



**Universitat**  
de les Illes Balears

**Title: L2 Plural Inflection in Spanish: Contrastive Study  
between Italian and English Late Learners**

**AUTHOR: Laura Oliete Cruz**

**Master's Thesis**

Master's degree in Cognition and Human Evolution

at the

**UNIVERSITAT DE LES ILLES BALEARS**

Academic year 2016/2017

*Date: 17/09/2017*

*UIB Master's Thesis Supervisor: Pedro Guijarro Fuentes*

# INDEX

Abstract .....	2
1. Theoretical Background .....	3
1.1. Morphological processing in Language learners.....	3
1.2 Representational Deficit.....	4
1.3 Processing constraints.....	4
1.4 MSIH (Missing Surface Inflection Hypothesis) .....	4
1.5 The role of Transfer .....	5
1.6 The Shallow Structure Hypothesis .....	5
1.7 The problem of morphological variability.....	6
2. Plural Inflection .....	6
2.1 The morphology of the plural inflection in Spanish.....	6
2.2 The morphology of the plural inflection in English .....	7
2.3 The morphology of the plural inflection in Italian .....	8
3. Previous research on L2 Number Inflection .....	9
4. Hypotheses and Predictions.....	10
5. Method.....	11
5.1 Participants.....	11
5.2 Procedure .....	11
5.2.1 Language background questionnaire .....	11
5.2.2 Spanish proficiency test. ....	12
5.2.3 Experiment 1: Offline grammaticality judgement task.....	12
5.2.4 Experiment 2: Online self-paced reading task .....	14
6. Conclusions.....	16
References.....	18

## **Abstract**

The aim of this study is to explore two aspects of the acquisition of Spanish L2 morphological feature of plural inflection. Firstly, whether morphological knowledge of number agreement at native level is attainable. Secondly, if learners' L1 has any influence in this regard. To answer these questions, 20 Italian and 20 English speakers at two levels of proficiency, together with a control group of 20 native speakers, conducted an off-line grammaticality judgement task and an online self-paced reading task. The results indicate that: (1) native-like level can be achieved, since both natives and advanced L2 speakers of the two groups showed longer RT in agreement violations, contradicting the critical period hypothesis (Lenneberg, 1967); (2), both Italians and English are able to internalize new formal features despite differences in their L1 morphological features, supporting Full Access Theories (FTFA)(Schwartz, 1996); and (3) lack of sensibility to agreement violations only happens in beginners, which may be explained through Missing Surface Inflection Hypothesis (MSIH)(Haznedar & Schwartz, 1997; Prévost & White, 2000; Sagarra & Herschensohn, 2010). These results match with the existence of a dual-morphology, justifying that certain superior linguistic aspects such as the feature of number are acquired over time and after learning the basic syntactic rules of a second language, and would also explain intralinguistic but not interlinguistic differences; mistakes can be due to initial Representational Deficit Account (RDA) (Hawkins & Liszka, 2003) or transfer (de Garavito, 2007; Goad & White, 2004), but full access can be achieved as knowledge improves and level of L2 increases (Hopp, 2010).

Keywords: FTFA, plural inflection, SLA, MSIH, native-like.

# 1. Theoretical Background

## 1.1. Morphological processing in Language learners

Much work in linguistic theory assumes that the language faculty has a dual structure and consists of two basic components: a lexicon and a system of combinational operations for forming later lexical entries. This division would lead to differences regarding morphological processing. Studies using ERP have been used in order to determine if these forming mechanisms are actually occurring in an independent way, attempting to identify electrical components associated with a given linguistic stimulus in a specific task. Particularly, regarding what may be of interest to this work, ERPs on regular and irregular participles and noun plurals formation concluded that there is a dual mechanism for regular/irregular morphological processing in language learners. Three experiments are relevant in this respect:

- In a first study for German as L2, anterior negativity was found in participles formation but not in plural formations. Centro-parietally distributed positivity (p600) was found in regulars and n400 negativity found in irregular plurals. (Lück et al, 2001)
- Later on, German as L2 was also tested (participants mother tongue was Russian). Again, a P600 component was found in plural regularizations and a N400 in the irregular cases. (Hahne, Müller, 2003)
- Another ERP experiment with L2 learners of German showed that overapplications of the –s plural rule produce a P600 component while overapplications of irregular patterns elicited an N400 (Hahne, Mueller and Clahsen, 2006)

The results of these studies show regular/irregular contrasts in adult L2 learners' processing of inflected words. In processing grammatical rule violations, the L2 learners evidenced ERP components (an anterior negativity and/or a P600), which have been linked to morpho-syntactic processing. In the case of misapplications of irregular inflection, an N400 effect was shown, which has been claimed to be characteristic of lexical processing. These results indicate that the two processing routes posited by dual-mechanism models of inflection (lexical storage and morphological decomposition) are also accessible in second language processing of inflected words, at least by advanced learners and in inflectional domains in which they are highly proficient (Clahsen & Felser, 2006). This dual morphology has also been supported by other studies unrelated to ERP experiments. For instance, Clahsen and Verissimo found, through production and judgement tasks, that overapplication of –s suffixation decreases as learners acquire the correct non-sigmatic forms, indicating a role of morphological structure knowledge regarding language processing, and supporting the idea of a dual architecture of the language faculty.

The particular case of inflectional morphology has been proved to be problematic in L2 learners. In fact, a variable use of inflectional morphology is found even in end-state grammar. This was shown by Lardiere (Lardiere, 1998b), who conducted a longitudinal case study with a Chinese-native speaker whose L2 was English with an exposure to that language of a 18-years period. In this study, the participant showed a 35% incidence in tense morphology but 100% correct incidence in syntax, despite speaking English very fluently and having been living in the US for such a long period.

