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# Gender marking in written L2 French

## Before, during, and after residence abroad

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The aim of this study was to examine how a group of 20 learners of second-language French express gender marking in three written tasks administered over the course of 21 months, including an academic year abroad. All full nouns modified by either a determiner or an adjective overtly marked for gender were analyzed ( $n = 1,601$ ), and each token was coded for a set of extralinguistic and linguistic features identified in previous literature as playing a role in gender marking. The analysis reveals that targetlike rates of use increased between pre-stay testing and in-stay testing, and that levels were maintained at post-stay. In addition, three factors – time, noun gender, and syllable distance – were found to significantly characterize behavior with respect to gender marking.

**Keywords:** grammatical gender, L2 French, residence abroad, written production, L2 development

### 1. Introduction

Although some students, educators, and community members may continue to subscribe to what Wilkinson (1998, p.33) and DeKeyser (2007, p.220) have referred to as the “magical” image associated with the stay-abroad experience, whereby residence abroad is thought to inevitably lead to progress in one’s second language (L2), research on this particular learning context demonstrates that the relationship between achievement in one’s L2 and the context of learning is complex. For example, it has become apparent that residence abroad generally affects different sub-components of language competence variably (Churchill & DuFon, 2006; Collentine, 2004; Llanes, 2011): whereas gains with respect to oral expression and sociolinguistic competence have been consistently reported, the impact

of a stay abroad on writing in the L2 and on grammatical competence has led to contradictory results.

In the current paper, we use written data from the LANGSNAP project<sup>1</sup> (see Mitchell, Tracy-Ventura, & McManus, 2017) and concentrate on one aspect of grammatical competence, namely gender marking. In particular, we will examine how a group of 20 learners of French completing a French degree at a British university change in how they mark gender in their written French over a period of 21 months, including an academic year in France. Although previous research has called into question the impact of residence abroad on the development of grammatical competence (Collentine, 2004; Lafford & Collentine, 2006; cf. Howard, 2006), most of this previous research has concentrated on global error rates. Although we will report targetlike rates of use and examine any evidence of change, we also conduct a logistic regression in which we identify factors influencing how the learners mark gender. Given the complexity of the gender system in French, and the numerous explanatory factors that have been identified in both the first-language (L1) and L2 literature (e.g., Granfeldt, 2003; Lyster, 2006), the current approach has the potential to shed light on changes in interlanguage not immediately apparent from reports on targetlike rates of use alone.

## 2. Literature review

After providing a concise overview of the recent research into L2 development during residence abroad, we will describe the gender-marking system in French and present the L1 and L2 research that has examined it. Finally, we will define the two research questions at the heart of the current project.

### 2.1 Residence abroad and L2 development

Findings regarding the impact of a stay abroad on achievement or progress in the L2 have been reported to differ as a function of the sub-component of language competence being examined (see overviews in Churchill & DuFon, 2006 and Llanes, 2011). Starting with broad comparisons of L2 speaking and writing, numerous authors have reported gains in measures of L2 oral proficiency. On the other hand, “evidence on written literacy skills, that is reading and writing, is scarce” (Pérez-Vidal & Juan-Garau, 2009, p. 273), although there is some evidence that a stay abroad can significantly and positively influence the quality and the flu-

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1. <<http://langsnap.soton.ac.uk/>>. The corpus is also available in the CHILDES project (MacWhinney, 2000).

ency of learners' writing in the L2 (Pérez-Vidal & Juan-Garau 2009; Sasaki, 2007; cf. Llanes, Tragant, & Serrano, 2012). In addition to these broad conclusions, it appears that an extended stay abroad, when compared to learners who continued language learning at home, can lead to gains in lexical growth (Milton & Meara, 1995), sociolinguistic competence (Geeslin & Long, 2014), and pragmatic competence (Charkova & Halliday, 2011). However, when grammatical competence has been investigated, the existing research "presents conflicting results" (Llanes, 2011, p. 193), with researchers such as Lafford and Collentine (2006, p. 107) concluding that "the appreciable development of general grammatical abilities and morphosyntax is not robust, at least within the timeframe of a semester to a year abroad."

Various explanations for the differences between lexical, sociolinguistic, and pragmatic competence, on the one hand, and grammatical competence, on the other, have been offered. In an investigation of the recognition and perception of pragmatic and grammatical errors in a foreign-language and a target-language context, Bardovi-Harlig and Dörnyei (1998) found that individuals studying English in an English-speaking environment identified more pragmatic than grammatical errors and judged them to be more severe; the opposite was true of a group of Hungarians learning English in Hungary. The researchers suggested that this result may indicate a greater focus on grammatical accuracy in foreign-language classrooms, with a stronger stigma attached to departures from pragmatic or sociolinguistic expectations in target-language contexts. In other words, the nature of the target-language context may push learners to attend more strongly to aspects of language competence other than grammar. A second explanation for the general lack of development in grammatical ability has been offered by Lafford and Collentine (2006) who suggested that it may be an artefact of the learners' proficiency level. They suggest that intermediate learners of the type generally investigated have not yet attained a level that will allow them to free up resources in order to attend to, for example, communicatively redundant grammatical markers. On the other hand, there is some evidence that learners with more advanced levels of proficiency show progress with respect to grammatical competence after a stay abroad (see Gudmestad & Edmonds, 2016; Isabelli & Nishida, 2005, cited by Lafford & Collentine, 2006, p. 117).

