The acquisition of nominal and verbal inflectional morphology: Evidence from Basque ergativity in adult L2 speakers

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1. Introduction

Studies on language acquisition have long established that the acquisition of morphology presents a tremendous challenge for adult second language (L2) learners (Brown, 1973; Clahsen et al., 1994; Radford, 1990; Haznedar, 2006; Gürel, 2000; White, 2003a; Bianchi, 2013). The underlying reason is that speakers exhibit optionality (non-target-like production) in their use of morphological features (e.g. overt realization of case). Important scholarly debate has been carried out on this topic in order to explain why L2 speakers show this variability.

In the generativist tradition of L2 acquisition, two opposing views exist. On one hand, some researchers argue that the inconsistent use of morphological features is due to an impairment of the functional categories with which they are associated (Beck, 1998; Vainikka & Young-Scholten, 1998; Eubank et al., 1997; Meisel, 1997). Under this view, morphological knowledge is dependent on the syntactic knowledge of the language. On the other hand, others have postulated that L2 grammars are not impaired, but instead, L2 speakers exhibit a problem at the surface-level morphology (Lardiere, 2000; Prévost & White, 2000; Haznedar, 2003, 2006). On this view, morphological and syntactic knowledge are independent of each other.

The present study is designed to contribute to the ongoing debate by analyzing the variability in suppliance or omission of nominal inflection among adult L2 Basque and L1 Spanish speakers, considering the auxiliary selection of *izan* (BE) and **edun* (HAVE) according to verbal agreement. Because Basque ergativity also shows optionality among certain unergative verbs, the present study follows a semantic-syntactic approach to auxiliary selection in order to understand whether this optionality also poses a challenge to the L2 learner, as previously postulated (Sorace, 2000). Previous research on Basque ergativity has focused on children (L1 and L2) and little is known on the mastering of Basque ergativity among Basque adults, who constitute more than the 50% of Basque speakers today (Eusko Jaurlaritza, 2011). The implications for language transmission to children by these adults I particularly important.

Therefore, the aims of the present paper are two-fold: (a) to contribute to the ongoing debate as to whether lack of overt inflection is a problem of syntax or surface morphology, and, consequently, (b) to better understand the variation of ergative production by incorporating social factors connected to the type of bilingual speaker and other linguistic factors (type of verb). Results from three experiments suggest that L2 learners show syntactic knowledge (accurate auxiliary assignment and verbal inflection). Furthermore, the results show that all speakers (including natives) omit the Basque ergative case marker in the nominal inflection, especially with unergative verbs. However, it is argued that the omission mechanisms vary among different bilinguals.

The present paper is organized as follows: section 2 provides an overview of the two theories of L2 acquisition tested in this paper. Section 3 presents the case systems in Spanish and Basque, along with previous research on Basque ergativity in section 4. In section 5, I describe the methodologies and

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experimental tasks. Results are presented in section 6, along with a discussion in section 7. Finally, some conclusions are drawn in section 8.

2. Case morphology in L2

Studies on language acquisition have long established that the acquisition of morphology presents a tremendous challenge for adult second language (L2) learners (Brown, 1973; Clahsen et al., 1994; Radford, 1990; Haznedar, 2006; Gürel, 2000; White, 2003a; Bianchi, 2013). Generativist approaches to language acquisition present two opposing views to explain the optional use of inflectional morphology in L2 grammars. On the one hand, the *Impairment Representation Hypothesis* holds that lack of inflectional morphology signals impairment in L2 grammars (Beck, 1998; Vainikka & Young-Scholten, 1998; Eubank et al., 1997; Meisel, 1997). On the other hand, the *Missing Surface Inflection Hypothesis* suggests that lack of morphological realization signals a problem with surface morphology (Lardiere, 2000; Prévost & White, 2000; Haznedar, 2003, 2006). These two accounts are detailed in turn.

2.1. Impairment Representation Hypothesis

The *Impairment Representation Hypothesis* (IRH) claims that there is a direct relationship between overt morphology and syntax in the sense that lack of inflectional morphology signals the absence of associated functional categories. This syntactic impairment can occur either at the global or local level. With regards to impairment at the global level, Meisel (1997) claims that Universal Grammar (UG) is no longer available in L2 grammars, which results in a lack of functional projections. Consequently, he argues that abstract agreement and finiteness distinctions are no longer available He studied verbal agreement and verbal position (V2) of 3 adult L2 speakers learning German, finding that two of the speakers produced finite verbs in non-finite positions.[2] Thus, he claims that finiteness and verb placement are not related to each other, and that this difficulty is related to learners' lack of [+finite] feature at the abstract level, in the functional projection TP.

With regards to impairment at the local level, others argue that although functional projections are available in L2 grammars, their feature-strength mechanisms are impaired (Beck, 1998; Eubank et al., 1997; Vainikka & Young-Scholten, 1998). This account suggests that feature-strength mechanisms attract finite verbs by raising them to their ultimate position in non-impaired grammars. In this regard, the use of uninflected forms (in inflected contexts) implies that the verb remained *in situ* because feature-checking mechanisms were impaired or not fully available. For instance, Vainika & Young-Scholten (1994, 1996) studied the acquisition of German by Korean and Turkish speakers and they found evidence for lack of verb raising, as well as impoverished agreement mechanisms. They argued that L2 speakers have an'organic grammar', which means that early stages of L2 grammars only contain lexical categories that are found in the L1 (Vainika & Young-Scholten, 2009). This early stage is followed by an underspecified functional projection that may be replaced by a fully developed Agree projection driven by the available input.

2.2. Missing Surface Inflection Hypothesis

The accounts assuming impairment at the syntactic level in L2 grammars contrast with those that suggest that the absence of a morphological feature is at the surface level as opposed to the syntactic one. This approach refers to the *Missing Surface Inflection Hypothesis* (MSHI), a theory that has been advanced by numerous researchers (Grondin and White, 1996; Haznedar & Schwartz, 1997; Haznedar, 2001, 2003, 2006; Lardiere, 2000; Prevost & White, 2000; Jaensch, 2008). More specifically, Prevost & White (2000) argue that L2 adult learners have full access to syntactic features (due to L1 transfer) but that the features associated with the lexical items may not be fully acquired. In this sense, the MSIH holds that the acquisition of syntactic properties is independent from morphological ones, as abstract properties are already available in the underlying grammar but might not be realized at the morphological (surface) level in L2 grammars.

[2] More specifically, these speakers produced the negator to the left of finite verbs and modals whereas the opposite is expected in target-like grammars.

Evidence for the MSIH mainly comes from L2 learners of English (Lardiere, 2000), Turkish (Gürel, 2000; Haznedar, 2003, 2006; Papadopoulou et al., 2010), French (Prévost, 2003; Prévost & White, 2000; Grüter, 2006; Jaensch, 2008) and German (Parodi et al., 2004). For instance, Lardiere (2000) studied the end state of a Chinese L1 adult speaker of English (L2). The data revealed that the L2 English learner produced very low rates of overt morphology but nevertheless produced a variety of syntactic features (i.e. tense), which suggests that the learner had tense at the abstract level. Similarly, Gürel (2000) examined data from 21 adult native speakers of English acquiring Turkish. Using the results from a grammaticality judgment task and a picture description task, Gürel (2000) examined the relationship between case marking and word order restrictions (scrambling) in Turkish. Her results show that Turkish L2 learners often lack the overt realization of nominal case morphemes but show knowledge of abstract case in the word order restrictions. Thus, both authors concluded that the lack of overt morphology alongside the correct use of tense and adherence to word order restrictions in scrambled sentences are not the result of a syntactic impairment of the L2 speakers' grammar, but rather a problem mapping the right morphological form onto the right syntactic property of the language.

More robust evidence comes from Prévost & White's (2000) study, which examined verbal agreement and word order restrictions of two adult speakers of French and two adult speakers of German (who differed in their L1s). They argue that these speakers had a mapping problem between abstract features and morphological forms. Evidence came from the fact that finite verbs did not occur in non-finite positions, suggesting that these adult speakers distinguished between both finite and infinitive forms and therefore, that abstract features were available (rather than impaired) in their grammars. With regard to verbal morphology, L2 speakers showed a great deal of verbal inflection omission, which was interpreted as morphological errors at the surface level of the grammar. Thus, the crucial point for Prévost & White is that L2 speakers acquire grammatical features via L1 or UG, but morphological specifications do not get fully acquired. Under this analysis, there is no evidence that the syntactic representations of L2 speakers are impaired.

The present study aims to contribute to the ongoing debate by analyzing the variable use of ergativity in nominal and verbal inflection among adult Spanish learners of Basque. The two morphological features that are treated in the present paper relate to verbal functional categories in Basque: auxiliary verb selection, agreement-checking (verbal inflection) mechanisms and case-marking mechanisms (nominal inflection). These are detailed in turn.

