapé	b)	mobilier	c)	chaise
el / la	mujer	a)	personne	b)	femme	c)	homme
el / la	relación	a)	interruption	b)	lien	c)	relation
el / la	palabra	a)	silence	b)	texte	c)	mot
el / la	idea	a)	croire	b)	absurdité	c)	idée
el / la	actriz	a)	actrice	b)	chanteuse	c)	artiste
el / la	técnica	a)	technicienne	b)	profession	c)	artisan
el / la	cuenta	a)	chiffre	b)	compte	c)	dette
el / la	autobús	a)	transport	b)	place	c)	autobus
el / la	tarde	a)	matin	b)	jour	c)	après-midi
el / la	origen	a)	destination	b)	voyage	c)	origine
el / la	actor	a)	profession	b)	écrivain	c)	acteur
el / la	noche	a)	jour	b)	temps	c)	nuit
el / la	vestido	a)	couture	b)	robe	c)	vêtement
el / la	ejemplo	a)	exception	b)	classification	c)	exemple
el / la	cereal	a)	blé	b)	nourriture	c)	céréale
el / la	árbol	a)	arbre	b)	flore	c)	branche
el / la	bar	a)	bibliothèque	b)	bar	c)	endroit
el / la	edad	a)	âge	b)	vie	c)	jeunesse
el / la	leche	a)	vin	b)	lait	c)	boisson
el / la	asteroide	a)	univers	b)	étoile	c)	astéroïde
el / la	carácter	a)	caractère	b)	trait	c)	comportement
el / la	tren	a)	transport	b)	voiture	c)	train
el / la	lugar	a)	coin	b)	endroit	c)	chambre
el / la	taxi	a)	taxi	b)	transport	c)	prix
el / la	casa	a)	maison	b)	chambre	c)	construction
el / la	tostada	a)	nourriture	b)	confiture	c)	toast
el / la	ciudad	a)	région	b)	village	c)	ville
el / la	televisión	a)	journal	b)	médias	c)	télévision
el / la	problema	a)	cause	b)	problème	c)	solution
el / la	día	a)	temps	b)	nuit	c)	jour

el / la	muerte	a)	mort	b)	vie	c)	être
el / la	cinturón	a)	vêtement	b)	ceinture	c)	bretelles
el / la	crisis	a)	prospérité	b)	crise	c)	situation
el / la	papel	a)	encre	b)	papier	c)	arbre
el / la	error	a)	correction	b)	résultat	c)	erreur
el / la	ingeniera	a)	emploi	b)	boulangère	c)	ingénieur
el / la	pie	a)	tête	b)	pied	c)	corps
el / la	mano	a)	pied	b)	main	c)	corps
el / la	planeta	a)	planète	b)	satellite	c)	univers
el / la	cuerpo	a)	main	b)	corps	c)	présence
el / la	interés	a)	apathie	b)	intérêt	c)	attitude
el / la	sinopsis	a)	synopsis	b)	texte	c)	mot
el / la	fin	a)	histoire	b)	fin	c)	début
el / la	color	a)	couleur	b)	perception	c)	ton
el / la	aire	a)	élément	b)	air	c)	feu

Appendix E

Selected nouns for the second analysis

1) Non-semantic and overt nouns by transfer in German (GE) and French (FR) by positive (+TR) and negative (-TR) transfer

Masc					**Fem**				
Non-Cognates		Cognates			Non-Cognates		Cognates		
+ TR	- TR	+ TR	- TR		+ TR	- TR	+ TR	- TR	
				FR	GE				
camino	*vestido*	*cuerpo*	*minuto*	*casa*	*mantequilla*	*palabra*	*idea*	*historia*	*tostada*

2) Non-semantic and non-overt masculine nouns by morphological similarity (cognates: CG; non-cognates: Non-CG)

*"-**r**"*					*"-n"*				
Non-CG			CG		Non-CG			CG	
+ TR	- TR		+ TR	- TR	+TR	- TR		+ TR	- TR
	FR	GE			FR	GE			
lugar	*valor*	*amor*	*carácter*	*color*	*corazón*	*cinturón*	*fin*	*tren*	*origen*