## 2.2 Grammatical gender in French

All French nouns are assigned one of two genders, masculine or feminine, and any modifier (i.e., determiner, adjective) must agree in gender (and in number) with the noun it modifies. However, in reality, there are many modifiers that do not show overt gender marking in French. In other words, these modifiers have

the same form, whether used with a masculine or a feminine noun. Thus, if *le* in *le couple* ‘the couple’ clearly marks *couple* as a masculine noun, and *la* in *la raison* ‘the reason’ shows unambiguously that *raison* is feminine, no overt sign of gender is available on the determiner in *l’honnêteté* ‘the honesty’, *leur maison* ‘their house’, or when any noun is used in the plural with the definite or indefinite article: *les couples* ‘the couples’, *des raisons* ‘some reasons’. There are also adjectives for which the same form is used regardless of the gender of the noun, particularly those that end in <e>: *pauvre* ‘poor’, *agréable* ‘pleasant’. For written French, the percentage of nouns for which modifiers do not show overt gender has been calculated by Ayoun (2010, p.132) using a magazine and newspaper corpus. She found that of 5,016 determiner phrases, 49.76% were not accompanied by a modifier overtly marked for gender.

Although children learning French as their L1 have generally mastered gender marking in the spoken language by age 3 (Grégoire, 1947, cited in Harley, 1979; Karmiloff-Smith, 1979), grammatical gender in French has long presented a challenge, both for linguists working on French and for adult learners of this language. For linguists, the difficulty resides in gender attribution, and the relevant literature contains a host of competing analyses (see Surridge, 1989; Tucker, Lambert, & Rigault, 1977). For learners of L2 French, it is necessary to acquire knowledge of a noun’s gender (often called gender assignment) and to learn how to express gender syntactically (often called gender agreement), both of which have been found to be challenging for learners.

### 2.2.1 Grammatical gender in L1 French

Whereas numerous grammarians have contended that there is no rhyme or reason to gender attribution in French (see references in Lyster, 2006, pp.69–70), linguists have set about attempting to identify regularities on the basis of semantic or formal characteristics in this complex system (see Surridge & Lessard, 2008, for an overview). If there is general agreement that inherent or semantic gender is expressed concordantly in grammatical gender (i.e., *fille* ‘girl’ is feminine, whereas *garçon* ‘boy’ is masculine),<sup>2</sup> the majority of research has concentrated on formal properties of the noun as predictive of gender assignment. Three such properties have received particular attention. The first – (orthographic or phonological) noun endings – has been the most extensively examined. Numerous researchers have shown that certain orthographic or phonological endings in French are pre-

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2. Certain authors (e.g., Nelson, 2005) have suggested that semantic characteristics play an even larger role, whereby certain semantic classes – such as days of the week (masculine) and academic disciplines (feminine) – are associated with a specific gender. Because of very low token counts, this variable will not be further explored with the current corpus.

dictive of the gender of the noun (Lyster, 2006; Tucker et al., 1977), and that native speakers (NSs) of French are sensitive to these endings in assigning gender (Desrochers & Paivio, 1990; Holmes & Dejean de la Bâtie, 1999; Holmes & Segui, 2006; Taft & Meunier, 1998).

The second – and related – property concerns derivational morphology. Surridge and Lessard (2008) demonstrated that derivational endings are consistent markers of gender (e.g., nouns derived with the suffix *-tion* are always feminine). They also showed that these patterns are sometimes at odds with more general orthographic and phonetic ending patterns (e.g., words ending in *-on* are generally masculine), and thus argued that a distinction needs to be made between orthographic / phonological endings and derivational suffixes. Finally, it has been observed that NSs behave differently with vowel-initial and consonant-initial nouns when it comes to gender marking. Desrochers and Paivio (1990), Taft and Meunier (1998), and Holmes and Segui (2006) demonstrated experimentally that NSs of French are slower in assigning gender when the noun begins with a vowel and that more errors are made on such nouns, presumably because determiners that occur with vowel-initial nouns are less likely to contain information concerning the gender of the noun.

### 2.2.2 Grammatical gender in L2 French

According to Ayoun (2007, p.147), “L2 French learners are confronted with a complex and ambiguous input when it comes to grammatical gender.” The challenge of acquiring grammatical gender in L2 French has not been lost on researchers, and numerous studies have brought to light observations related to how learners assign gender and how they use gender when speaking and writing.

Of these different observations, three are particularly robust. First, several studies have found evidence of the overuse of masculine modifiers in interlanguage. This has been found for advanced L1 Swedish learners (Bartning, 2000), L1 Dutch learners (Dewaele & Véronique, 2001), and L1 English learners (Harley, 1979; Holmes & Dejean de la Bâtie, 1999), interpreted by all researchers as indicative of the masculine as the default or unmarked option in gender marking (cf. the pre-advanced learners in Bartning, 2000, and Granfeldt, 2003, pp.225–226). Moreover, for those studies that have examined how learners mark agreement on determiners and on adjectives, results have consistently pointed to more target-like behavior with determiners (Ayoun, 2007; Dewaele & Véronique, 2001; Harley, 1979; Holmes & Dejean de la Bâtie, 1999). The third observation that has been reported consistently is that learners – like NSs – are sensitive to noun endings when assigning gender in their L2 (Hardison, 1992; Holmes & Dejean de la Bâtie, 1999; Surridge & Lessard, 1984).

Although reported by fewer studies, three additional observations have been made in the literature. First, learners have been found to be more targetlike in assigning gender to high frequency nouns (SurrIDGE & Lessard, 1984). In addition, Holmes and Segui (2006) found evidence that learners were more targetlike in assigning gender to nouns beginning with a consonant as opposed to a vowel, a finding that found additional support in Dewaele's (2015) examination of oral production. He found that Dutch learners of French as a third language were less accurate in gender agreement with vowel-initial nouns, although this effect was not significant for a more advanced group of learners. Finally, Prodeau (2005) noted that the distance between the noun and the modifier influenced targetlike rates of use, with greater distance resulting in lower targetlike rates.