3. Case marking and agreement in Spanish and Basque

In terms of case systems, Spanish and Basque show very different case alignments. Spanish shows a nominative-accusative alignment in which the subjects of the transitive and intransitive verbs are treated alike, distinguishing them from objects of transitive verbs. On the contrary, Basque is an ergative-absolutive language, which treat objects of transitive verbs and intransitive subjects alike, distinguishing them from the subjects of transitive verbs. We now discuss the case systems of each language with special focus on how Basque ergativity is syntactically and morphologically encoded.

3.1. Spanish

Because Spanish shows a nominative-accusative alignment, all subjects of Spanish are marked with nominative case regardless of verb type as in (1-3):

(1) Miguel ha le-ído un libro
Miguel.NOM have.3rd.sing read-PART a book.
'Miguel has read a book'

(2) Yo he esqui-ado
I.NOM have.1st.sing skii-PART
'I have skiied'

(3) Miguel ha llegado
Miguel.NOM have.3rd.sing arrive-PART
'Miguel has arrived'

Spanish is a synthetic language in which grammatical morphemes are encoded as verbal affixes. All Spanish verbs are fusionally inflected for Tense, Aspect, Number and Person in regular verbs but only person and number show agreement with the subject. Thus, Spanish inflected verbs distinguish six forms that are based on first, second, and third person, and singular and plural as seen in the auxiliary verb *haber* (HAVE) in Table 1.

	Singular	Plural
First	He 'I have'	Hemos 'we have'
Second	Has 'you have'	Habéis 'you (informal plural) have'
Third	Ha '(s)/he /it has'	Han 'they have' or you (formal singular have'

Table 1. Person and number marking in the Spanish auxiliary *haber* 'have'.

Although Spanish shows a rich verbal morphology, Spanish only has one auxiliary verb for perfective clauses, *haber* (HAVE). As can be seen in the examples, the auxiliary verb *ha* is inflected for third person singular that agrees with the third person singular subject, whereas the first person singular *he* agrees with *yo* 'I'. In summary, Spanish marks its subjects with nominative case (-Ø) and only selects the auxiliary verb *haber* (HAVE) in perfective tenses, which is inflected according to person and number.

3.2. Basque

3.2.1. Nominal inflection

Basque, on the other hand, is an ergative-absolutive language (Dixon, 1994; Ortiz de Urbina, 1989; Arregi and Molina-Azaola, 2004), whose case marking is present both in the nominal inflection and verbal (auxiliary)[3] morphology via agreement operations. With respect to nominal inflection, subjects of transitive and unergative verbs must be marked with the morphological ergative case marker *–k*, whereas unaccusative subjects are marked with the default absolutive marker *(-ø)*.

Transitive verb

(4) Ni-k liburu-a-ø irakurri d-u-t
I-ERG book-the-ABS read ABS.3sg-have-ERG.1sing
'I have read the book'

Unergative verb

(5) Ni-k eskiatu d-u-t
I-ERG skii ABS.3sg-have-ERG.1sg
'I have skied'

Unaccusative verb

(6) Gizon-a-ø etorri da
Man-the-ABS come ABS.3sg.be
'The man has arrived'

Among the unergative verbs, Basque allows some variation as to whether the subject is marked with the ergative *–k* or absolutive –ø. Etxepare (2003) explains that there are two types of unergatives in Basque, synthetic ones (*dantzatu* 'to dance', 7b-c) and periphrastic ones with *egin* 'to do' (*dantza egin*, 'to dance' (literally, 'to do dance', 7a):

[3] With the exception of a small set of synthetic verbs, finite verbs are composed of a lexical verb and an auxiliary verb in Basque. The lexical item carries aspectual information whereas the auxiliaries are responsible for bearing Tense, Agreement with Case, subject Person and Number, and Modal information through affixes.

(7a) Ni-k dantza egin d-u-t
I-ERG dance do ABS.3sg-have-ERG.1sg
'I have danced' (literally: 'I have done dancing')

(7b) Ni-k dantzatu[4] d-u-t
I-ERG dance ABS.3sg-have-ERG.1sg
'I have danced'

(7c) Ni-ø dantzatu n-aiz
I-ABS dance ABS.1sg-BE
'I have danced' (literally: 'I have danced myself')

Although there are no important differences in meaning between (7a-c), one imperative question that arises from this variation is whether it poses challenges for second language acquisition (Sorace, 2000). The present study examines 10 unergative verbs with the aim to test whether unergative verbs are harder to be acquired.

In terms of case-assignment procedures, two types of licensing exist in the traditional generativist view; structural and inherent (Chomsky, 1981, 2000). According to the structural view, case is assigned by T and is independent of the theta-roles of the subject at hand. Inherent cases are usually licensed non-structurally, and are largely dependent on the semantics or the semantic roles of the subjects. Because Spanish does not distinguish between types of subjects and therefore, does not morphologically encode the distinction between these subjects, I will work from the premise that Spanish subjects are structurally case-marked. (Blake, 2001:59). With regards to Basque ergativity, controversy exists as to whether ergative case is inherently (Oyharçabal, 1992; Chomsky, 1993; Woolford, 1997, 2006; Laka, 2006; Legate, 2008, 2012) or structurally assigned (Bobaljik, 1993; Laka, 1993; Chomsky, 2000, 2001; Anand & Nevins, 2012; Rezac et al., 2011; Preminger, 2012; Arregi & Nevins, 2012; Siebecker & Kramer, 2014). Under the inherent view, it has been suggested that there is no disassociation between theta role and case assignment (Laka, 2006), postulating that case is assigned in the initial position where the subject is generated. The structural view holds that theta roles are not responsible for predicting case marking in Basque, but rather, it is the result of agreement and movement operations. More specifically, ergative assignment in nominal inflection occurs in a structural manner, that is, the subject is generated in the specifier position of vP and raises to T where it receives ergativity through agreement, which is morphologically realized as *–k* in Basque.

Because the structural view captures the variation found on the optionality of Basque unergative verbs, the present paper assumes that Basque ergativity is licensed structurally and works under the premise that *–k* represents the morphological knowledge of Basque ergativity.

3.2.2. Auxiliary selection

As opposed to Spanish, Basque has two auxiliaries: i*zan* (BE) and **edun* (HAVE), whose selection is largely dependent on the valency of the verbal predicate (Etxepare, 2003); transitive verbs select derived forms of **edun* (HAVE), whereas unaccusative verbs select *izan* (BE) as shown (4-7).

The distribution of auxiliary selection pertains to important theoretical issues that have been at the center of controversial debates. Different languages show different distributions of BE and HAVE that have been attributed to syntactic, semantic or morphological levels; that is, the debate centers on whether auxiliary selection is morphosyntactically based or semantically driven (McFadden, 2007). For the purposes of this paper, I follow a mediating interface between syntax and semantics (Zaenen, 1993). This approach categorizes arguments (syntactic configurations operated by Merge) on the basis of semantic roles (i.e. agent, experiencer) claiming that auxiliary selection and the mapping of grammatical roles are sensitive to an intermediate level between syntax and semantics, rather than purely syntactic or semantic. In this sense, the distinction between transitives and intransitives is based on argument structure, whereas the distinction between unergatives and unaccusatives occurs in terms of the initial position occupied by the sole argument of the verb, dictated by the semantics of the verb. In this matter, I follow Sorace (2000) who suggests that the split within the intransitive verbs may be semantically based but syntactically represented (Levin & Rappaport, 2005).

[4] The morpheme *–tu* derives from the first conjugation of the participial *–TUM* in Latin. (Michelena, 1974: 204).

3.2.3. Verbal agreement

Similar to Spanish, every finite verb needs to be inflected for number and person in the auxiliary verb they select. Unlike Spanish, Basque has two auxiliaries to which different verbal morphemes are attached for agreement purposes. Therefore, in addition to the person and number agreement in Spanish, Basque verbs additionally agree in case. Tables 2 and 3 show the absolutive (*izan* 'BE') and absolutive-ergative (**edun* 'HAVE') pronominal clitics[5] that bear agreement for person, number and case.

Unaccusative	**Abs (Subject)**	Root *be*	Cl. (pl.)	Examples
1st (singular)	**N-**	aiz		Ni etorri naiz 'I arrived' (literally: 'I am arrived')
2nd (singular)	**Z-**	ara		Zu etorri zara 'You arrived'
3rd (singular)	**D-**	a		Hura etorri da '(S/he) arrived'
1st (plural)	**G-**	ara		Gu etorri gara 'We arrived'
2nd (plural)	**Z-**	are	te	Zuek etorri zarete 'You (all) arrived'
3rd (plural)	**D-**	ira		Haiek etorri dira 'They arrived'

Table 2. Derived forms of Basque auxiliary *izan* (BE) or absolutive pronominal clitics.