Assuming that L2 learners processing system is similar to that of L1 speakers, differences between L1 and L2 speakers extracted from previous literacy would be due to other factors, highlighting learners constrained knowledge of the L1 (RDA), variations in working memory capacity (PDA), or effects of transfer. (Clahsen & Felser, 2006).

### **1.2 Representational Deficit**

On the one hand diverse researchers have attributed L2 learners difficulty mastering L2 inflection to a deficit of target representations or incomplete acquisition, this is, impaired syntactic representations (Clahsen, 1988). Some have studied it deeper proposing what is called the ‘failed functional features hypothesis’ (Hawkins and Chan, 1997), according to which the L2 learners are unable to attain the grammatical features of the L2 (such as agreement inflection) since every grammatical feature absent in their L2 cannot be integrated into their L2 grammar. This fact does not mean an unawareness of the L2 grammar because morphological deficits are unrelated to syntactical ones (Lardiere, 1998a). Several of these approaches signal a main difference between grammars in L1 and L2, undertaking the accessibility of an Universal Grammar in the acquisition of the L1 but not the case of the L2 (Clahsen, 1988). This position is sometimes collectively referred to as the Representational Deficit Hypothesis (Hawkins & Lizska, 2003) or Representational Deficit Account (Song, 2015). As Trenkic points out, “It captures well the observation that learners from different L1 backgrounds often show different rates of success in mastering certain grammatical forms of a particular L2” (Trenkic, 2007, p. 291)

### **1.3 Processing constraints**

On the other hand, other researchers support the idea that these differences in inflection are due to performance deficits and not to representational ones (Haznedar & Schwartz, 1997; Sagarra & Herchensohn, 2010; White, Valenzuela, Kozłowska–Macgregor, & Leung 2004). A main reason for this deficit to happen is working memory (WM) low capacity, since memory plays a key role holding grammatical features until their inflection is checked (Song, 2015). This perspective does not support any grammar impairment in the L2. It proposes that second language learners can get to know the morphosyntax of the target language at the level in which a native does. The fact that the precise rule or representation of the L2 is absent or present in their mother tongue would be irrelevant. Language learning process and morphosyntactic acquisition of knowledge would be closely related as their grammatical understanding increases at once with their proficiency of the L2 (Song, 2015).

### **1.4 MSIH (Missing Surface Inflection Hypothesis)**

This dissociation between grammar and morphology is a basic argument that supports what Haznedar and Schwartz called Missing Inflection Hypothesis (MIH) (1997), later on renamed Missing Surface Inflection Hypothesis (MSIH) by Prévost and White (2000) in order to emphasize that “it is at the surface morphological level that inflection is assumed to be absent, rather than at the abstract featural level” (Prévost & White, 2000, p.108). From this perspective, missing infection is more a lack of access rather than a failure in representation, so that the variable use of inflection does not indicate impairment in the representation of the associated functional projections. In other words, L2 learners difficulties with inflectional morphology may be due to processing reasons. Prévost and White dealt with the justification of this statement by carrying out an experiment with two L2 French adult low proficient

students and two L2 German adult low proficient students. In terms of verbal agreement production, accurate use is around 95% for the French students and over 70% in the case of the German learners. Regarding subject clitics, present only in French, the agreement is also largely accurate (78.5% for one participant and 95% for the other one). According to their own words, their “results differ from Meisel (1991), who reports generally low accuracy in verbal inflection” (Prévost & White, 2000, p. 123).

To explain this variation, Prévost and White argue for what they call mapping problem (appealing to Lardiere, 2010) between abstract features and their surface morphological form. In order to answer the question of what mechanisms underlie the appearance of defaults, they seek to associate the mapping problem with Halle & Marantz’s Distributed Morphology (Halle & Marantz, 1993), which distinguishes between grammatical features (such as tense, person, etc.) on a given inflected form and the node that hosts it in the syntax. With it, they assume that L2 learners have acquired the relevant features of the terminal nodes in the syntax (from the L1, from UG or motivated by L2 input) and their problems lie with the feature specification of the associated lexical items (Prévost & White, 2000)

### **1.5 The role of Transfer**

Another approach that attempts to justify L2 learners’ difficulties regarding morphological inflection is the one of the Prosodic Transfer Hypothesis (PTH). This approach mainly developed by White (Goad & White, 2004) and lately enlarged by de Garavito (de Garavito, 2007), states that difficulties that troubles found by L2 learners in the field of functional morphology derive from constraints on prosodic structure derived from their L1 grammar. (Goad, White, de Garavito, 2011). This way, learners omit certain functional morphemes when the prosodic structure cannot be transferred from L1 to L2. The results of diverse studies seem to justify the role of transfer. In 2003, 12 Mandarin speakers with intermediate/low advanced proficiency in English L2 were tested. In this experiment, half of the participants omitted inflection entirely, and the other half provided morpheme inflection based on their L1 structure (Goad, White & Steele, 2003). In 2004 a Turkish L1 participant with advanced proficiency in English L2 was evaluated. In his production, morphology inflection was accurate when produced but it was mostly omitted. (Goad & White, 2004). Later on there was a study on Spanish L2 with French L1 speakers. The group was divided into 30 low proficiency participants and 12 with low-intermediate proficiency. They were asked to describe the pictures shown including in these description series of adjectives and nouns. Group 1 (low proficiency) showed 37.75% omission of plural in plural context. The [-es] plural allomorph was more likely to be omitted than the [-s] plural by the two groups. (Garavito, 2007). The most recent one (Goad et al. 2011), developed also with French L1 participants learning Spanish as L2 consisted of two groups as well: Group 1 formed by 28 low proficient participants, group 2 by 12 low-intermediate proficient participants. Their unawareness of affixal clitic structure led them to either omit the inflection or resort to the verbal inflection of their L1, transferring it.