### 2.3 Overview and research questions

Whereas residence abroad has been found to lead to improvements in oral expression, vocabulary development, sociolinguistic competence, and pragmatic abilities, questions remain open as to the influence of a stay abroad on improvements in L2 writing or in grammatical abilities. The current study aims to contribute to this discussion with an examination of how one aspect of morphosyntax in L2 French – namely, grammatical gender – is expressed in written data before, during, and after a stay abroad. The design of our project allows us to make two important contributions, in connection with previous research on both residence abroad and the expression of grammatical gender. First, we report on longitudinal data, allowing us to follow the development of learners' marking of gender in written production over a period of 21 months, including an academic year abroad. Second, the analysis conducted departs from most previous research, insofar as we do not limit our focus to targetlike rates of use, but instead also identify factors that influence gender marking over the 21 months. This means that we will examine both if and how targetlike use changes over the course of 21 months, and if and how the different factors underpinning the marking of gender change. We aim to provide responses to two research questions: (a) Do learners show change in rates of targetlike gender marking with determiners and adjectives in a writing task over a period of 21 months including a stay abroad? (b) What factors influence L2 learners' targetlike marking of gender in written French and do these factors change over the course of 21 months, which includes a stay abroad?



### 3. The current study

#### 3.1 Method section

Our study was conducted using data made freely available by the LANGSNAP project. In what follows, we will present the characteristics of the participants, the data collection procedure, the data-coding schema that we developed, and finally details on how the data were analyzed.

##### 3.1.1 Participants

The LANGSNAP team collected data from a total of 29 learners of French; for the current project, data from the first 20 learners were analyzed.<sup>3</sup> Two of the participants were men and 18 were women. All had obtained an end-of-secondary-education qualification in French and were enrolled in a French degree program in England at the time of data collection. The participants were on average 20 years old (range: 19–21) and self-reported having studied French for between six and 20 years ( $M=10.45$ ).<sup>4</sup> At the beginning of the project, the LANGSNAP team administered an elicited imitation task to each participant in order to obtain a measure of global proficiency. Scoring was done on the basis of 120 points (see Tracy-Ventura, McManus, Norris, & Ortega, 2014, for details); participants whose data were analyzed for the current study scored between 36 and 97 points ( $M=59.25$ ,  $SD=14.58$ ). During their stay abroad in France, the participants were involved in three different activities: three had found a workplace internship, five were exchange students at a French university, and twelve would be working as teaching assistants, helping teach English in primary and secondary schools across France. In a study that examined the full cohort of students studying French in this project, Mitchell, McManus, and Tracy-Ventura (2015) found that placement type played no role in gains on oral expression, oral fluency, or lexical diversity. We have thus not included this factor in the current analysis.<sup>5</sup>

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3. Data were also collected from ten NSs of French. The results for the NSs will not be reported in detail, as only one item (of 343) showed nontargetlike gender marking (*l'homosexualité n'est plus vécu comme une honte* 'homosexuality<sub>fem</sub> is no longer experienced<sub>masc</sub> as shameful', Participant 139).

4. Participant 100, who was 20 years old at the beginning of the project, self-reported 20 years of French study. According to the LANGSNAP website, this participant reported some at-home contact with French.

5. We have also analyzed the oral data from this dataset (Edmonds & Gudmestad, 2016). However, given the fact that certain written manifestations of gender marking are not audible in spoken French (e.g., *joli*<sub>masc</sub> and *jolie*<sub>fem</sub> 'pretty' have the same pronunciation), our coding of the two types of data was different and, thus, the data could not be analyzed together.

### 3.1.2 Data collection

Data were collected from the participants at six different times: before their stay abroad, three times during the academic year abroad, and twice after returning to England. At each data-collection point, the participants completed two oral tasks (an interview and a narrative) and one argumentative essay of approximately 200 words. In the current project, we concentrate solely on the written data, and we have analyzed all essays for the 20 participants collected at three points in the project, namely the pre-test (May / June 2011), the fourth data collection point, which occurred after learners had been in France for approximately nine to ten months (May / June 2012), and the second post-test (January / February 2013). We will refer to these three points as pre-stay, in-stay, and post-stay, respectively. The same topic – Do you believe gay couples have the right to get married and adopt children? – was used for pre-stay and in-stay, whereas a different topic was used for post-stay (In order to encourage people to eat in a healthy manner, do you think sugary beverages and fatty foods should be taxed?).

These data were collected using a computer program. Participants saw the prompt in French on the screen and were given three minutes to plan their responses. They were then allotted 15 minutes to write their approximately 200-word argumentative essay.

### 3.1.3 Data coding

The full corpus under examination contains 11,948 words (pre-stay: 4,123; in-stay: 3,841; post-stay: 3,984). In order to investigate gender marking in this corpus, we coded every instance in which a full noun was modified by a determiner and/or by an adjective.<sup>6</sup> This means that a single noun could give rise to multiple tokens, as in the following example, where the noun *vie* 'life' is modified by one determiner and two adjectives (in all examples, we cite learner productions exactly as they were written):

- (1) *une vie comfortable et hereux* (Participant 114, pre-stay)  
'a comfortable and happy life'

For this example, three different tokens were coded: *une* modifying *vie*, *comfortable* modifying *vie*, and *hereux* modifying *vie*. This coding of the dataset identified 3,059 instances of potential gender marking. However, not all of these items could be retained for the final analysis. As mentioned in the literature review, gender is not overtly marked on all determiners or on all adjectives. In the example in (1), whereas it is clear that the participant has used a feminine determiner (*une*)

6. Although we have also coded for agreement with pronominal referents that express verbal subjects, we will not analyze these tokens here due to low token counts ( $n=82$ ).

and a masculine adjective (*hereux*) with the feminine noun *vie*, it is not possible to know what gender is assigned to the invariable adjective *comfortable*, whose form is the same with masculine and feminine nouns. We thus removed from the dataset all instances where gender marking was not overt on the modifier. This left us with a total of 1,601 tokens, of which 982 were with determiners and 619 concerned adjectives. A total of 273 different nouns (133 feminine nouns, 140 masculine nouns) make up this final dataset. Table 1 presents the number of tokens for the ten most frequent feminine and masculine nouns. Taken together, these 20 most frequent nouns account for 56.6% of occurrences involving overt gender marking (906/1601 occurrences).