Transitive Unergative	**Abs (Object)**	T Agr	Cl (pl.)	Root *have*	**Erg (Subject)**	Examples (when the object is 3rd person)
1st (singular)	**N-**	a		u	**t**	Nik ogia jan dut 'I have eaten bread'
2nd (singular)	**Z-**	a	it	u	**zu**	Zuk ogia jan duzu 'You have eaten bread'
3rd (singular)	**D-**			u	**ø**	Hurak ogia jan du 'He has eaten bread'
1st (plural)	**G-**	a	it	u	**gu**	Guk ogia jan dugu 'We have eaten bread'
2nd (plural)	**Z-**	a	it	u	**zue**	Zuek ogia jan duzue 'You have eaten bread'
3rd (plural)	**D-**		it	u	**(z)te**	Haiek ogia jan dute 'They have eaten bread'

Table 3. Derived forms of Basque auxiliary *edun (HAVE) or absolutive-ergative pronominal clitics.

Following Arregi & Nevins (2012) who base their analysis on the Agree operation (Chomsky, 2000), it is assumed that agreement proceeds in two steps: *Agree-Link* and *Agree-Copy*. As such, pronominal clitics first syntactically generate a constituent with arguments (Agree-Link) and undergo cliticization to their hosts (Agree-Copy); T for absolutive and C for ergative.[6] In light of previous work on agreement operations in Basque (Arregi, 2004; Arregi & Nevins, 2012; Bobaljik, 2005), I assume that although agreement between a predicate and its argument has a syntactic component, agreement is a post-syntactic phenomenon that follows morphological rules in terms of case-assignment. Thus, auxiliary selection is syntactically selected and pronominal clitics are generated according to the argument structure of the verbal predicate but are morphologically realized.

3.3. Spanish vs. Basque

The reminder of this section discusses the apparent differences in case assignments in Basque and Spanish as well as a few similarities between the two linguistic systems.

The present study works under the premise that both nominative in Spanish and ergative in Basque are structurally assigned and represent the knowledge of Basque ergativity at he the morphological level. The difference lays in the fact that Basque transitive and unergative subjects take *–k* whereas all Spanish subjects take *–ø*.

[5] In this paper, I follow Arregi & Nevins's (2012) terminology by using 'pronominal clitics' to refer to what Hualde (2003) terms 'morphological agreement markers'.

[6] More specifically, Arregi & Nevins (2012) propose a 'Big DP' hypothesis, in which the clitics are generated (through Merge) in a DP and are later moved to a functional projection higher in the structure (Functional Projection or Clitic Projection). For a more detailed discussion see Arregi & Nevins, 2012: 60-68).

Unlike Spanish, Basque has two auxiliaries that are dependent on the valency of the verbal predicate, **edun* (HAVE) for transitives and unergative verbs and *izan* (BE) for unaccusatives, whereas Spanish only has *haber* (HAVE). Following a mediating interface between syntax and semantics, it is assumed that the distinction between transitive and intransitive auxiliaries in Basque represents syntactic knowledge of ergativity, whereas the distinction between unergatives and unaccusatives is dictated by the semantics of the verb. There distinctions are not encoded in Spanish syntax.

Both Spanish and Basque show rich verbal agreement and both inflect verbs for person and number. However, the ways these are encoded differ; while Spanish inflects for person and number in a fusional manner, Basque additionally inflects for case (through pronominal clitics) according to the argument structure. The result is that Spanish shows six conjugated verbs while Basque has 102 forms for the present indicative.

4. Previous accounts on the acquisition of Basque ergativity

Research on the acquisition of the Basque ergative has mainly focused on children, either monolingual (Basque L1), simultaneous bilinguals (2L1) or child L2 acquisition (child L2) (Larrañaga, 1994; Ezeizabarrena & Larrañaga, 1996, Barreña & Zubiri, 2000; Ezeizabarrena, 2011, 2013; Austin, 2007, 2012, 2013a). First studies on the acquisition of a monolingually-raised child found that the ergative case marker first appeared in the auxiliary form (inflected forms of **edun* HAVE). It then appeared in the nominal inflection at the age of 2;04 without stabilizing until the age of 3;05 (Larrañaga, 1994; Ezeizabarrena & Larrañaga, 1996). Later on, Austin (2007) compared the use of nominal ergative among Basque monolingual children with 2L1 (Basque-Spanish) children and results showed that the 2L1 bilingual group lagged behind in suppliance of the nominal ergative case marker,[7] which was attributed to interference from Spanish. She concluded that Spanish influence could be detected in early 2L1 acquisition.

More recently, studies on the acquisition of ergative have focused on the role of the input as a responsible factor for the acquisition of ergative (Barrenña & Almgren, 2008; Manterola & Idiazabal, 2013; Barreña, 2013; Ezeizabarrena, 2011, 2013). For instance, Barreña (2013) studied children being raised in a town (Amurrio) where Basque is spoken by 90% of the population, and children raised in a close-by city (Gasteiz) where Basque is only spoken by 20% of the population. He found that children raised in Gasteiz showed a much higher delay than those raised in Amurrio, attributing this difference to the amount of input that children receive in Basque.[8] Austin (2013a, 2013b) studied the order in which 20 children (age 2;00- 3;06) mastered verbal morphology based on statistical properties of the input. Contrary to other studies, she found that the input they received did not play a role in mastering the ergative in Basque. The fact that the speech of the researchers was compared to the children's production of ergativity could explain this difference. It may well be that the children's speech resembled the input of their parents or caregivers and not the researchers *per se.* Whether the input that children receive influences their learning is still a matter of scholarly debate that warrants the systematic study of the possible variable input that these children obtain from adults, a task we take up in the present study.

The only study that sheds some light on the acquisition of Basque ergativity by adults was carried out from a neurolinguistic perspective. Using Event-Related brain Potentials (ERP), Zawiszewski et al. (2011) examined syntactic processing of ergative sentences (among other syntactic phenomena) in young adult speakers of Basque (aged 19-25) who acquired the language simultaneously or sequentially (between the ages of 3 and 6). They found that both groups differed in processing ergativity in Basque in the sense that the early sequential bilinguals did not show differences in processing grammatical and ungrammatical sentences. Based on the fact that they did not find a P600

[7] These results are consistent with Ezeizabarrena (2011) who attributes this period to the *Optional Ergative Case Stage*, and suggests that 2L1 children remain in this stage for a longer duration than their monolingual counterparts. She attributes this 'optional stage' to the inconsistency of the ergative morphology in Basque.

[8] Although Barreña (2013) argues that this difference is because of the amount of input children receive, it could also be due to their Acquisition Onset (Ezeizabarrena, 2013); children in Gasteiz started acquiring Basque through the school at the age of 3 as opposed to those raised in Amurrio, where some children had the opportunity to receive input from birth from their Basque-speaking parents.

effect among this group the authors argue that near-native speakers found difficulties attributing a thematic role to the ungrammatically case-marked argument (the subject), because they use a processing strategy transferred from their L1, Spanish.

To best of my knowledge, there are no other studies conducted on the production of ergative in Basque among adult L2 learners, and little is known about the production of ergativity among adults in other languages.[9] Recently, Montrul et al. (2012) studied case marking of ergativity in adult native speakers of Hindi and Hindi Heritage speakers residing in the U.S. Their results show that the ergative marker in Hindi is omitted by the heritage speaker group to a greater extent than by the native speaker group, and it is much less affected in verbal agreement than in nominal morphology. They propose that these omissions are either due to attrition or incomplete acquisition effects, in which nominal inflection is more affected than agreement morphology. They conclude that ergative omission is due to transfer effects from English, a language with no ergative case system.

Based on the results found in syntactic processing on Basque ergativity and the differences of use in Hindi heritage speakers, it is reasonable to assume that different types of adult Spanish-Basque bilinguals will show production differences in their use of Basque ergativity. Given that the vast majority of current Basque speakers are either child L2 or adult L2 learners (Eusko Jaurlaritza, 2011), the main contribution of the present study is to examine the patterns of use found in different types of adult bilinguals for its implications for language transmission to children.

Overall, these studies lead to the question of whether the grammars of L2 learners are impaired, or instead merely show morphological surface level errors. The present study contributes to the ongoing debate by analyzing data from L2 adult speakers of Basque. The two morphological features that are treated in the present paper relate to the verbal functional categories in Basque: auxiliary verb selection and case-marking mechanisms (nominal inflection). It was mentioned that auxiliary verb selection was syntactically determined, although different morphological forms were used that agreed with the subject. Meanwhile, case marking in nominal inflection occurs as a result of movement and agreement operations in T, making Basque ergativity a structural phenomenon that surfaces at the morphological level with *-k*. Thus, we will refer to auxiliary selection (BE or HAVE) as the syntactic or abstract knowledge of ergativity, surfaced in verbal morphological inflection through agreement markers (see table 2), whereas case marking in nominal inflection is treated as the surface (morphological) knowledge of ergativity.

Taking into account these properties of Basque and Spanish and theoretical notions of L2 acquisition, the following research questions are presented along with predictions:

1) Is inconsistency in target-like ergative inflection in speech due to a problem in the syntactic domain, or to a problem in the surface morphology?
2) Does the optionality found in Basque unergative verbs pose a challenge to L2 speakers learning Basque ergativity?