### **1.6 The Shallow Structure Hypothesis**

A different perspective regarding inflection variability has recently appeared, coined by Clahsen and Felser in 2006. They argue that differences in L2 performance cannot be explained by shortage of working memory (WM) resources as the Performance Deficit supports, not even differences in processing speed, transfer of L1 processing routines, or incomplete acquisition

of the target grammar. They propose a shallow structure hypothesis (SSH) to explain the differences reported in sentence processing. According to this, L2 learners construct less detailed syntactic representations than those of L1 speakers. This approach suggests that L2 learners would not be capable of reaching native-like levels of grammar processing, including agreement inflection (Song, 2015).

### **1.7 The problem of morphological variability**

Variability in morphological features is complex because it involves both incorrect morphology and missing morphology or omission. In the case of L2 Spanish, substitution is a frequently repeated factor for person as well as gender or tense. Nevertheless, as McCarthy (2008) points out, analysing variability in morphology features does not always provide relevant conclusions. As mentioned above, a dichotomy exists between a lack of syntactic competence and a problem of lexical access to be the principal cause of variability. If we believe that these errors are just due to performance limitations, Prévost and White (2000) would be right and, by using comprehension and grammaticality judgement tasks, we should be able to obtain more accurate data by reducing the pressure of the participant in the tasks.

This problem increases if we take into account not only production but also comprehension. Regarding variability in Spanish L2 comprehension, the following researches can be compiled: Firstly, Franceschina (2002) discovered variability in gender comprehension in English speakers, attributing their errors to an absence of this feature in their L1. Lately, the same variability was found by White et al (2004) in which participants used the masculine form by default. For more discussion of agreement variability in comprehension, see McCarthy, 2008.

## **2. Plural Inflection**

Whereas Romance languages and English are different as far as gender features is concerned, both present number as grammatical features in the DP. Regarding the English language, plural is normally marked in nouns by adding the allomorph [-s]. Interestingly, Spanish behaves basically the same way. Italian instead, despite being part of the same language family, structures plural formation by switching the last vowel of the noun, [-a] to [-e] and [-o] to [-i], with a few exceptions.

### **2.1 The morphology of the plural inflection in Spanish**

Following the MSIH and similar, the morphological feature of the number (as well as others such as gender and person) can be categorized into class nodes. This way, the features of singular and plural depend upon the existence of number (McCarthy, 2008). The singular would constitute underspecification and is considered as the unmarked number. I will follow McCarthy (2007) examples to explain deeper number properties in Spanish.

- a) Las casas nuevas (Fem, Pl)
- b) El libro viejo (Masc, Sg)

As shown in example a), plural of determiner, noun and adjective are formed by adding suffix -s. Example b) demonstrates that singular is characterized by absence of plural marker, being the singular the unmarked form of the number, as stated above. The structure of the plural formation usually follows the next rule: -s (or -(vocal)s in the case of words ending in

consonant) is affixed to determiners, nouns and adjectives (except in special cases such as masculine plural determiner, which constitutes an entire different word “los”). Therefore, distinction between plural and singular is determined by presence of affix (plural inflection) or the absence of it (singular inflection)

The unmarkedness of the singular could lead to morphological variability in certain occasions. A question framed in singular can be answered in both singular and plural by L2 speakers since the subject is unknown. This syntactic distribution is explained with the following example (McCarthy, 2007, p 33-34)

- a) ¿Quién comió las galletas? (expected answer: singular or plural)  
who ate-3sG the cookies
- b) ¿Quiénes comieron las galletas? (expected answer: plural)  
who- PL ate-3PL the cookies

## 2.2 The morphology of the plural inflection in English

The case of plural nouns formation in English follows pretty simple rules. Number in nouns distinguishes between singular and plural. They are differentiated by a suffixation produced only in the case of plural, which is usually –s. There are some special suffixations that follow the general rule but differ in spelling due to phonological reasons. This way, the suffix is –es instead of –s. It takes place in those nouns whose endings are –s, -ss, -x, -ch, -sh.

ENDING	SINGULAR	PLURAL
-s	bus	buses
-ss	kiss	kisses
-x	box	boxes
-ch	church	churches
-sh	dish	dishes

There is a very relevant factor regarding plural inflection in English. Regarding number agreement, plural inflections only occur in DP and not in QP (quantifier phrases) as shown in the following examples (extracted from Song, 2015)

- 3. DP , (Wen et al 2010)
  - a) This beautiful house /houses\*  
[-plural] [-plural] [+plural]
  - b) These beautiful houses/ house  
[+plural] [+plural] [-plural]
- 4. QP (Jiang 2007)
  - a) Many of the houses /house\*  
[+plural + count] [+plural] [-plural]
  - b) one of the dinosaurs/dinosaur\*  
[-plural + count] [+plural] [-plural]



*As illustrated in the examples, in the DP the plural inflection is required for [+plural] number agreement between the demonstrative and the noun, but in the QP, the plural inflection does not seem to be relevant to number agreement. In particular, example 2b clearly shows that the quantifiers and the noun in the QP are not in number agreement dependency. Note that although the quantifier one and the noun dinosaur in 2b bear contradicting number features, this phrase is perfectly grammatical. In the QP, the plural inflection is required when the partitive is headed by a [+count] quantifier, whether it is [+plural] or [-plural]*

### **2.3 The morphology of the plural inflection in Italian**

Italian is a language chosen for this study since its formation of plural constitutes a different case; whereas in both English and Spanish noun plurals are marked by –s suffixation, Italian replaces the ending vowel for a different one, since in this language words must end in vocalic sound. The way it works is represented in the examples below:

- a) Words ending in –o, switch to –i:  
Eg: tavolo – tavoli  
[mas.sing] [mas.plu]
- b) Words ending in –a, switch to –e:  
Eg: sedia – sedie  
[fem.sing] [fem.plu]
- c) Words ending in –e, switch to –i, either masculine or feminine:  
Eg: cane – cani                      informazione – informazioni  
[mas.sing] [mas.plu]    [fem.sing]            [fem.plu]

Few exceptions may take place:

- a) Masculine nouns ending in vowel –a:  
Their plural formation rule agrees with the gender rather with the morpheme.  
Eg: pilota – piloti  
[mas.sing] [mas.plu]
- b) Nouns ending in consonant (adopted from another language):  
These words do not apply any suffixation and present the same form for both singular and plural.  
Eg: autobus – autobus  
[mas.sing] [mas.plu]
- c) Nouns ending in a tilded vowel:  
These words do not apply any suffixation either, and present the same form for both singular and plural.  
Eg: città - città  
[fem.sing] [fem.plu]

Number, together with gender, is easily identifiable since determiners are different for singular or plural and feminine or masculine cases.