**Table 1.** Ten most frequent feminine and masculine nouns

Feminine	<i>n</i>	Masculine	<i>n</i>
<i>famille</i> ‘family’	56	<i>couple</i> ‘couple’	181
<i>nourriture</i> ‘food’	52	<i>droit</i> ‘law’	85
<i>vie</i> ‘life’	49	<i>monde</i> ‘world’	64
<i>boisson</i> ‘drink’	40	<i>mariage</i> ‘marriage’	47
<i>chose</i> ‘thing’	38	<i>aliment</i> ‘food’	45
<i>question</i> ‘question’	33	<i>avis</i> ‘opinion’	27
<i>santé</i> ‘health’	30	<i>gouvernement</i> ‘government’	27
<i>société</i> ‘society’	24	<i>parent</i> ‘parent’	27
<i>idée</i> ‘idea’	21	<i>problème</i> ‘problem’	25
<i>raison</i> ‘reason’	17	<i>sexe</i> ‘gender’	18

One of the coding challenges that we faced in analyzing this dataset concerned learner creativity, resulting in nouns or adjectives that do not exist in French. Each such example was considered on a case-by-case basis, with a view to ultimately including all examples that were informative with respect to gender marking in the interlanguage systems under investigation. Two illustrative examples involving creative nouns are presented in (2a–b):

- (2) a. *dans une société moderne et liberale* (Participant 120, in-stay)  
       ‘in a modern and liberal society’  
       b. *le coût est cher* (Participant 116, post-stay)  
       ‘the cost is expensive’

In both cases, the intended noun is clear: *société* in (2a) and *coût* in (2b). We decided to include in our analysis items such as (2a), namely items in which the intended noun was clear and the deviation from the targetlike spelling did not

jeopardize the presumed gender of the noun. These examples often involved misplaced or missing letters or accents (as in 2a). On the other hand, any creative noun for which the gender was called into question or unclear was excluded. Most such examples involved changes made to the noun ending, as endings have been found to be indicative of gender. It is for this reason that (2b) was removed from the dataset, as the addition of <e> to the end of the noun could signify that the learner thinks the noun is feminine (when it is actually masculine) (see Ayoun, 2010, and Hardison, 1992, who both reported that learners associated orthographic <e> with the feminine gender). English nouns that do not have gender in French were also removed (e.g., *les grands chains de fast food* ‘the big fast food chains’; Participant 105, post-stay). With respect to adjectives, we have several instances in which learners created entirely new adjectival forms, such as *rélevant* in (3):

- (3) *et ainsi l'opposition de l'église contre les homosexuels n'est plus rélevante*  
 ‘and thus the opposition of the church against homosexuals is no longer relevant’  
 (Participant 112, pre-stay)

Even though this adjective and others like it do not exist in French, we decided to keep them in the main analysis. This is because these forms clearly show gender marking (i.e., it is clear that the interlanguage adjective *rélevant* has been marked as feminine in the above example).

Each one of the 1,601 tokens was analyzed for the targetlike or nontargetlike nature of the gender marking between the noun and modifier (i.e., the binary dependent variable) in addition to a host of extralinguistic and linguistic factors, drawing on previous research on both L1 and L2 French. The independent factors and their coding categories are presented in Table 2.

Starting with the extralinguistic factors, for each token we noted who had written it (participant) as well as at what data-collection point (time). In addition, each token was coded for the initial proficiency of the speaker (using the elicited imitation score obtained by each participant at pre-stay testing).

Nine linguistic factors were coded for each token, beginning with the gender of the noun in modern-day French (noun gender). Noun frequency was determined by consulting the book portion of the Lexique 3.8 database and taking the non-lemmatized frequency counts per million words.<sup>7</sup> In addition, we coded for noun class, by noting whether the nominal referent had semantic – that is, inherent – gender (e.g., *mère* ‘mother’) or grammatical gender. Each token was also

7. <<http://www.lexique.org>> Because frequency counts were not available for certain nouns, notably coordinated noun phrases and proper nouns, such tokens were excluded from the analysis (this involved only twelve instances in the original dataset of 1,613 tokens).

**Table 2.** Independent factors

Factors	Coding categories
<b>Extralinguistic</b>	
Participant	100–120
Time	pre-stay vs. in-stay vs. post-stay
Initial proficiency	36–97
<b>Linguistic</b>	
Noun gender	feminine vs. masculine
Noun frequency	0-1289.39
Noun class	grammatical gender vs. semantic gender
Modifier type	adjective vs. determiner
Syllable distance	0 vs. > 0
Noun first phoneme	consonant vs. vowel
Noun final orthographic rhyme	not predictive vs. predictive
Noun final phoneme	consonant vs. vowel
Noun derivational morphology	absent vs. present

coded as to whether the modifier was an adjective or a determiner (modifier type). Finally, we coded for the distance (in syllables) between the noun and the modifier. For the current analysis, this variable has been collapsed into a binary one, opposing instances where the modifier is directly next to the noun (syllable distance is 0) and those where it is farther away (a distance of >0).

The final four independent variables concern either the beginning or the ending of the noun being modified. The variable initial phoneme allowed us to code each noun for whether it began with a consonant or a vowel. As for the ending of nouns, three different variables were examined. We coded for the orthographic ending (noun final orthographic rhyme), opposing nouns ending in a predictive ending to those that do not. For this distinction, we relied on Lyster (2006), who used all nouns in the *Le Robert Junior Illustré* as his corpus and classified each orthographic noun ending that appeared more than once according to whether it was predictive of a certain gender. For an ending to be considered predictive, at least 89% of all nouns in the corpus with that ending had to have the same gender. For this variable, the category ‘not predictive’ groups together ambiguous endings, exceptions to predictive endings (e.g. *fin* is feminine, although <in> is predictive of masculine gender), and off-list nouns. We also coded for phonological ending (noun final phoneme), grouping nouns ending in a vowel in one group and those ending in a consonant in another. According to research on L1 French, mascu-

line nouns tend to end in vowels, whereas feminine ones end in consonants (see Tucker et al., 1977). Finally, using Surridge (1989) as a guide, we coded for derivational morphology, distinguishing between nouns with and without a derivational suffix.