As far as the first research question is concerned, 4 predictions are considered:

- *Nominal and verbal inflection:* In terms of ergative assignment in nominal and verbal inflection, the IRH claims that feature-checking mechanisms are impaired. Accordingly, L2 speakers should present nominal inflection mismatches with infinitival forms of verbs or the wrong verbal clitic, suggesting that agreement mechanisms are not part of their grammars.
- *Auxiliary selection:* The IRH predicts that speakers will select the auxiliaries BE or HAVE in a random manner, showing no relationship between auxiliary selection and nominal inflection. This would suggest that speakers cannot distinguish between the argument structure of the three types of verbs.
- *Nominal inflection:* The MSHI predicts that the syntactic level is not impaired in L2 grammars, but rather the lack of morphological overt realization of *–k* will be due to problems at the surface level.
- *Auxiliary selection and verbal inflection:* Assuming that nominal case assignment in Basque occurs post-syntactically at the structural level, it is expected that L2 speakers either: 1) select

[9] Most of the literature on ergative acquisition cross-linguistically comes from monolingually raised children in Inuiktitut (Sherkina-Lieber et al., 2011; Allen, 2013), Samoan (Ochs, 1982), Hindi (Narasimhan, 2005), and K'iche Maya (Pye, 1990).

the right auxiliary verb (HAVE for transitive and unergative predicates and BE for unaccusatives), or 2) produce the correct clitic in the verbal morphology showing agreement mechanisms.

Regarding type of verb, optionality allowed with unergative verbs may pose a challenge to the mapping of semantic properties of the subject (i.e. agent) onto the syntactic domain (auxiliary selection), for which two predictions are made:

- The IRH cannot make predictions in terms of auxiliary selection for those unergative verbs that present variation, and instead, it will suggest mismatches between that auxiliary verb and the nominal inflection in the opposite direction. When the auxiliary *izan* (BE) is selected for unergative verbs, the overuse of ergative *-k* will appear in nominal inflection.
- The MSHI predicts that L2 speakers will present higher rates of omission in the nominal inflection of unergative subjects. We expect that L2 speakers will accurately select auxiliary along with the correct use of agreement clitic, but will show higher rates of *–k* omission in the nominal inflection.

5. The study

5.1. Participants

Native speakers of Basque were recruited from the semi-urban town of Gernika, (where 90% of the population are speakers of Basque), whereas L2 learners were recruited from surrounding areas of the capital of the Bizkaian province, Bilbao (i.e. Getxo, Las Arenas, Algorta, Barakaldo and Portugalete), where Basque is spoken by 20% of the population. Participants were divided into 4 groups: native speakers (2L1), early sequential bilinguals (ESB), L2 advanced learners and L2 intermediate learners of Basque. Native speakers were raised in bilingual households learning both Basque and Spanish at the same time. The early sequential bilingual speakers started learning Basque at the age of 3 through Basque immersion program (Cenoz, 2009), whereas L2 speakers started learning Basque after the age of 12, conforming to previous studies on Critical Periods and Age effects (Johnson & Newport, 1989; White, 2003b; Meisel, 2008; Montrul, 2008).

All participants completed a language background questionnaire eliciting information about language use, education, self-reported proficiency, and language background of family members. The intensity of contact with Spanish was measured through their self-reported language use patterns, both in their households and in other social domains (DeHouwer, 2007). A 24-item multiple-choice test was used in order to measure their Basque proficiency, consisting of questions selected from multiple levels of the standardized Basque test, EGA (*Euskal Gaitasun Agiria*, 'Certificate of Basque Literacy'). L2 learners were further divided into advanced or intermediate learners depending on their language proficiency test results.

The study uses three experiments in order to determine the use and knowledge of Basque ergativity: an oral interview, an elicited production task, and an acceptability judgment task. Because data was collected at different sessions, not all participants completed all these three tasks. For the oral interviews, 27 bilinguals (6 Native, 6 ESB, 8 advanced L2, 8 intermediate L2) engaged in a conversation with the researcher. A total of 25 bilinguals completed the elicited production task (6 native, 6 ESB, 7 advanced L2, 7 intermediate L2) and the acceptability judgment task was carried out by 48 bilinguals (9 native, 11 ESB, 16 advanced L2, 12 intermediate L2).

5.2. Experimental Tasks

5.2.1. Oral Interviews

28 Basque-Spanish bilinguals (6 native, 6 ESB, 8 advanced L2, 8 intermediate L2; mean age = 27.4; SD = 4.1; range = 18-46) engaged in a 45-60 minute oral interview with the researcher (Labov, 2001). The oral interview was used in order to prompt natural speech data and the most 'vernacular' aspect of participants' speech (Labov, 2001). An advantage of using oral interviews with L2 speakers is that it allows us to gain a general picture of how they use Basque, that is, it is a source of data that reveals variable performance, which is especially important if we want to have a more direct understanding of the input children learning Basque may obtain. In order to prompt as natural speech as possible, participants were asked to talk about themselves (i.e., where they were born, where and what

they studied, their occupation, etc.), and then they were asked to discuss childhood memories, the national economic crisis, and plans for the summer.[10]

One disadvantage of using natural speech data is that there is a high variability in the amount of tokens that speakers produce because participants are largely in control of the content of the data. Although this technique is suitable to study the variability found among native speakers, L2 speakers often avoid structures they do not feel comfortable with so that they avoid possible structural errors. In order to overcome this problem, and additional oral task was used: an elicited production task.

5.2.2. Elicited Production Task (EPT)

An elicited product task (EPT) was used in order to determine whether L2 speakers were able to produce simple sentences of Basque ergativity in a condition that requires them to use metalinguistic knowledge. An advantage of using this task is that it allows us to systematically study the use of Basque ergativity in a controlled manner. Although natural speech data better shows a general picture of how learners use language, the amount of tokens is extremely variable, because often times, participants control what they say. This in mind, naturalistic performance may not reflect their overall competence of Basque ergativity. Therefore, the results obtained in the EPT, which taps to more metalinguistic knowledge of Basque ergativity, are compared to those obtained in the oral interviews. In terms of nominal and verbal inflection, if speakers perform accurately in the EPT but show high rates of omissions in the oral interviews, we are able to empirically determine that their ergative knowledge is quite successful

A total of 25 Basque-Spanish bilinguals (mean age = 29.3; SD = 3.7; range = 18-46) participated in the EPT. With the exception of three participants, all participated both in the oral interviews and in the EPT yielding 5 native speakers, 5 ESB, 8 advanced L2 and 7 intermediate L2 speakers.

The EPT consisted of 30 target items equally distributed into 3 verb types:

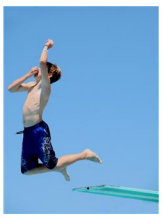
(a) transitives: such as *liburu bat irakurri* 'to read a book' and *laztandu* 'to pet',

(b) unergatives: such as *korrika egin* 'to run' and *eskiatu* 'to skii'

(c) unaccusatives: such as *joan* 'to go' and *jaiki* 'to wake up'.

Participants were shown a series of pictures on a Power Point (1 per slide) in which the name of the person, object, and the verb were provided. They were instructed to produce sentences in the present perfect. The figure below shows an example of the transitive verb *irakurri* 'read', unergative verb *salto egin* 'to jump' and the unaccusative verb *joan* 'to go':

Peio liburu irakurri
Peio book read



Jon salto egin
Jon to jump

Mikel joan
Mikel go

Figure 1. Examples of test instruments used in the EPT

A total of 5 test items were implemented as examples prior to the study, and the following question was asked: *Zer egin du?* 'What has [ø =s/he] done?'. After the training session, the question was not asked again in order to avoid any priming effects.

[10] Given Basque's split ergativity, topics that would enhance the production of non-progressive contexts were encouraged. Although future research should examine possible ergative patterns in the progressive, the present paper focuses on the non-progressive contexts, which are the obligatory ones for Basque ergativity.

5.2.3. Acceptability Judgment Task (AJT)

An acceptability judgment task (AJT) was employed in order to determine whether L2 learners are able to discern the grammaticality of simple Basque ergative sentences.

A total of 48 Basque-Spanish bilinguals (mean age = 25.2; SD = 2.7; range = 18-46), 22 of whom took part in the previous tasks, completed the task that was presented in a written form through the web survey tool *Survey Gizmo.*

The AJT consisted of 96 sentences: 48 experimental and 48 fillers. The 48 experimental sentences were equally distributed for the suppliance and omission of ergative in the nominal inflection according to their grammaticality. This yielded to 24 grammatical and 24 ungrammatical sentences that were further divided according to verb type with 8 tokens per type. In order to determine whether unergative verbs are differently acquired depending on whether they are synthetic or periphrastic, the type of verb was further divided as such:

TRANSITIVE

(8a) * Itziar txakurr-a-ø laztandu d-u-ø
Itziarr-ek txakurr-a-ø laztandu d-u-ø
Itziar-ERG dog-the.ABS pet ABS.3sg-have-ERG.3sing
'Itziar has petted the dog'

UNERGATIVE

(9a) * Itziar eskiatu / dantza egin d-u-ø
Itziarr-ek eskiatu / dantza egin d-u-ø
Itziar-ERG skii dance do ABS.3sg-have-ERG.3sing
'Itziar has skied/danced'

UNACCUSATIVE

(10a) * Itziarr-ek joan da
(10b) Itziarr-ø joan da
Itziar-ABS go ABS.3sg.be
'Itziar has gone'

All the verbs that were used in the elicited production task were also used in the acceptability judgment task. All sentences were presented in the third person singular and contained 4-5 words. The remaining 48 distractors consisted of 6 verbs that take animate objects and were equally distributed in terms of acceptability. The unacceptable sentences involved the over-use of dative with animate objects and were controlled for sentence length and tense.