3) Non-semantic and non-overt feminine nouns by morphological similarity (cognates: CG; non-cognates: Non-CG)

"-d"				"-e"			
Non-CG		CG		Non-CG		CG	
+ TR	- TR	+ TR	- TR	+ TR	- TR	+ TR	- TR
ciudad	*edad*	*realidad*	*No word*	*noche*	*tarde*	*clase*	*No word*

Appendix F

Complete list of 80 items tested. Accuracy rates per noun and Number of responses for each item (N)

	actor	*N*	*actriz*	*N*	*aire*	*N*	*alcohol*	*N*	*amor*	*N*	*anillo*	*N*	*árbol*	*N*	*asteroide*	*N*
FR group	100%	46	84%	43	71%	42	100%	46	100%	46	92%	36	95%	40	82%	44
GE group	98%	44	82%	47	61%	46	87%	46	57%	47	93%	28	92%	25	93%	45
EN group	99%	136	87%	97	70%	135	91%	134	69%	136	95%	110	92%	126	84%	133

	autobús	*N*	*automóvil*	*N*	*bar*	*N*	*bronquitis*	*N*	*camino*	*N*	*carácter*	*N*	*carne*	*N*	*casa*	*N*
FR group	100%	46	62%	45	100%	45	63%	41	100%	43	98%	43	80%	44	100%	46
GE group	91%	47	78%	32	66%	47	60%	46	100%	34	77%	47	35%	45	100%	38
EN group	98%	135	91%	128	93%	135	20%	134	97%	114	75%	130	36%	131	99%	128

	cereal	*N*	*chiste*	*N*	*cinturón*	*N*	*ciudad*	*N*	*clase*	*N*	*color*	*N*	*consumo*	*N*	*corazón*	*N*
FR group	60%	40	64%	28	66%	44	100%	46	98%	46	53%	45	84%	37	92%	39
GE group	46%	39	56%	36	91%	33	93%	25	96%	47	70%	47	94%	47	48%	27
EN group	61%	133	81%	102	85%	112	84%	114	87%	133	89%	136	97%	116	67%	132

	crisis	*N*	*cuerpo*	*N*	*detalle*	*N*	*día*	*N*	*edad*	*N*	*ejemplo*	*N*	*error*	*N*	*examen*	*N*
FR group	90%	42	100%	45	93%	43	89%	45	83%	40	100%	45	52%	44	98%	44
GE group	51%	47	100%	39	63%	46	83%	47	86%	45	98%	47	87%	47	87%	45
EN group	31%	132	97%	123	60%	131	65%	136	61%	127	97%	136	93%	134	88%	136

	fin	*N*	*foto*	*N*	*habitación*	*N*	*historia*	*N*	*hombre*	*N*	*idea*	*N*	*ingeniera*	*N*	*ingeniero*	*N*
FR group	70%	44	89%	46	95%	39	100%	46	100%	45	96%	46	93%	44	100%	45
GE group	80%	46	43%	47	89%	45	100%	45	100%	40	96%	47	100%	39	100%	47
EN group	84%	134	37%	136	68%	132	99%	135	100%	131	71%	136	98%	134	99%	135

	interés	*N*	*leche*	*N*	*lugar*	*N*	*mano*	*N*	*mantequilla*	*N*	*mapa*	*N*	*mes*	*N*	*minuto*	*N*
FR group	77%	43	45%	44	93%	43	91%	45	93%	28	22%	45	93%	45	91%	45
GE group	53%	47	60%	20	38%	13	14%	46	95%	28	2%	43	60%	42	93%	46
EN group	61%	132	82%	106	81%	125	30%	124	99%	95	33%	136	58%	132	98%	136