#### 3.1.4 *Data analysis*

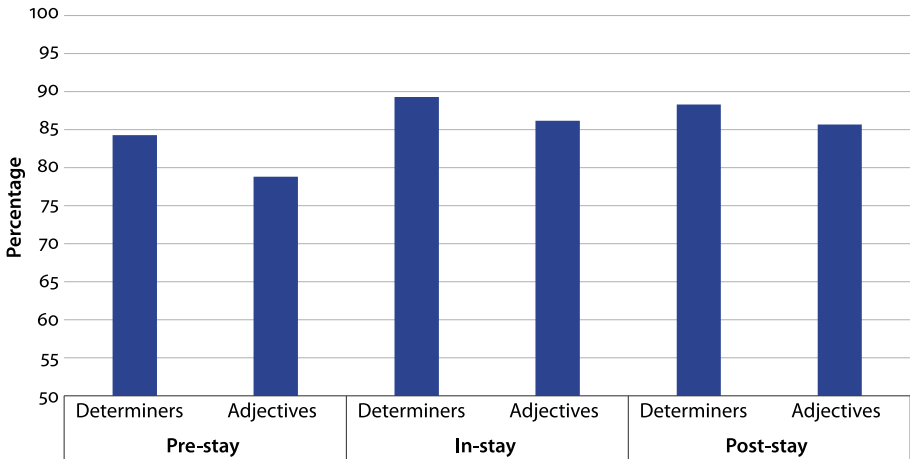
Our data analysis will be divided into two parts, corresponding to our two research questions. In the first part, we will present targetlike rates of gender marking with determiners and with adjectives in pre-stay, in-stay, and post-stay argumentative essays. For the second part, we used the statistical program R to conduct logistic regressions in order to identify the factors that simultaneously influence how this group of learners marks gender and how these factors may change across time. Any factors that were not significant in this first model were removed, and the model was rerun. This was done in order to identify a model that could potentially be generalized beyond the current dataset. Once we had arrived at a model with only significant fixed effects, we then examined whether strong interactions were present (i.e., interactions between two significant fixed effects). In a final step, we investigated whether the inclusion of the extralinguistic variable of participant as a random effect changed the model. For this final step, we ran a mixed-effects regression, which analyzed fixed effects and the random effect together. Each logistic model included a goodness-of-fit metric, which indicates the percentage of observed data points that are accurately predicted by the model. In order to illustrate our final model, we ran cross-tabulations of the significant patterns uncovered in the regression models.

### 3.2 Results

#### 3.2.1 *Targetlike rates of use*

When we focus on the full corpus, we find that this set of participants shows high rates of targetlike gender marking in their writing, both for determiners (855/982 occurrences or 87.1%) and for adjectives (517/619 occurrences or 83.5%). Looking at gender marking as a function of time shows that this group of learners is more targetlike with determiners than with adjectives at each testing period. Moreover, for both types of modifiers, we note differences between pre-stay rates of targetlike use, on the one hand, and in-stay and post-stay rates of use, on the other (Figure 1). More specifically, before going abroad, these participants were targetlike with gender marking on determiners 83.9% of the time and on adjectives 78.5% of the time. In-stay rates show movement towards greater target-

likeness (88.9% for determiners and 85.8% for adjectives), which appears to be maintained eight months later (87.9% for determiners and 85.3% for adjectives).



**Figure 1.** Targetlike rate of gender marking for determiners and adjectives as a function of time

### 3.2.2 Factors influencing gender marking

We carried out an initial logistic regression in which each of the variables from Table 2, with the exception of participant, was included as a fixed effect. In this first analysis, three variables – time, noun gender, and syllable distance – were found to be significant (see Appendix for full results). We then re-ran the analysis with only these factors. In this new model, the three factors all remained significant. We then explored whether interactions existed between the three significant variables, thereby adding  $time \times noun\ gender$ ,  $time \times syllable\ distance$ , and  $noun\ gender \times syllable\ distance$  to the model. Only the  $time \times noun\ gender$  interaction reached significance. We thus removed the other two interactions, which resulted in the model provided in Table 3. The first column in this table presents those fixed effects and interactions that were significant and identifies the reference point for each variable. The second column presents the coefficients; a positive coefficient means that the category of the variable mentioned in the first column resulted in significantly more targetlike gender marking when compared to the reference point. The final three columns present the standard error, the  $z$  value, and the  $p$  value for each significant result. The goodness-of-fit metric showed that 86% of the observed data were correctly fitted by this model. Finally, we ran another logistic regression, this time including the variable of participant as a random effect, in addition to the fixed effects. The resultant, mixed-effects model was identical to the one reported in Table 3, in terms of the significant fixed effects and

the goodness-of-fit metric. Given that the inclusion of participant did not change the fixed effects in the model, the simpler model (Table 3) will be retained as the final one (i.e., parsimony; Wu & Hamada, 2000).

**Table 3.** Final binary regression model

Factors	Coefficient	Standard error	z value	p value
Intercept	.3374	.2139	1.578	.1147
<b>Time (ref point: pre-stay)</b>				
In-stay	.7256	.2376	4.334	.002262
Post-stay	1.0233	.2361	3.053	1.46e-05
<b>Noun gender (ref point: feminine)</b>				
masculine	1.3466	.2544	5.292	1.21e-07
<b>Syllable distance (ref point: &gt;0)</b>				
0	.6154	.1751	3.514	.000441
<b>Time x Noun gender (ref point: pre-stay x feminine)</b>				
in-stay x masculine	-.5529	.3646	-1.517	.129381
post-stay x masculine	-1.2652	.3572	-3.572	.000397

*Note.* The reference point for the dependent variable is targetlike gender marking.