Participants were instructed to read each sentence and rate its acceptability using a Likert Scale (1= completely unacceptable, 4 = completely acceptable). The task was self-paced.

6. Results

6.1. Oral production

The natural speech of each speaker was manually transcribed using the using the language archive ELAN[11] (Sloetjes & Wittenburg, 2008). In order to examine the use of Basque ergativity, data was coded for three linguistic measurements; first, data was coded for the presence or absence in obligatory contexts according to verb type (with possible over-use in unaccusative contexts). Second, speech production was additionally was coded for the suppliance of the correct auxiliary verb (BE or HAVE). Finally, it was coded as to whether speakers supply the correct agreement clitic (subject-verb agreement) in the verbal inflection.

[11] ELAN is a linguistic annotator developed by Max Planck Institute for Psycholinguistics, The Language Archive, Nijmegen, The Netherlands. It is widely used to transcribe natural speech data and it allows multiple levels of annotation URL: http://tla.mpi.nl/tools/tla-tools/elan/.

With respect to the nominal inflection, previous research has shown that coarticulation effects of plosives could lead to the omission or lenition of *–k*, especially in final word positions (Nadeu, 2010). Spectrograms were generated in *Praat* and used to determine whether the plosive marker denoting the ergative was fully produced, lenited or omitted (Hualde, Simonet, Nadeu, 2011). For our binary distribution of the presence of ergative (suppliance or omission), lenited examples were considered as examples of presence of ergative.

The collected corpus consisted of 51,739 words, with a total of 9,099 inflected clauses. Given the nature of null subjects in Basque, clauses with no overt subject were excluded, as well as repeated forms, expletive expressions such as *hori da* 'that's it,' and unfinished sentences. Thus, our analysis comes from a total of 2,480 perfective clauses, which constitutes 27.25% of the entire corpus. Although the data is relatively evenly distributed across speakers and groups, the amount of tokens per group varies greatly. As shown in Table 2, the verb type with the most tokens is found in the unaccusative group (66.1%). Among those verbs that require the ergative case marker, tokens in the transitive group (30.5%) outnumbered the unergative group (3.3%).

	Transitive	Unergative	Unaccusative	Total
Native (n=6)	219 (27.9%)	22 (2.8%)	545 (69.3%)	786
ESB (n=6)	128 (26.9%)	15 (3.2%)	333 (69.9%)	476
L2 – advanced (n=8)	171 (28.3%)	19 (3.1%)	414 (68.6%)	604
L2 – intermediate (n=8)	238 (38.6%)	26 (4.3%)	350 (57.1%)	614
TOTAL	**756 (30.5%)**	**82 (3.3%)**	**1,642 (66.1%)**	**2,480**

Table 2. Distribution of the natural data according to verb type across groups

Following new trends in variationist work (Gorman & Johnson, 2013), three separate mixed-effects logistic regressions (one per measure: nominal inflection, auxiliary selection, verbal agreement) were performed using the *lmer( )* function in the statistical software *R* (R Development Core Team, 2009). This way, intra-speaker variation within a specific group is accounted for, and it satisfies the assumption of independent outcomes between factors (Baayen, 2008). Results for each model are explored in turn.

6.1.1. Nominal inflection

In order to determine the accuracy rates of Basque ergativity in the nominal inflection a mixed-effects logistic model was carried out with *Nominal_Inflection* as a response, verb type (transitive, unergative, unaccusative) and group as a fixed factors and speaker as random intercepts.

Table 3 shows accuracy percentages in the use of ergative in obligatory contexts; ergative omission in the same contexts, and overgeneralizations in unaccusative predicates distributed by type of bilingual. Speakers very rarely over-generalize the ergative marker to unaccusative contexts (range between 0.2 and 5.0 % of unaccusative verbs) but are prone to omit the ergative *-k* marker (up to 68.8%). The statistical model yielded significant results between the intercept (natives) and L2 learners, both advanced speakers (β = 0.13431, t = 2.975) and intermediates (β = 0.12650, t = 5.062). However, there was no statistically significant difference between native speakers and ESBs (β = 0.12384, t = 1.518). These results mean that overall, L2 speakers pattern different from L1 and ESB groups. However, a closer look at the data shows that both ESB and L2 advanced speakers produce the highest rate of omissions, a fact that is shown in an interaction between group and verb type. More specifically, this interaction lies between the use of unergative verbs by advanced learners and early sequential bilinguals, as opposed to native speakers' use of *–k* with unergative subjects (β = 0.09550, t = -3.319). These results suggest that advanced L2 speakers are more likely to omit nominal *–k* in unergative verbs than any other group.

	***-(e)k* suppliance**		***-(e)k* omission**		***-(e)k* over-generalization**
	Transitive	Unergative	Transitive	Unergative	Unaccusatives
Native (n=6)	81.7% (.2)	54.5% (1.2)	22.3%	45.5 %	0.2 % (0.4)
ESB (n=6)	52.8% (.5)	31.2% (3.2)	47.2%	68.8 %	0.7 % (.01)
L2 – advanced (n=8)	51.2% (.3)	25 % (2.4)	48.8%	75 %	1.5 % (.02)
L2 – intermediate (n=8)	61.1% (2.7)	47.1% (4.3)	38.9%	52.9 %	5.0 % (.03)

Table 3. Mean percentage accuracy, omissions and overgeneralization of ergative nominal (-k) marking in the oral interviews. SDs are in parentheses.

Overall, these results indicate that Basque speakers predominantly omit ergative *–k* in obligatory contexts. The most vulnerable set of verbs that omit the nominal ergative is certainly unergative verbs as predicted. As put forward in the second research question, these results may indicate that unergative verbs are the hardest to learn. In order to assess whether these omissions represent either a syntactic deficit, a morphological problem or a performance error, we must look at syntactic knowledge measured through auxiliary selection and agreement patterns, results that are discussed below.

6.1.2. Auxiliary Selection and verbal inflection

In order to study the accurate suppliance of auxiliary and agreement clitic, two mixed-effects logistic models were carried out with *Auxiliary_Selection* and *Verbal_Inflection* as responses in each model and with verb type (transitive, unergative, unaccusative) and group as a fixed factors and speaker as random intercepts.

As it can be seen in Table 4, auxiliary selection is largely accurate in L2 speakers, who exhibited more than 88% correct suppliance of the auxiliary verb form. The model showed neither statistical difference between groups (β = 0.1577, t = 1.028) nor among verb types (β = 0.1745, t = 1.103).

	Auxiliary Selection			**Subject-Verb Agreement**		
	Transitive *(have)*	Unergative *(have)*	Unaccusative *(be)*	Transitive	Unergative	Unaccusative
Native (n=6)	100 %	100 %	100 %	100 %	100 %	100 %
ESB (n=6)	97.7 %	90 %	99.7 %	97.7 %	100 %	99.7 %
L2 advanced (n=8)	99.4 %	100 %	99.3 %	99.4 %	100 %	99.3 %
L2 intermediate (n=8)	94.5 %	88.5 %	94.6 %	89.1 %	84.6 %	93.7 %

Table 4. Accuracy rates for auxiliary selection and subject-verb agreement in the natural data.

As far as subject-verb agreement is concerned, results show a minimum of 97.7% accuracy rates for all groups with the exception of intermediate speakers, who were 84% accurate in the inflection morphology of unergative verbs. Results in the statistical model show that the intermediate group exhibited significant differences in subject agreement between unergative and transitive verbal inflection and unaccusative verbal inflection (β = 0.03773, t = 2.18). However, while it can be claimed that intermediate speakers are more accurate at selecting the right auxiliary, they continue to present slightly more problems when selecting the right clitic for verbal agreement.

Overall, the results obtained in the oral interviews suggest morphological errors are not a product of impairment effects; the question of whether unergative verbs are the hardest to learn remains under-examined. This is due to the low number of tokens obtained in this task, which disallowed the formation of any important conclusions. To address this, we report the results obtained in the elicited production task, in which the production of unergative verbs was obtained in a more controlled manner.

6.2. Elicited Production Task (EPT)

In order to determine whether L2 speakers were able to produce simple sentences of Basque ergativity, 25 speakers were shown 30 pictures and asked to produce a complete sentence for each picture. This task yielded a total of 750 tokens, which were manually coded for the presence or absence

of ergative *–(e)k* in obligatory contexts, and for correct auxiliary verbal inflection. As in the oral interviews, two mixed effects were carried out, one per measurement.