	muerte	*N*	*mujer*	*N*	*mundo*	*N*	*noche*	*N*	*origen*	*N*	*país*	*N*	*palabra*	*N*	*papel*	*N*
FR group	98%	46	100%	46	100%	45	100%	46	70%	44	100%	46	89%	38	100%	46
GE group	34%	39	84%	45	100%	31	91%	46	87%	39	83%	47	90%	40	72%	36
EN group	34%	120	92%	131	98%	130	83%	134	75%	134	82%	128	94%	128	80%	136

	pared	*N*	*pie*	*N*	*plan*	*N*	*planeta*	*N*	*problema*	*N*	*realidad*	*N*	*relación*	*N*	*sangre*	*N*
FR group	33%	27	95%	44	100%	42	9%	45	67%	42	100%	46	100%	42	29%	42
GE group	32%	38	74%	42	64%	47	9%	46	34%	47	89%	47	71%	46	40%	47
EN group	39%	134	87%	127	55%	132	4%	135	15%	133	85%	136	64%	134	44%	135

	sed	*N*	*sinopsis*	*N*	*situación*	*N*	*sofá*	*N*	*sol*	*N*	*tarde*	*N*	*taxi*	*N*	*técnica*	*N*
FR group	29%	31	45%	40	98%	46	96%	46	100%	46	100%	45	100%	45	98%	44
GE group	21%	40	70%	32	87%	28	19%	47	79%	47	84%	46	89%	46	98%	25
EN group	25%	136	18%	129	72%	132	11%	133	90%	136	75%	135	92%	135	95%	91

	técnico	*N*	*televisión*	*N*	*tomate*	*N*	*tostada*	*N*	*tren*	*N*	*valor*	*N*	*vestido*	*N*
FR group	93%	42	93%	45	37%	46	86%	37	98%	46	23%	43	96%	24
GE group	100%	47	60%	38	79%	47	89%	42	94%	47	86%	42	91%	35
EN group	98%	130	59%	121	80%	136	95%	126	86%	136	95%	120	87%	115

Appendix G

Accuracy rates for masculine non-overt terminal phonemes

-e	ataque	pie	chiste	detalle	asteroide	aire	tomate	Total
FR group	68%	95%	64%	93%	82%	71%	37%	73%
GE group	67%	74%	56%	63%	93%	61%	79%	70%
EN group	88%	87%	81%	60%	84%	70%	80%	79%

–r	amor	valor	color	bar	lugar	carácter	error	Total
FR group	100%	23%	53%	100%	93%	98%	52%	74%
GE group	57%	86%	70%	66%	38%	77%	87%	69%
EN group	69%	95%	89%	93%	81%	75%	93%	85%

–n	corazón	examen	origen	tren	cinturón	fin	plan	Total
FR group	92%	98%	70%	98%	66%	70%	100%	85%
GE group	48%	87%	87%	94%	91%	80%	64%	79%
EN group	67%	88%	75%	86%	85%	84%	55%	77%

–l	automóvil	sol	alcohol	árbol	cereal	papel	Total
FR group	62%	100%	100%	95%	60%	100%	86%
GE group	78%	79%	87%	92%	46%	72%	76%
EN group	91%	90%	91%	92%	61%	80%	84%

–s	mes	país	autobús	interés	Total
FR group	93%	100%	100%	77%	93%
GE group	60%	83%	91%	53%	72%
EN group	58%	82%	98%	61%	75%

Accuracy rates for feminine non-overt terminal phonemes

	–ión				
	habitación	**situación**	**relación**	**televisión**	**Total**
FR group	95%	98%	100%	93%	97%
GE group	89%	87%	71%	60%	77%
EN group	68%	72%	64%	59%	66%

	–ad			
	realidad	**edad**	**ciudad**	**Total**
FR group	100%	83%	100%	94%
GE group	89%	86%	93%	89%
EN group	85%	61%	84%	76%

	–is			
	bronquitis	**crisis**	**sinopsis**	**Total**
FR group	63%	90%	45%	66%
GE group	60%	51%	70%	60%
EN group	20%	31%	18%	23%

	–d		
	pared	**sed**	**Total**
FR group	33%	29%	31%
GE group	32%	21%	27%
EN group	39%	25%	32%

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