In order to describe the final model, we will make reference to both the coefficients from the logistic regression (Table 3) and the cross-tabulations for the significant variables (see Table 4). Starting with the factor of time, we see that this group of learners was more likely to mark gender in a targetlike manner at in-stay and at post-stay testing when compared with their behavior at pre-stay testing (see positive coefficients, Table 3). In Table 4, this finding translates into gains that were made during the year abroad and maintained at the time of post-stay testing. As for noun gender, the overall trend shows that gender marking tends to be more targetlike with masculine as compared to feminine nouns, with targetlike rates of use with masculine nouns at 89.5% versus 80.7% for feminine nouns (see Table 4). A significant main effect of syllable distance was also observed, whereby modifiers located directly adjacent to the noun were more likely to be marked in a targetlike manner than those separated from the noun they modified by one syllable or more. Finally, one interaction – time x noun gender – was identified as significant. In the final model, only the comparison between gender marking with feminine nouns at pre-stay and masculine nouns at post-stay reached significance; the comparison involving feminine versus masculine nouns at pre- versus in-stay testing did not reach significance. In other words, when compared to targetlike



rates of gender marking for feminine nouns at pre-stay, this group of learners was less likely to produce targetlike gender marking with masculine nouns at post-stay (see negative coefficient, Table 3).

**Table 4.** Cross-tabulations showing significant patterns

Factor	Targetlike gender marking	
	<i>n</i>	%
<b>Time</b>		
pre-stay	392	82
in-stay	497	87.5
post-stay	493	86.9
<b>Noun gender</b>		
masculine	817	89.5
feminine	565	80.7
<b>Syllable distance</b>		
>0	213	79.2
0	1169	87
<b>Time x Noun gender</b>		
pre-stay x masculine	255	90.1
pre-stay x feminine	137	70.3
in-stay x masculine	313	90.7
in-stay x feminine	184	82.5
post-stay x masculine	249	87.4
post-stay x feminine	244	86.5

One of the significant variables identified in this analysis – time – has three categories (pre-stay, in-stay, post-stay). Because a binary logistic regression compares a reference point (e.g., targetlike use at pre-stay) to another value of the variable (e.g., in-stay and post-stay rates of use), the findings reported in Table 3 only tell us that pre-stay behavior was significantly different from gender marking in essays written in-stay and post-stay. We do not, however, know whether there was a significant difference between in-stay and post-stay behavior. As one of the goals of the current project is to look at development, we conducted a new analysis in which the reference point for time was changed to in-stay, thus allowing us to examine the developmental trajectory between in-stay and post-stay testing. The results for this new analysis are presented in Table 5.

**Table 5.** Final binary regression model: New reference point for Time

Factors	Coefficient	Standard error	<i>z</i> value	<i>p</i> value
Intercept	1.0629	.2211	4.808	1.52e-06
<b>Time (ref point: in-stay)</b>				
pre-stay	-.7256	.2376	1.194	.0023
post-stay	.2978	.2493	-3.053	.2323
<b>Noun gender (ref point: feminine)</b>				
masculine	.7937	.2611	3.039	.0024
<b>Syllable distance (ref point: &gt;0)</b>				
0	.6154	.1751	3.514	.0004
<b>Time x Noun gender (ref point: in-stay x feminine)</b>				
pre-stay x masculine	.5529	.346	1.517	.1294
post-stay x masculine	-.7123	.362	-1.968	.049

*Note.* The reference point for the dependent variable is targetlike gender marking.

This new analysis identified the same main effects as in the final model presented in Table 3. Regarding the results for time, while the significant difference between in-stay and pre-stay held, no difference between in-stay and post-stay behavior was observed. On the other hand, for the noun gender x time interaction, a significant difference was found when gender marking with feminine nouns in-stay was compared with gender marking with masculine nouns at post-stay (coefficient =  $-.7123$ ,  $SE = .362$ ,  $p < .05$ ). This indicates that these learners were less likely to mark gender agreement in a targetlike manner on masculine nouns at post-stay when compared with their behavior on feminine nouns in-stay. No significant difference was observed when masculine nouns at pre-stay were compared with feminine nouns in-stay (coefficient =  $.5529$ ,  $SE = .346$ ,  $p = .13$ ). Thus, the regression models presented in Tables 3 and 5 demonstrate that time, noun gender, and syllable distance significantly influenced the marking of gender in this corpus. In addition, an interaction between time and noun gender was observed, with significant differences between gender marking on feminine nouns pre-stay and in-stay compared to masculine nouns post-stay.

#### 4. Discussion

In the current project, we have attempted to better understand how a group of learners marks gender in written French, by analyzing essays composed over a

period of 21 months including an academic year abroad. In order to do so, twelve different extralinguistic and linguistic factors based on previous literature were used to code the current dataset. As shown in the previous section, three of the twelve factors examined significantly predicted targetlike gender marking. Before discussing the significant results in more detail, we will reflect on how to reconcile the fact that three factors (participant, modifier type, and noun endings) shown to be important in the residence abroad or gender marking literatures in past studies were not found to improve the final model for the current dataset.

Beginning with research on residence abroad, recent studies, such as those by Kinginger (2008), Howard (2011) and Mitchell, Tracy-Ventura, and McManus (2015), have highlighted how individuals diverge in their experiences and engagement with the target language environment during a residence abroad, providing a convincing argument for the importance of examining the residence abroad experience at the level of the individual. In the current study, we attempted to account for the role of the individual in gender-marking behavior by including participant as a random effect in our models. However, the comparison of the models with and without participant revealed that the same fixed-effect predictors impacted use, perhaps suggesting that the significant factors are not masking individual differences in use to a substantial degree. Our results thus suggest that individual variation may be playing a smaller role in explaining gender marking than the three factors identified as significant. That said, the impact of the individual, accounted for in the current study with a random effect, could also be investigated in terms of variables that focus on specific characteristics of the individuals, such as length of French study or characteristics of the social networks developed while abroad. Thus, it remains to be seen whether such variables may play a significant role in the behavior modeled here. Finally, this finding also stands out against the backdrop of recent research pointing to the importance of the individual in the acquisition of variable morphosyntactic structures, including in stay-abroad contexts (Geeslin & Long, 2014). It may be of interest for future research to explore whether the acquisition of categorical structures (such as gender marking) versus variable ones ultimately leaves less room for variation at the level of the individual.