6.2.1. Nominal inflection

The first mixed-effects logistic model was carried out with *Nominal_Inflection* as a response, verb type (transitive, unergative, unaccusative) and group as fixed factors and speaker as random intercepts. Table 5 shows suppliance and omissions of ergative in obligatory contexts and overgeneralizations in unaccusative predicates distributed by type of bilingual.

	***-(e)k* suppliance**		***-(e)k* omission**		***-(e)k* over-generalization**
	Transitive	Unergative	Transitive	Unergative	Unaccusatives
Native (n=5)	93%	80%	6%	20 %	2 %
ESB (n=5)	90%	84%	10%	16 %	8 % [12]
L2 – advanced (n=8)	81.2%	86.2 %	18.8%	13.8%	5 %
L2 – intermediate (n=7)	60%	62.4%	40%	38.6 %	2.9 %

Table 5. Mean percentage accuracy, omissions and overgeneralization of ergative nominal (-k) marking in the EPT. SDs are in parentheses.

All groups were 80% accurate in all verb contexts with the exception of intermediate L2 learners, who produced the ergative in 60% and 62.4% in obligatory transitive and unergative contexts. All groups showed very low rates of ergative overgeneralizations to unaccusative contexts, with the exception of early sequential bilinguals (8%). Results in the statistical model showed that there is a statistically significant difference between intermediate L2 learners and the rest of the groups (β = 0.01244, t = -2.948) in disfavoring the ergative in obligatory contexts. Results also show that native speakers and early sequential bilinguals fail to assign the nominal ergative *–k* marker in unergative verbs more often than their L2 counterparts although these results did not reach significance (β = 0.00964, t = -0.692). A possible explanation for these unexpected results is addressed in the discussion section.

These results suggest that all groups are capable of producing the nominal ergative *–k* in a relatively productive manner with the exception of intermediate speakers. However, as they advance in their proficiency, nominal inflection becomes more productive, showing a developmental effect. In order to determine whether the lack of native-like production of ergative suppliance is due to syntactic deficits, the syntactic knowledge should tested, as analyzed through the auxiliary selection that is explained in turn.

6.2.2. Auxiliary selection

The second mixed-effects logistic model was carried out with *Auxiliary_Selection* as response, with verb type (transitive, unergative, unaccusative) and group as a fixed factors and speaker as random intercepts. Table 6 shows accurate suppliance of auxiliary according to verb type across groups.

	Auxiliary Selection		
	Transitive *(have)*	Unergative *(have)*	Unaccusative *(be)*
Native (n=5)	100 %	100 %	100 %
ESB (n=5)	100 %	100 %	98 %
L2 advanced (n=8)	98.75 %	91.25 %	98.75 %
L2 intermediate (n=7)	98.6 %	84.3 %	95.7 %

Table 6. Accuracy rates for auxiliary selection in the EPT.

All groups are above 98% accurate in selecting the correct auxiliary verb for transitive and unaccusative verbs. The only statistically significant difference found in the model (β = 0.004485, t = -

[12] The 8% is representative of 4 tokens (out of 50) and it is not enough to make generalizations for this group.

2.23) concerned intermediate L2 learners, who exhibited large variation in assigning the auxiliary verb within unergative verbs. These results should be analyzed with caution: there were 18 cases of non-canonical use of auxiliary verbs among the L2 groups, but only one of the constituted a grammatical error:

(11) *Markel-ø etzan egin d-u-ø
Markel-ABS lay down do ABS.3sg-have-ERG.3.sing
'Markel has lie down'

The other non-canonical auxiliary assignment involved unergative verb optionality (as explained in section 3.2.1). This means that when some unergative verbs were assigned BE, the subject appeared in the correspondent ABS (ø) form as shown in (12a) and (12b):

(12a) Peio-ø jolastu da
Peio-ABS play ABS.3sg.be
'Peio has played'

(12b) Andoni-ø dantzatu da
Andoni-ABS dance ABS.3sg.be
'Andoni has danced'

As already put forward by Etxepare (2003), there are two types of unergative verbs: synthetic (*dantzatu* 'to dance', *jolastu* 'to play') and periphrastic (*dantza egin* 'to do dance', *jolas egin* 'to do game') and it is the synthetic verbs that allow optional auxiliary selection. Most importantly, Laka (2006) argues that the periphrastic verbs such as *dantza egin* are not true unergatives but transitives, because they are formed by a noun *dantza* ('dance') or *jolas* ('game') and a light verb *egin* 'do'. This may suggest that speakers interpret examples in (12a-b) as unaccusatives instead of unergatives. Interestingly, all other groups favored HAVE with unergative verbs whereas intermediate learners favored BE. A possible explanation for this dichotomy is explored in the discussion section.

Overall, findings obtained in the EPT suggest that all speakers are capable of assigning the correct auxiliary verb to the correct argument structure of the verb, indicating that they do in fact have syntactic knowledge of ergativity at the abstract level. More importantly, when speakers chose the non-canonical auxiliary, agreement with the subject matches, suggesting that agreement mechanisms are available in L2 grammars. These results provide support for the MSIH. Moreover, the highest rate of variation was found among the L2 groups in assigning ergativity to unergative verbs. As follows, we study whether the variable production of this group affects their intuitions on discerning grammatical sentences.

6.3. Acceptability Judgment Task (AJT)

An acceptability judgment task was employed in order to determine whether L2 learners are able to discern the grammaticality of simple Basque ergative sentences. Because auxiliary selection was not manipulated in this experiment, only data for grammatical and ungrammatical ratings of ergative suppliance in the nominal inflection will be reported. 48 bilinguals rated the acceptability of 48 target tokens yielding a total of 2,308 tokens. These underwent a repeated measures ANOVA analysis in *R*: a model was created with grammaticality and verb type as within-subjects factors and with bilingual as the between subject variable.

Results suggest that there was a main effect of grammaticality ($F(1, 42)= 181.348$, $p<0.001$) and verb type ($F(2, 1820) = 9.435$, $p< 0.001$) but no main effect of group ($F(3, 42) = 1.783$, $p > 0.05$). At first glance, these results may indicate that groups are patterning in a similar vein but further analysis on interactions reveal the opposite: a two-way interaction was found between verb type and grammaticality ($F(2, 1820) = 14.405$, $p<0.001$), a marginally significant interaction between verb type and group ($F(8, 1820) = 1.904$, $p = 0.055$) and a three-way interaction between grammaticality, verb type and group ($F(8, 1820) = 4.304$, $p < 0.001$). These interactions suggest that different groups rate grammaticality of ergatives in Basque differently, as displayed in Figure 1.

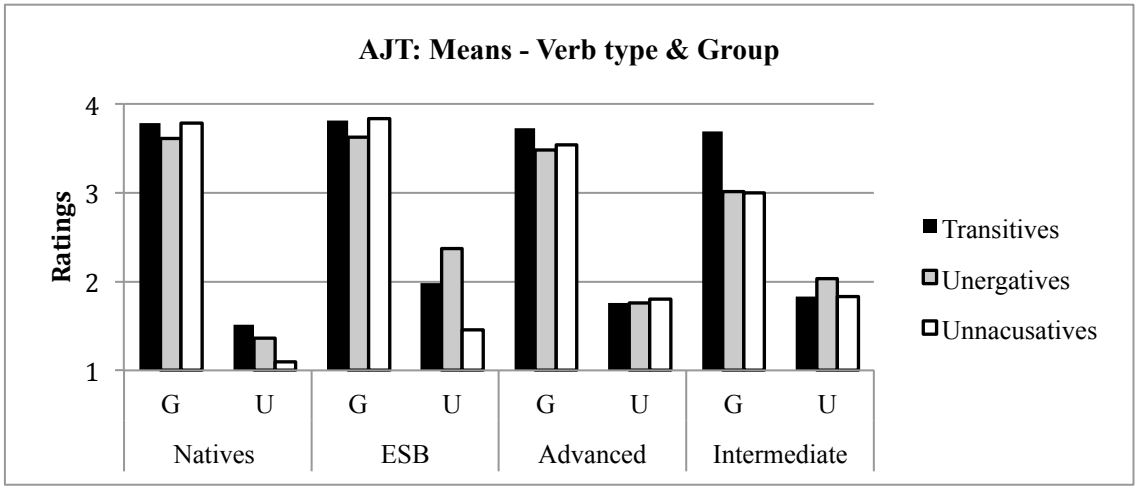


Figure 1. Mean acceptability ratings of (un)grammatical sentences according to verb type and group.