	SINGULAR	PLURAL
MASCULINE	IL L' LO	I GLI GLI
FEMININE	LA L'	LE LE

In NP, determiners, nouns and adjectives agree in both number and gender, following the rules previously explained.

- a) La casa grande (the big house) – Le case grandi (the big houses)  
[fem.sing] [fem.sing] [fem.sing] [fem.plu ] [fem.plu] [fem.plu]
- b) Il brutto cane (the ugly dog) – I brutti cani (the ugly dogs)  
[mas.sing] [mas.sing] [mas.sing] [mas.plu] [mas.plu] [mas.plu]

### 3. Previous research on L2 Number Inflection

Over 70% of the world’s languages, including English, exhibit some form of agreement (Mallison & Blake, 1981), and there is growing literature on this aspect. As far as L2 plural formation is concerned, a very extensive research has not been addressed yet since it is a quite particular topic. Nonetheless, in recent years experts seem to have realized the existence of this emptiness in the field of linguistic research and have tackled the issue a little more in-depth.

In 2009, Holger Hopp carried out an investigation on L2 inflection seeking similarities between native and non-native speakers. Fifty-nine near-native L2 German students with different L1 (English, Dutch and Russian) were tested on number and gender inflection through several off-line and online tasks. The results showed that “native-like ultimate attainment of L2 inflection is possible for postpubescent learners in L2 grammar and L2 processing” (Hopp, 2009)

The following year, Ionin and Montrul (Ionin and Montrul, 2010) investigated the role of transfer when it comes to definite plurals in English as L2. They theorised that L2 learners would transfer the plural noun phrases structures from their mother tongue. Through a truth-value judgement task, they discovered that Spanish L1 students (n=24) overtook the interpretation of English noun phrases plural much more than what Korean L1 proficient students (n=29) did. With a complementary study, they could specify that with a higher proficiency, the Spanish-speaking learners showed a similar behaviour as that of the Korean speakers, suggesting that the initial possible transfer taking place in low-level English L2 students disappears as the knowledge of the target language increases.

Later on, Sagarra and Herschensohn (Sagarra and Herschensohn, 2011 )examined English L2 learner’s knowledge of Spanish gender and number agreement and their sensitivity to gender and number agreement violations. For this study, 69 Spanish L2 beginners, 64 Spanish L2

intermediates and 63 Spanish monolinguals participated. Two tests were carried out; a moving window test, in order to check Reading Times (RTs) in gender/number agreement and gender/number violation; and a Reading span test, to check whether working memory (WM) capacity is related to sensitivity in gender and number discord. “The results show that beginners are insensitive to gender and number agreement differently” while “the intermediates and Spanish monolinguals are sensitive to such violations”.

Regarding Spanish plural inflection, we could highlight the work of Lydia White and Joyce Bruhn de Garavito. In their first investigation together on this item (Bruhn de Garavito and White, 2002), they put L2 acquisition of Spanish DPs into question, objecting that the representation of functional features is limited by the L1 features. After finding difficulties in the representation of features such as number and especially gender in SSL learners, they would defend the theory that these troubles are not due to the absence of the exact features in their L1, and that this is not necessarily a signal of representational deficit.

In 2004 (White et al., 2004), White addressed the issue with adult learners of Spanish, at three levels of proficiency. Results of both an oral production and an interpretation task showed that the more proficient, the more native-like their behaviour regarding number agreement was, matching with the Full Transfer Full Access (FTFA) hypothesis. The role of transfer in plural formation was also investigated by Bruhn de Garavito on her own (de Garavito, 2007). By working with French L1 students of Spanish, she described their three stages in the acquisition of the Spanish number distinctions. At beginning stage, noun agreement was not shown at all; at a second learning stage the addition of the allomorph [-s] after vowel was exhibited, and in the third stage [-es] plural formation was produced normally. Her results provide clues against the No parameter resetting hypothesis, which states that interlanguage grammars are restricted to the functional properties of the L1, since the learners were capable of acquiring high knowledge of Spanish and realizing number inflection on nouns. Still more recently (de Garavito & Otálora, 2016), she went on with plural inflection research adults L2 knowledge of number in Spanish, focusing particularly on ellipsis. With a written elicited production task and a grammaticality judgement task, she showed evidence, again, that L2 speakers are able to access features not present in their L1.

#### **4. Hypotheses and Predictions**

This study re-examines whether late L2 learners can attain native-like knowledge of Spanish plural inflection when the L1 has some equivalences but some differences in agreement features for the DP (determiner phrase), which is presence of number agreement (English and Italian) but presence (Italian) or absence (English) of gender agreement. The expected results of this study, based on investigations as the above mentioned, together with some literature on Spanish L2 plural (Bruhn de Garavito 2007, White, L., Valenzuela, E., Kozłowska-Macgregor, M., & Leung, Y. K. I. 2004) are that the L1 background of the L2 learners should not be implicated in their learning.