Moving now to the literature on L2 gender marking in French, it may be recalled that three findings were particularly robust. However, in the current analysis, factors based on two such findings were not found to be significant (results with respect to the third robust finding – the overgeneralization of the masculine – finds support in our data and will be addressed later). Specifically, it has been widely reported that learners behave differently with respect to gender marking depending on type of modifier, with several researchers indicating differences between determiners and adjectives (Ayoun, 2007; Dewaele & Véronique,

2001; Harley, 1979; Holmes & Dejean de la Bâtie, 1999). Our own results with respect to the targetlikeness of gender marking support these previous findings, as the learners from the LANGSNAP corpus were consistently more targetlike with determiners. However, modifier type was not a significant predictor of targetlike gender marking in the logistic regression model. In other words, although rate of targetlike use may differ as a function of type of modifier, the system underpinning gender marking does not appear to be distinct for the two types of modifiers in this written corpus, when this factor is considered in conjunction with other independent variables. This finding highlights the importance of looking beyond targetlike rates of use, as the difference in such rates between determiners and adjectives may not necessarily be indicative of an underlying difference in interlanguage gender-marking systems. Logistic regression models, such as the one presented in this article, are a promising option for expanding how the acquisition of grammatical gender is studied.

The second factor to which learners have been widely reported to be sensitive concerns noun endings. Given the variety of ways in which noun endings have been discussed in the literature, we included three factors that targeted this aspect: noun final orthographic rhyme, noun final phoneme, noun derivational morphology. None of these factors was significant in the current analysis. We suggest that this departure from previous findings may be explained with respect to the type of data under investigation. Whereas we examined production data, the previous research on the importance of noun endings has generally created situations in which learners are encouraged to focus on gender. For example, Hardison (1992) asked her participants directly what strategies they used in terms of gender assignment, whereas Surridge and Lessard (1984) and Holmes and Dejean de la Bâtie (1999) asked learners to assign gender to a list of nouns (including, in the case of Holmes and Dejean de la Bâtie, nonwords). The evidence used in these studies to conclude that learners are sensitive to noun endings for gender assignment would appear to be quite different from the process at work when actually producing French in, for example, a written argumentative essay. Moreover, in production tasks such as the ones reported on in the current study, the learner can choose – to a certain extent – to avoid words if s/he is unsure of the gender (Surridge & Lessard, 1984, p. 48); such a strategy is of course difficult to implement in the off-line gender assignment tasks that have often been used to study learners' sensitivity to noun endings. Thus, it seems plausible that learners of L2 French may show sensitivity to noun endings when required to focus on gender, but that sensitivity either may not intervene or may not be visible during production activities such as the ones analyzed in the current project.

We now turn to our significant results and to the responses to our two research questions. The first aim of this study was to determine the rates of tar-

getlike gender marking with determiners and adjectives in three writing tasks collected over a period of 21 months, including an academic year abroad. Although it has been claimed that “[t]he mastery of French noun gender has long been one of the most persistently difficult problems for Anglophone learners of French” (Querbach, 1988, p.81), in the current investigation, we found that even before spending an academic year abroad, this group of 20 learners of French from the United Kingdom showed targetlike gender marking in 81.9% of cases in an argumentative essay. When we looked at the evolution in the rates of targetlike gender marking for determiners and for adjectives, we found a progression between pre-stay testing and in-stay testing, with a maintenance of the improvement at the time of post-stay testing. In addition, we noted that these participants were consistently more targetlike with determiners than with adjectives, a finding that is in line with previous research (Ayoun, 2007; Dewaele & Véronique, 2001; Harley, 1979; Holmes & Dejean de la Bâtie, 1999).

The descriptive results used to respond to research question 1 were further developed by findings from the logistic regressions, which identified the factors that influenced this group of learners’ targetlike marking of gender over the same time period (research question 2). The final model (Table 3) included three main effects and one interaction and was able to correctly predict 86% of all data points. Beginning with the main effect of syllable distance, it was found that learners were significantly more targetlike in their marking of gender with modifiers that were directly next to the modified noun. In other words, even though learners had the possibility of rereading their productions and potentially self-correcting, a modifier that was not directly next to the noun was more likely to be marked for gender in a nontargetlike way. We believe that this result speaks to the distinction between gender assignment (i.e., the learner assigns a nontargetlike gender to the noun and marks gender accordingly) and gender agreement (i.e., the learner assigns a targetlike gender to the noun, but marks a nontargetlike gender on a corresponding modifier). Unlike some researchers (Ayoun, 2007, p.159; Dewaele & Véronique, 2001, p.283), we have chosen to look at gender marking without attempting to classify nontargetlike instances as problems of assignment or agreement, as it is in our opinion impossible to make a clear distinction in most cases. That said, we believe that the significance of syllable distance in our final model may be interpreted as reflecting difficulties with gender agreement (as opposed to gender assignment). This is because, if the learner has assigned nontargetlike gender to a noun but has no trouble with gender agreement, we would expect nontargetlike gender marking on all modifiers, regardless of their distance from the noun. Thus, only problems with gender agreement would be expected to be sensitive to the phenomenon of distance.