All groups seem to know the distribution of ergative case marker *–(e)k* in grammatical transitive sentences. The two interactions lie in the ratings of grammatical sentences of unergative and unaccusative sentences by intermediate learners, who show the lowest acceptability scores. These results suggest that intermediate L2 learners may fail to make a distinction between unergative and unaccusative verbs but they still have the knowledge of ergative in obligatory contexts with transitive subjects. This result implies that the syntactic distinction between transitives and intransitives is maintained. Ungrammatical sentences present more variation in their ratings: all groups accept errors of omission (transitive and unergative) more than over-use of ergative (unaccusative). The three-way interaction found in the model was in high ratings of the ungrammatical sentences of unergative verbs among early sequential bilinguals and intermediate speakers, a finding that is partially consistent with the hypothesis that unergative verbs are the hardest to learn.

Overall, the results obtained in the acceptability judgment task show that speakers have acquired the syntactic knowledge of ergativity at an abstract level. All speakers rated errors of omissions higher than over-extensions. Furthermore, unergative verbs were the most prone to be rated higher in the ungrammatical condition.

7. Discussion

The main purpose of the present study was to determine whether the inconsistent use of morphological ergative is due to impairment at the abstract level (syntactic knowledge) or a problem at surface morphology. To this aim, we compared the use of the nominal inflection *–k* concerning auxiliary selection of *izan* (BE) and **edun* (HAVE) according to verbal agreement among 4 groups of Basque-Spanish bilinguals. Additionally, we wanted to investigate if the optionality of auxiliary selection and ergative use with some unergative verbs presents a problem in the acquisition of ergativity among L2 speakers. Based on the results obtained in our three experimental tasks, two main conclusions are drawn: (1) L2 speakers do not present a syntactic impairment in the abstract knowledge of Basque. Rather, lack of nominal inflection is suggestive of problems at the surface level and (2) unergative verbs are harder to learn due to variability found in these verbs.

7.1. L2 grammar is not impaired

In order to examine whether L2 grammars present a syntactic deficit, two hypotheses were tested. The IRH claimed that UG is no longer available in L2 grammars, which results in a lack of functional categories. This means that at the local level, feature-checking mechanisms are impaired, which consequently results in a lack of verbal agreement. Under this view, it was predicted that speakers would select the auxiliaries BE and HAVE in a random manner with no consistency in verbal

agreement forms. The opposing view, the MSHI, claims that L2 grammars are *not* impaired, and that learners have access to UG via the L1 with feature checking mechanisms at their disposal. Thus, it was predicted that L2 speakers would select the correct auxiliary verb with the correct verbal clitic agreement markers but would fail to produce the nominal ergative case *-k* marker with the subject. Our results confirm the results predicted by the MSIH.

Auxiliary selection was largely accurate (BE for unaccusatives and HAVE for unergative and transitive predicates) as shown by the results from the two oral tasks. Based on theoretical accounts of auxiliary selection in the languages of the world, and theoretical accounts by Arregi & Nevins (2012), we assumed that Basque auxiliary selection occurs at the syntactic level through operations of Merge. If L2 speakers allude to this syntactic knowledge, they will be able to distinguish between transitive and intransitive predicates, a prediction under the MSIH hypothesis. The higher rates of accurate auxiliary selection in both production tasks suggest that L2 speakers do indeed have the syntactic knowledge of ergative at the abstract level. They are capable of distinguishing the argument structure of both types of predicates by almost categorically using HAVE for transitives and BE for unaccusatives.

With respect to agreement, our results further confirmed that the syntactic knowledge of the Basque ergative is retrieved relatively accurately by L2 speakers. Under theories of cliticization and agreement formulated by Arregi & Nevins (2012), it was argued that agreement proceeds in two steps: *Agree-Link* and *Agree-Copy*. First, pronominal clitics syntactically generate forming a constituent with arguments (Agree-Link), which is also determined by auxiliary selection. They then undergo cliticization to their hosts (Agree-Copy): T for absolutive and C for ergative. Controlled stimuli used in the EPT only dealt with third person singular *–ø* (du-ø) for ergative and *d-* for absolutive (d-a), and little can be said about the agreement patterns with other person and number features. However, results showed that all groups were accurate in selecting the correct verbal form. These results were further corroborated in the data obtained in the oral interviews, in which participants were at least 85% accurate in supplying the correct verbal form. However, L2 intermediate speakers displayed slightly more errors in subject-verb agreement than other groups, which can be attributed to the two steps proposed in Arregi & Nevins (2012). It seems that the first step (Agree-Link) in which clitics form a constituent with arguments is more accurate than the second step (Agree-Copy) in which cliticization occurs. This suggests that speakers are capable of retrieving correct argument structure, but some small problems may occur in retrieving correct superficial form at the morphological level (i.e. third person singular). These small inconsistencies constituted less 5% of the cases, which is not enough to claim that their syntactic knowledge is impaired. However, it does speak for the theory of agreement and cliticization proposed by Arregi & Nevins (2012); that *Agree-Link* must occur before *Agree-Copy*, the latter being more vulnerable in L2 grammars.

We have argued that L2 speakers present abstract knowledge of the ergative, evidenced by accurate auxiliary selection and pronominal clitics (or morphological agreement markers). However, L2 speakers *do* have problems producing the correct form in the nominal inflection, a problem that has been attributed to mapping problems at surface morphology. Regarding nominal inflection, the IRH predicted that L2 grammar would present mismatches between the auxiliary and the nominal inflection by overproducing the ergative *–k* marker in unaccusative contexts and underusing the HAVE auxiliary in transitive and unergative predicates. On the opposite view, the MSHI predicted correct auxiliary selection and verbal morphology but lack of use of ergatives at the morphological level, in favor of ergative underuse in the nominal morphology. The results in the three tasks further support the latter theory.

In terms of nominal inflection, results in the oral tasks showed that speakers very rarely over-generalize the ergative marker *–k* in unaccusative contexts, but instead, omit the ergative marker in obligatory contexts. These results can be explained by two theories; 1) the Distributional Morphology approach and 2) case-assignment mechanisms aided by transfer effects from the dominant language, Spanish. According to the Distributional Morphology approach proposed by Halle & Marantz (1993), there is a disassociation between abstract features and morphological ones. In the target-like form of use of ergative, case forms are associated with grammatical abstract features. Those case markers also depend on the argument of the structure of the verb. In order to produce target-like forms, both features should be consistent in the syntactic node. Because L2 adult learners have full access of the syntactic features (due to L1), lack of the morphological feature (ergative) suggests that syntactic features (subject) are independent from morphological features in L2 grammars. As predicted by the MSIH, this would result in the overuse of absolutive *–ø* instead of ergative *–k*. Our results show that speakers not

only produced absolutive –ø in ergative contexts but rarely accepted errors of ergative over-generalizations in unaccusative contexts in the acceptability judgment task. The high accuracy rates of auxiliary selection with underuse of the morphological *–k* in nominal inflection supports the claim that there is a disassociation between syntactic and morphological knowledge of Basque ergativity.

A second important reason behind underuse of ergative *–k* among L2 speakers is due to transfer effects from the dominant language. This is explained by case-assignment mechanisms in both languages. Following the Minimalist approach (Chomsky, 1993) to Case Theory, it was argued that Spanish subjects are assigned morphological case (nominative –ø) in T (Blake, 2001: 59). As for case-assignment in Basque, an enormous body of research has been devoted to the claim that Basque ergative is structural: the subject generates in the specifier position of *vP* and raises to T where it assigns ergative through agreement mechanisms and spelled out as *–k* (Bobaljik, 1993; Laka, 1993; Chomsky 2000, 2001; Anand & Nevins, 2012; Rezac et al., 2011; Preminger, 2012; Siebecker, 2014). These theories suggest that both Spanish and Basque are assigned case in the same manner (by T) but that the case that is assigned is different given its diverse structural alignments (Dixon, 1994). Therefore, it may well be that the lack of ergative *–k* in the nominal inflection is due to transfer effects from Spanish;[13] both Spanish nominative and Basque absolutive are –ø, which aids the effect of omitting ergative *-k* (or extending the absolutive to ergative contexts). This explanation is also consistent with Zawiszewski et al.'s (2011) study on ergative processing, which found that ungrammatical sentences (with omission errors) were accepted by near-native speakers with no P600 effects in the frontal lobe. They argued that these speakers processed ungrammatical sentences as grammatical because they interpret the absolutive (–ø) as an equivalent of Spanish nominative (–ø) – an effect of transfer effects from Spanish.

7.2. The difficulty of unergative verbs

The second goal of the present paper was to examine if the optionality found with unergative verbs poses a challenge to L2 speakers. The experimental results in this paper answer this question affirmatively. All groups were able to fairly accurately assign the correct auxiliary verb regardless of verb type but failed to assign the ergative *–k* marker in the nominal inflection. Also, the intermediate group showed the highest variation in assigning the auxiliary to the verb. We argue that these results are consistent with semantic-syntactic approaches to intransitive verbs and further explain the implications for L2 acquisition.