Following the steps of previous investigations, I will try defend the fact that knowledge of grammar at a native-like level can be achieved even in late learners. If the results of the experiments match with the expectations, the Spanish L2 students of both groups, especially

those with a proficient level, will get to native-like level in the detection of grammatical errors in plural production. If so happens, it could also be concluded that the mother tongue of the students does not influence on their capability of learning new grammar rules. By affirming so, I would challenge the theory that grammatical features absent in the L1 cannot be acquired in postpuberty acquisition. According to FTFA, I will defend the fact that the grammars of non-native speakers are not restricted to uninterpretable formal features found in the L1. That is, that interlanguage grammars, and particularly the representation of parametrized features like number agreement within a DP, are acquirable.

## **5. Method**

### **5.1 Participants**

A total of 60 individuals participated in this study. Forty of them were Spanish L2 learners, of which twenty Italians and twenty English, and the other twenty were a control group of Spanish native speakers. All of the participants were undergraduated students from different universities around Europe, resident at that time in Palma di Mallorca for a minimum period of six months and a maximum of twelve. All of the SSL learners had been exposed to Spanish in their hometowns for a minimum of one year, always after 12 years-old age, and that one was their first long-stay experience in a Spanish-speaking country. Age was between 18 and 25, and the gender of the participants was chosen randomly.

### **5.2 Procedure**

For this investigation, 5 tests were created in order to get the greatest amount of information possible about the Spanish level of the participants, particularly regarding to plural inflection. The first two ones were language tests to get to know their level of Spanish as L2, so that they could be separated into group levels and to make sure that all the vocabulary existing in the future tasks was familiar to them. Tests number 3 and 4 were proper experiments making part of the investigation (off-line grammaticality judgement task and online self-paced reading task) from where the information about their plural inflection knowledge could be obtained and analysed.

The fifth one would be a production task as a means to go deeper into their Spanish L2 number inflection cognition, and examine if non recognition of grammatical errors in reading tasks was present at the same level in production tasks, bounding the types and amount of mistakes and drawing possible conclusions of the causes. Due to the lack of time, the production task was not performed, so we leave this part open for future investigations.

#### **5.2.1 Language background questionnaire**

Both Italians and English L2ers completed a yes/no questionnaire based on the vocabulary to be used later on in the experiments. Unfamiliarity with Spanish terms could lead to incorrect development of the task and unrepresentative results, especially in RTs. A total of 300 words were listed, of which 165 nouns, 85 adjectives and 50 verbs.

Participants completed the questionnaire individually. Once completed, the data was revised. A sum of 27 words was highlighted as unknown by the attendants, of which 3 verbs, 13 nouns and 11 adjectives. Right afterwards, the sentences designed for Experiments 1 and 2 were

modified. This ensured reliability to the results obtained in both the Grammaticality Judgement Task (GJT) and the self-paced reading task.

### 5.2.2 Spanish proficiency test.

Spanish learners took a test so as to check their level of the second language. The test chosen was the Online Spanish Level Test by the Oxford House. It was cloze test comprised by 50 multiple choice questions, in which semantics and morphology were tested. The test included from very simple sentences about greetings and locations, to colloquial expressions. Participants had to click on the correct answer. Correct answers would score one point, whereas both unanswered and erroneous questions would score zero. At the very end of the test, the result was given on screen (number of correct answers out of the total) together with the correspondence of levels according to the Common European Framework of Reference for Languages. This would evidence properly their knowledge of their second language, taking into account that this could be relevant for the interpretation of the results of the experiments taken later on.

#### *Rating on the Common European Framework of Reference for Languages*

A1/A1 “B”	0% - 20% (0-9 right answers)
A2	20% - 40% (10-20 right answers)
B1	41% - 72% (21 – 36 right answers)
B2	73% - 95% (37-47 right answers)
C1	96% - 100% (48-50 right answers)

Due to the limited amount of participants available for the experiment, it was decided to divide Spanish L2 students only into two groups: Low Level of Proficiency (range of results from A1 level to B1 level inclusive) and High Level of Proficiency (B2 and C1 results).

**Table 1.** Background information of the participants

	<i>N</i>	<i>Level of SSL proficiency</i>	<i>Lenght of exposure (years)</i>	<i>Age</i>
Control	20	Native	21.6	21.6
English (group 1)	10	High	1.7	22.2
English (group 2)	10	Low	1.4	21.7
Italians (group 1)	10	High	1.6	21.6
Italians (group 2)	10	Low	1.5	22.4

*\*The equity in the distribution of the groups is coincidental*

### 5.2.3 Experiment 1: Offline grammaticality judgement task

#### **Materials**

This experiment investigates off-line knowledge of plural marking for syntactic function assignment in L2 Spanish through an interpretation task. Its aim is to establish the extent to which L2ers have target knowledge of Spanish plural inflection. Students are asked to identify sentences as grammatically acceptable or unacceptable according to the absence or presence of any kind of incongruence, either syntactical or morphological.

Participants are tested individually. The instructions of the task were given in the three L1s of the participants (Spanish, English and Italian) in order to avoid any kind of mistake lead from language misunderstanding. Four sentences were shown and participants were asked to judge their acceptability as a trial. Afterwards, a number of 50 sentences were displayed one at a time. The set was composed of 20 grammatical items, 10 ungrammatical items, 20 unrelated distractors. Participants were asked to label each item as acceptable or unacceptable. Items were randomly displayed in every trial.

### Results

The primary purpose of this analysis was to see how similarly or differently the native group and the SSL groups behaved in processing the missing plural inflections. Results are expressed in percentage of success in the task. Descriptive data of the results are presented in table 2.