The second main effect also supports findings reported in previous studies. Specifically, the learners show higher targetlike rates of use with masculine as opposed to feminine nouns. In other words, the majority of nontargetlike tokens involved a feminine noun modified by a masculine determiner or adjective. As suggested by other researchers, this may reflect the status of the masculine form of the modifier as a default in interlanguage (Bartning, 2000; Dewaele & Véronique, 2001; Harley, 1979; Holmes & Dejean de la Bâtie, 1999). This finding indicates that masculine modifiers continue to be overused, even when targetlike rates of gender marking are high. We return to this issue, though, later in the Discussion.

The third and final main effect revealed by our analysis is, to the best of our knowledge, a new finding. The group of 20 learners significantly improved in terms of targetlike gender marking between the pre-stay testing and in-stay testing; however, no significant progression was found between in-stay and post-stay. Although the impact of a stay abroad on grammatical competence has been questioned (see Llanes, 2011, for an overview), our finding suggests that such development is indeed possible. It has been suggested that learners need to have attained a certain level of L2 proficiency before going abroad to be able to free up resources in order to attend to features that can be communicatively redundant (Lafford & Collentine, 2006) or to automatize existing knowledge (DeKeyser, 2007). Applied to the current findings, it may very well be the case that this group of learners' relatively high global and grammatical gender-specific levels of proficiency at pre-stay testing were key in allowing them to progress during the stay abroad. In any case, further research involving at-home comparison groups and investigating how learners of different proficiency levels fare with respect to grammatical development while abroad is needed.

Finally, an interaction between the factors of time and noun gender was detected, although not all comparisons were significant (only the comparisons with masculine nouns x post-stay reached significance).<sup>8</sup> Generally speaking, this interaction shows different trajectories for gender marking on feminine versus masculine nouns as a function of time. Looking at the data distributions (Table 4), targetlikeness for masculine versus feminine nouns at pre-stay differs by almost 20 percentage points. This gap closes at in-stay testing to 8.2 percentage points, and by post-stay testing, targetlike rates of use are at 87.4% for masculine nouns and 86.5% for feminine nouns. This significant interaction reveals that in terms of development, the feminine nouns are the real winners over the course of the 21-month period examined in this study. In other words, it appears that the masculine form of modifiers may have lost ground as a default after the stay abroad.

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8. In this statement, we make reference to results obtained in the models presented in Tables 3 and 5.

Moreover, this interaction indicates that the main effect of time – for which no significant change was found between in-stay and post-stay testing – must be nuanced. Whereas targetlikeness with respect to feminine nouns increases between in-stay (82.5%) and post-stay (86.5%), during the same period, targetlikeness on masculine nouns falls from 90.7% to 87.4%. Thus, the interaction shows a significant evolution (in opposite directions) in targetlike behavior on masculine versus feminine nouns after the participants returned to England.

## 5. Conclusion

This study has provided evidence of development with grammatical gender marking in written L2 French over a 21-month period, allowing us to contribute to discussions concerning both the impact of residence abroad on grammatical competence and the acquisition of gender marking in L2 French. More specifically, we saw that rates of targetlike use improved between pre-stay and in-stay testing, suggesting that this aspect of morphosyntactic competence was susceptible to change during a stay abroad. In addition to looking at targetlike rates of use, we examined our dataset in terms of factors discussed in the literature with respect to gender marking. As a result of this analysis, we saw that development in the direction of targetlikeness continued after participants returned to the United Kingdom, although only with feminine nouns, whereas behavior with masculine nouns regressed (with respect to the targetlike standard) during the same period. In addition, the factor of syllable distance was found to be significant in our model, which possibly points to difficulties in marking agreement (as opposed to knowing the gender of the noun). Finally, numerous factors shown in previous research to underlie knowledge about gender in L2 French (e.g., knowledge about noun endings) were not significant in explaining the gender-marking behavior examined in the current dataset. This of course does not mean that the set of participants are not sensitive to these factors; however, it appears that they do not play a significant role in explaining patterns found in their written production when other independent variables are considered. While the current study looked at participants who had been studying French for at least six years, it will be necessary in future research to examine participants at different proficiency levels in order to understand the full developmental trajectory for gender marking in L2 French and the potential impact of a residence abroad on this development. Given that researchers such as Lafford and Collentine (2006) and DeKeyser (2007) have suggested that a learner's initial proficiency level before the residence abroad may impact development, particularly with morphosyntax, it would be interesting to conduct a similar study with a cohort of students whose initial pro-

iciency is clearly lower than those in the LANGSNAP project. Overall, this study demonstrates the utility of a logistic regression in order to complement information provided by targetlike rates of use and to move towards a more thorough understanding of the interlanguage system.

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**Appendix. Multiple regression analysis including all independent factors**

Factors	Coefficient	Standard error	z value	p value
Intercept	-.0286	.3889	-.073	.9415
<b>Time</b>	.4709	.179	2.631	.0085
(ref point: pre-stay)	.5429	.1814	2.993	.0028
in-stay				
post-stay				
<b>Proficiency</b>	.0072	.0046	1.566	.1173
<b>Noun gender</b>	.8405	.1627	5.165	2.4e-07
(ref point: feminine)				
masculine				
<b>Noun frequency</b>	.0004	.0004	1.108	.2678
<b>Noun class</b>	.5864	.772	.76	.4475
(ref point: grammatical)				
semantic				
<b>Modifier type</b>	.1836	.1608	1.142	.2536
(ref point: adjective)				
determiner				
<b>Syllable distance</b>	.5499	.1877	2.93	.0034
(ref point: >0)				
zero				
<b>Noun initial phoneme</b>	-.3546	.21	-1.689	.0913
(ref point: consonant)				
vowel				
<b>Noun final orthographic rhyme</b>	-.1113	.1962	-.567	.5708
(ref point: not predictive)				
predictive				
<b>Noun final phoneme</b>	.2193	.1622	1.351	.1765
(ref point: consonant)				
vowel				
<b>Noun derivational morphology</b>	.0927	.2016	.46	.6455
(ref point: absent)				
present				

*Note.* The reference point for the dependent variable is targetlike gender marking.

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