**Table 2** Descriptive data of the results in Experiment 1

	<i>N</i>	<i>Min - Max</i>	<i>M</i>	<i>SD</i>
Natives	20	96-100	99.60	1.23
English High Proficiency (EHP)	10	88-100	94.80	3.80
English Low Proficiency (ELP)	10	64-88	76.00	7.78
Italians High Proficiency (IHP)	10	88-100	95.20	3.67
Italians Low Proficiency (ILP)	10	64-88	74.80	8.23

The analysis of the results of the SSL low proficient learners shows no significant difference ( $t_{(18)} = .335, p = .74$ ) between Italians ( $M = 74.80, SD = 8.23$ ) and English ( $M = 76, SD = 7.75$ ) students. We hypothesize that high sd in both groups are due to the fact of low N; as it can be observed in table 1, the range between minimum and maximum percentage of right responses in these two groups is wide. Having such a small group of participants has caused reduced grouping into two categories of proficiency and, consequently, the coexistence of real Low Proficient and Medium Proficient students in the same category. Consequently, the percentage of right answers vary from 66 to 88%. Instead, significant difference is found between Natives ( $M = 99.6, SD = 1.23$ ) and Italians with Low Proficiency (ILP) ( $t_{(28)} = 13.41, p < .001$ ) and between Natives and English with Low Proficiency (ELP) ( $t_{(28)} = 13.47, p < .001$ ).

The analysis of the results of Italians with High Proficiency (IHP) ( $M = 94.8, SD = 5.6$ ) and English with High Proficiency (EHP) ( $M = 94.8, SD = 3.7$ ) follow the same line. There is no significant difference between IHP and EHP ( $t_{(18)} = .23, p = .81$ ) although we can find significant difference between IHP and Native speakers ( $t_{(28)} = 4.9, p < .001$ ) and EHP and Native speakers ( $t_{(28)} = 5.2, p < .001$ ). Consequently, a significant difference may be observed either between ILP and Natives ( $t_{(28)}=13.41, p < .001$ ) or ELP and Natives ( $t_{(28)} = 13.47, p < .001$ )

These results apparently stand against one of our two hypotheses, in which we state that native-like level is attainable regarding plural inflection knowledge. Nonetheless, a significant improvement is shown between Low Proficient groups and High Proficient groups, demonstrating that learning regarding plurals occurs. The apparent lack of proves for native-

like behaviour is probably due to the joining of B2 and C1 participants into the same group. Non-significant difference between High Proficients and Natives in this case would mean bilingual behaviour at what might be considered just as advanced level, which is highly improbable. Nevertheless, they certainly support the idea that the mother tongue of the SSL student does not count for the attainability of a proficient level of an L2.

#### 5.2.4 Experiment 2: Online self-paced reading task

##### **Materials**

This experiment examines whether the pattern of (non-) convergence on the morphosyntax in off-line judgements extends to on-line processing, i.e. whether advance to near-native L2ers can use plural inflection in real-time comprehension, registering their reading times. The rationale of this paradigm in L2 inflection processing is that participants' slowdowns in reading words with inflection errors (as compared to the same words without inflection errors) reflect their sensitivity to errors, and this sensitivity demonstrates that they possess the relevant linguistic knowledge.

In this task, every participant was asked to read each sentence for comprehension, word by word, as quickly as possible; the participant's reading time (RT) for each word is recorded. The experiment was designed and displayed with Open Sesame 3.0.7. A total of 54 sentences were used, 4 of them disposed for a practice loop, the rest of them in the experimental part, being 20 grammatical items, 10 ungrammatical items, and 20 unrelated. All sentences were de-contextualized but they made sense perfectly on their own. Participants had to read each sentence individually within a maximum period of 10.000 ms, after which there was no chance for a second reading. The items were shown on a screen, centrally located. Underneath, the commands "acceptable" (bottom left) or "unacceptable" (bottom right). The location of the commands of acceptability was inverted in half of the cases ("acceptable" bottom right, "unacceptable" bottom left) in order to avoid left and right-handed tendencies or involuntary associations (left-wrong, right-right). Students were asked to judge as acceptable or unacceptable the items displayed by pressing one key in the keyboard (bottom left judgement in key Z, bottom right judgement in key M). As in Experiment 1, instructions were given in Spanish, English and Italian. Items were randomly displayed in every trial.

##### **Results**

The average percentage of right responses, in general lines, equals the percentages in task number 1. Descriptive information of these responses is displayed in table 2.

**Table 2** Mean C-test scores of the five participant groups (max = 100)

	<i>N</i>	<i>M</i>	<i>SD</i>	<i>Min-Max</i>
Natives	20	99.6	1.23	96-100
English High Proficiency (EHP)	10	95.5	2.95	92-100
English Low Proficiency (ELP)	10	76.8	6.74	68-88
Italians High Proficiency (IHP)	10	95.6	2.95	92-100
Italians Low Proficiency (ILP)	10	76.4	8.09	68-88

There is a significant difference in the percentage of right responses between EHP ( $M = 95.5$ ,  $SD = 2.95$ ) and ELP ( $M = 76.8$ ,  $SD = 6.74$ ), ( $t_{(18)} = 8.07$ ,  $p < .001$ ) as well as between IHP ( $M = 95.5$ ;  $SD = 2.95$ ) and ILP ( $M = 76.4$ ,  $SD = 8.09$ ), ( $t_{(18)} = 7.04$ ;  $p < .001$ ). In the same way, significant difference is found between Natives ( $M = 99.6$ ,  $SD = 1.23$ ) and EHP ( $t_{(28)} = 5.27$ ,  $p < .001$ ) and between Natives and IHP ( $t_{(28)} = 14.87$ ,  $p < .001$ ), supporting the results of Experiment 1. Again, an improvement is manifested between low and proficient levels, evidencing the possibility of L2 late learning. We maintain the point that significant difference would not be found between proficient and natives if the number of participants was more numerous and high proficiency groups were just composed of C1 and C2 SSL.

Regarding the possible difference between both low proficient groups and both high proficient ones, no significance was found nor between the success of answering of ELP and ILP ( $t_{(18)} = .12$ ;  $p = .4$ ) nor between EHP and IHP ( $t_{(18)} = .01$ ,  $p = 1$ ), matching with the results of task 1 and upholding the theory that different L1s do not create disparities in L2 learning.

The results in regard of RT uphold previous conclusions. According to the hypotheses, there would be significant slowdowns in reading times in proficient groups for agreement violations (RT-AV) in respect of the RT of the total of items. Descriptive data of reading times is shown in table 3.

**Table 3** Descriptive results of RT and RT-AV of the five participant groups.

		Low proficiency			High proficiency		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
English	RT	10	5141.70	149.77	10	4586.43	702.04
	RT-AV	10	5212.30	1395.88	10	5308.94	927.85
Italian	RT	10	5175.83	198.70	10	4649.13	566.63
	RT-AV	10	5215.79	1380.97	10	5388.94	879.68
		<i>N</i>	<i>M</i>		<i>SD</i>		
Natives	RT	20	3822.16		894.71		
	RT-AV	20	4470.88		471.12		

In order to identify whether these slowdowns take place, we analysed RT with t-test intra-group, seeking relevance in the variation of RT of the whole set of sentences of task 2 and RT in sentences with discrepancies in plural inflection (RT-AV). No significant difference was found in ELL ( $t_{(9)} = .17$ ,  $p = .87$ ) or ILL ( $t_{(9)} = .1$ ,  $p = .92$ ). On the contrary, and supporting the main ideas of this thesis, these variations are relevant in both proficient groups, either English ( $t_{(9)} = 4.08$ ,  $p = .003$ ) than Italian ( $t_{(9)} = 4.07$ ,  $p = .003$ ) so proving high knowledge of Spanish L2 plural inflection. Accordingly, this relevance is also found in the control group ( $t_{(19)} = 3.29$ ;  $p = .004$ ). These results add evidence on behalf of the idea that knowledge on plural inflection is acquirable disregarding the starting learning age is.

Altogether we compared variations inter-groups, taking into account the High Proficiency ones and natives, with the aim of identifying possible relevant differences in RT-AV between natives and proficient, and among the latter. Data evidenced significance in the discrepancies of RT-AV either between EHL ( $M = 5380.94$ ,  $SD = 927.85$ ) and the control group ( $M = 4470.88$ ,  $SD =$



471.12), ( $t_{(28)} = 3.3, p = .003$ ) than between IHL ( $M = 5388.94, SD = 879.68$ ) and the natives ( $t_{(28)} = 3.75; p < .001$ ). Instead, no significant difference was found between both groups of SSL learners ( $t_{(18)} = 0.19, p = .85$ ). These results lead us to the conclusion that the grammatical structure of the L1 does not influence on the acquisition of new grammatical competences of an L2 as it is the case of plural inflection. We maintain the idea that the discrepancies between the groups of students and the native speakers of Spanish are due to the heterogeneity of the L2 level of the participants, we repeat, caused by their low numerical size.

## 6. Conclusions

This study investigated whether or not learners of L2 Spanish can gain sensitivity to number agreement, indicating acquisition of L2 grammatical features of number, and whether both Italians and English are able to internalize new formal features despite differences in their L1 morphological features.

Firstly, we can conclude that the acquisition of grammar knowledge, in particular on plural inflection, is attainable also in late learners. Advanced L2 learners showed a percentage of success on identifying plural inflection violations far greater than beginners, rather close to the results of the natives. Moreover, the high proficiency L2 groups are qualitatively similar to the Spanish native speakers in showing longer latencies to number disagreement than to agreement conditions. Beginners are insensitive to number concord/discord distinctions, while intermediates and proficient L2 learners, as monolinguals, demonstrate sensitivity to number and gender concord and discord.

Investigating advanced L2 learners' sensitivity to the plural inflection also allowed for testing and challenging the Shallow Structure Hypothesis (SSH). According to it, nonlocal checking of grammatical features is not possible in L2 sentence processing, since representations in L2 processing are shallow, lacking even very fundamental properties of sentence structure. Thus, L2 learners could not be sensitive to the plural errors in QP (and similar exceptions), as the errors can be detected only via successful nonlocal checking of the [+plural] inflection. With the results of this investigation we can see that ungrammaticality of specific features can be identified by advanced students, probably even at native-like level when they achieve high proficiency in their L2.

Secondly, we have shown that students differing on their L1 can achieve similar results, so that the disparity of SSL L1 and their syntactic rules does not play any role when internalizing new grammatical features, as it is plural inflection. The scores of both grammaticality judgement task and self-paced reading task evidence that the improvement takes place at a similar level disregarding if participants were Italian or English.

This findings support FTFA, which stands that the L1 grammar constitutes the initial state of L2 acquisition (full transfer), but that L2 learners have full access to UG at all times during the acquisition process (full access), and thus that parameter resetting is usually possible. Moreover, the lack of sensibility to agreement violations was only found for low proficient students, which may be explained through Missing Surface Inflection Hypothesis.

Nevertheless, results still evidenced disparity between the advanced SSL students and the natives for both percentage of identification of disagreements and RT on agreement violations. For this reason, we leave this research open for further investigation as we certainly believe that these variations would disappear as soon as the groups of participants were wider. This way, samples could be accurately divided into low, medium and advanced, getting to know the behaviour of real near-native SSL.

## References

- Bruhn de Garavito, J. (2007). Acquisition of the Spanish Plural by French L1 Speakers: the Role of Transfer. *The Role of Formal Features in Second Language Acquisition*, 270.
- Bruhn de Garavito, J., & Otálora, M. (2016). L2 knowledge of gender and number agreement in Spanish noun ellipsis. *Language Acquisition Beyond Parameters: Studies in honour of Juana M. Licerias*, 51, 99.
- Bruhn de Garavito, J., & White, L. (2002). L2 Acquisition of Spanish DPs: The status of grammatical features. *The Acquisition of Spanish Morphosyntax: The L1/L2 Connection*. Dordrecht, Kluwer, 151-176.
- Clahsen, H. (1988). Parameterized grammatical theory and language acquisition. In *Linguistic theory in second language acquisition* (pp. 47-75). Springer Netherlands
- Clahsen, H., & Felser, C. (2006). Grammatical processing in language learners. *Applied Psycholinguistics*, 27(01), 3-42.
- Clahsen, H. & Veríssimo, J. (in press). Dual morphology in the mental lexicon: Experimental evidence from the acquisition and processing of Greek and Portuguese. In P. Guijarro-Fuentes and P. Larranaga (Eds.), *Acquisition of Romance languages: Old acquisition challenges and new explanations from a generative perspective*. Berlin: De Gruyter Mouton. ISBN:978-1-61451-802-0
- Domínguez, A., Cuetos, F., & Segui, J. (1999). The processing of grammatical gender and number in Spanish. *Journal of Psycholinguistic Research*, 28(5), 485-498.
- Duffield, N., White, L., De Garavito, J. B., Montrul, S., & Prévost, P. (2002). Clitic placement in L2 French: evidence from sentence matching. *Journal of Linguistics*, 38(03), 487-525.
- Franceschina, F. (2002). Case and  $\bar{p}$ -feature agreement in advanced L2 Spanish grammars. *EUROSLA yearbook*, 2(1), 71-86.
- Goad, H., & White, L. (2004). Ultimate attainment of L2 inflection: Effects of L1 prosodic structure. *Eurosla yearbook*, 4, 119-145.
- Goad, H., White, L., & de Garavito, J. B. (2011). Prosodic transfer at different levels of structure: The L2 acquisition of Spanish plurals. In *Online Proceedings of the 35th Annual Boston University Conference on Language Development [BUCLD 35]*. <http://www.bu.edu/buclid/files/2011/05/35-Goad-White-Bruhn-de-Garavito.pdf> (21 May, 2014).
- Goad, H., White, L., & Steele, J. (2003). Missing inflection in L2 acquisition: Defective syntax or L1-constrained prosodic representations?. *The Canadian Journal of Linguistics/La revue canadienne de linguistique*, 48(2), 243-263.
- Halle, M., & Marantz, A. (1993). Distributed morphology and the pieces of inflection.
- Hahne, A., Müller, J., & Clahsen, H. (2003). *Second language learners' processing of inflected words: behavioral and ERP evidence for storage and decomposition*. Department of Language and Linguistics, University of Essex.

- Hahne, A., Mueller, J. L., & Clahsen, H. (2006). Morphological processing in a second language: Behavioral and event-related brain potential evidence for storage and decomposition. *Journal of cognitive neuroscience*, 18(1), 121-134.
- Hawkins, R. and Liszka, S. (2003). Locating the source of defective past tense marking in advanced L2 English speakers. *The lexicon–syntax interface in second language acquisition*. Amsterdam, 21–44.
- Hawkins, R., & Chan, C. Y. H. (1997). The partial availability of Universal Grammar in second language acquisition: The ‘failed functional features hypothesis’. *Second Language Research*, 13(3), 187-226.
- Haznedar, B., & Schwartz, B. D. (1997). Are there optional infinitives in child L2 acquisition. In *Proceedings of the 21st annual Boston University conference on language development* (Vol. 21, pp. 257-68). Somerville, MA: Cascadilla Press.
- Hopp, H. (2009). Ultimate attainment in L2 inflection: Performance similarities between non-native and native speakers. *Lingua*, 120(4), 901-931.
- Ionin, T., & Montrul, S. (2010). The role of L1 transfer in the interpretation of articles with definite plurals in L2 English. *Language Learning*, 60(4), 877-925.
- Lardiere, D. (1998a). Case and tense in the ‘fossilized’ steady state. *Second language research*, 14(1), 1-26.
- Lardiere, D. (1998b). Dissociating syntax from morphology in a divergent L2 end-state grammar. *Second language research*, 14(4), 359-375.
- Lück, M., Hahne, A., Friederici, A., & Clahsen, H. (2001, November). Developing brain potentials in children: An ERP study of German noun plurals. In *26th Boston University Conference on Language Development*.
- McCarthy, C. L. (2007). *Morphological variability in second language Spanish*. ProQuest.
- McCarthy, C. (2008). Morphological variability in the comprehension of agreement: An argument for representation over computation. *Second Language Research*, 24(4), 459-486.
- Outeiral, S. M. R., & Acuña-Fariña, J. C. (2012). Agreement processes in English and Spanish: A completion study. *Functions of language*, 19(1), 58-88.
- Prévost, P., & White, L. (2000). Missing surface inflection or impairment in second language acquisition? Evidence from tense and agreement. *Second language research*, 16(2), 103-133.
- Sagarra, N., & Herschensohn, J. (2010). The role of proficiency and working memory in gender and number agreement processing in L1 and L2 Spanish. *Lingua*, 120(8), 2022-2039.
- Sagarra, N., & Herschensohn, J. (2011). Asymmetries in gender and number agreement processing in late bilinguals. In *Selected proceedings of the 13th Hispanic Linguistics Symposium* (pp. 169-177).
- Song, Y. (2015). L2 processing of plural inflection in English. *Language Learning*, 65(2), 233-267.

Trenkic, D. (2007). Variability in second language article production: beyond the representational deficit vs. processing constraints debate. *Second Language Research*, 23(3), 289-327.

White, L., Valenzuela, E., Kozłowska-Macgregor, M., & Leung, Y. K. I. (2004). Gender and number agreement in nonnative Spanish. *Applied Psycholinguistics*, 25(01), 105-133.