The distinction between unaccusative and unergative verbs pertains to certain syntactic and semantic properties, as stipulated by the Unaccusative Hypothesis (Burzio 1986; Perlmutter, 1978). It was shown that syntactically, unaccusative subjects behave like direct objects whereas the subjects of unergatives are the equivalent of transitive subjects. Semantically, agentivity seems to correlate with unergativity whereas patienthood is more related to unaccusatives. However, the alignment between syntactic and semantic properties does not always correlate, as evidenced by previous research (Sorace, 2000; Sorace & Shomura, 2001; Levin & Rappaport, 2005). In terms of auxiliary selection, this mismatch is demonstrated in the sense that some verbs invariably select BE or HAVE whereas others show variation. In order to account for this variation, Sorace proposed the Auxiliary Selection Hypothesis, which claims that auxiliary selection in intransitive verbs can vary according to a hierarchy of thematic (semantic) factors. Thus, it can be said that the unaccusative-unergative distinction is semantically determined but syntactically encoded (Sorace, 2000). The interplay between these two factors has been suggested to pose some problems for L2 learners.

With respect to the nominal inflection, results in the elicited production task showed that intermediate speakers omit the ergative *–k* marker 40% of the times on transitive subjects and 38.6% on unergative subjects. As previously stated, these results show problems at the surface level, but the reasons behind these errors produced are different: in transitive subjects, lack of overt realization of ergative *–k* is due to a mapping problem, whereas with unergative subjects, it has to do with the semantics of the verb. This is evidenced by the fact that intermediate speakers were successful in discriminating the transitive grammatical sentences from the ungrammatical ones in the acceptability judgment task. In contrast, L2 intermediate speakers rated unergatives and unaccusatives similarly, which suggests that they treat these two verb types similarly. These results show further evidence that

[13] Analyzing speakers of a L1 ergative language acquiring Basque as a L2 should test this hypothesis.

L2 speakers discriminate between different verb types according to the argument structure of the verb, providing further support for the hypothesis that universal grammar is available in L2 acquisition.

With respect to auxiliary selection, results in the elicited production task and the oral interviews show that speakers follow the Auxiliary Selection Hierarchy; L2 intermediate speakers have a preference towards BE with those verbs showing variation whereas all other groups invariable select HAVE for unergative verbs. Interestingly, when HAVE is chosen, omission errors are found in the nominal inflection, but when intermediate L2 speakers selected BE, correct verbal agreement and corresponding correct case assignment were provided. Among those verbs that were preferred by BE included the synthetic denoting uncontrolled processes such as *irristatu* 'to slip' and motional controlled processes such as *dantzatu* 'to dance', *jolastu* 'to play' and *hegaztu* 'to fly'. These verbs constitute the peripheral verbs in Sorace's (Sorace & Keller, 2005) terms and it is consistent with theoretical notions of syntactic-semantic alignment: unergative verbs may be harder to learn for the complexity they exhibit in terms of semantic alignments or input variability.

Previous research has shown that learners may be potentially 'confused' by the variable input they obtain (Henry, 1997; Papp, 2000; Sorace, 1993, 2000b) and they may or may not show developmental effects. Ours have shown developmental effects as higher proficiency levels show a more categorical use of auxiliary selection and ergativity use. This is consistent with previous literature that shows that syntax presents less difficulty to learners than does semantics. In a series of experiments, Montrul & Slabakova (2002, 2003) examined the connection between inflectional morphology and aspectual tenses between imperfect and preterite among L1 English-L2 Spanish speakers and they found that those intermediate learners who did not master the imperfect and preterite morphology did not know the semantic contrast between the two tenses. The authors argued that the acquisition of semantic properties of verbs are gradual but may present some difficulties in early stages because there is no one-to-one correspondence at the semantic-syntactic interface.

In order to approach this problem, Sorace & Keller (2005:18) reformulate the Auxiliary Selection Hypothesis from an Optimality Theory perspective according to universal semantic verb subclasses (in which '1' represents subject and '2' represents object). The hierarches may vary according to language and these are explored for French and Italian in figure 2:

(i) a. **French:**
1/TELIC ≫ *1/MOTIONAL ≫ *2 ≫ *1/DIRECTIONAL ≫ *1/CONTINUATIVE ≫ *1/STATIVE ≫ *1/CONTROL

b. **Italian:**
1/TELIC ≫ *1/MOTIONAL ≫ *1/DIRECTIONAL ≫ *1/CONTINUATIVE ≫ *1/STATIVE ≫ *2 ≫ *1/CONTROL

Figure 2. Optimality Theory account of the Auxiliary Selection Hierarchy according to semantic verb classes (Sorace & Keller, 2005:18).

This hierarchy suggests that telicity is the main factor that distinguishes BE and HAVE verbs whereas control is a secondary factor that may distinguish among other HAVE verbs and may have splitting subgroups. The split of the auxiliary selection occurs in (*2 – "don't project direct object") which suggests that those verbs to the left would require BE whereas those to the right would require HAVE. This hierarchy hypothesizes that there is a gradient implication for language development; based on our results, Basque speakers in the present study behave more like the Italian paradigm above in which L2 intermediate speakers are in the optionality stage of the control constraint.

In this paper, we have addressed how syntactic and semantic factors constrain the use of Basque ergativity among different bilinguals. However, a theoretical question that still remains to be explored pertains to how aspectual factors also interact with these factors. To this aim, it will be necessary to study how the nature of split ergativity in Basque, which is conditioned by aspectual factors, plays a role in the acquisition of Basque ergativity. Future research should address this question.

7.3. Native speakers also omit –k: Phonological effects

To our surprise, native speakers showed relatively high percentages of ergative omission in the nominal inflection: 22.3% of transitive subjects and 45.5% of unergative subjects were caseless in the oral interviews, and a total of 20% of unergative subjects in the elicited production task. However, their ratings of the acceptability of grammatical and ungrammatical sentences are strictly categorical. These results suggest that native speakers have clear knowledge of Basque ergativity that might not be represented in their speech showing the possible performative variation previously assumed. A question that remains to be explored is whether this variation pertains to the morphological level of Basque ergativity or phonological co-articulation effects.

In order to test possible phonological effects, presence or absence of nominal *–k* was coded according to three possible contexts: preconsonantal (*Amaiak jan du* 'Amaia ate'); prevocalically (*Amaiak irri egin du* 'Amaia laughed'); and sentence-final position ('*irri egin du Amaiak* 'Amaia laughed'). Two separate mixed-effects models were performed (one per production task) considering *Nominal_Inflection* as response, phonological context, verb type and group as a fixed factors and speaker as random intercepts. The mixed effects model employed in the elicited production task showed no statistically significant difference between the phonological contexts of ergative (β = 0.003744, t = -0.848) or the phonological contexts of the following segment (β = 0.003941, t = -0.502). On the contrary, the model employed in the oral interviews showed that there was a phonological effect among natives only; native speakers omit the ergative *–k* significantly more often when the following segment is a consonant (β = 0.3671, t = 5.521).[14] Interestingly, the model further showed that early sequential differed from L2 speakers in final utterance contexts (β = 0.102, t = -2.703) but no statistical significant differences were found with natives for the same context (β = 0.15373, t = -0.983).

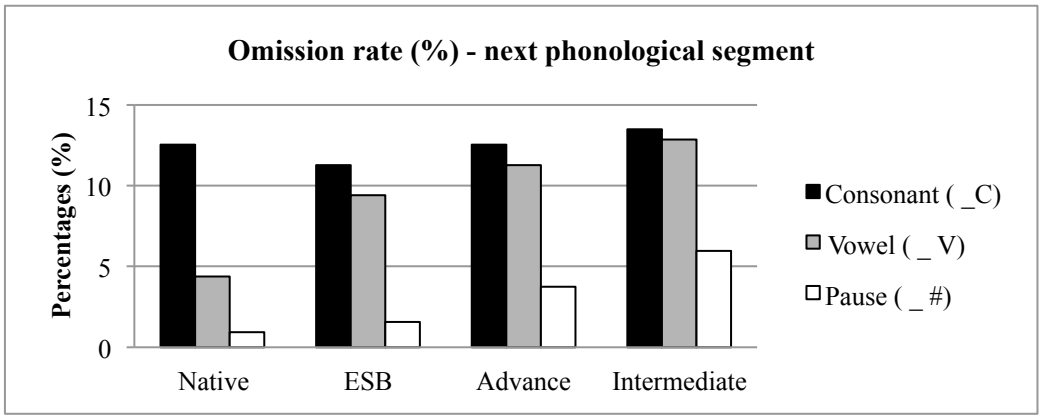


Figure 3. Percentages of omission according to phonological context across groups.

These results are consistent with phonological descriptions of the language (Hualde, 1991, 2003) and experimental data on Basque. Based from the premise that consonant clusters are rare in Basque (Hualde, 1991; Ladefoged & Maddieson, 1996), Nadeu (2010) studied possible co-articulation effects that led to omission or lenition effects of plosives in a spoken dialect of Basque. In her acoustic study of Basque plosives, Nadeu (2010) found that speakers of Goizueta Basque show higher rates of lenition and omission in word final position, which is the position of the nominal ergative –k. Our results suggest that the omission of nominal ergativity *–k* is not only due to a problem with the surface morphology but can be subject to phonological constraints of the language, as was found in the native group.

These results have important implications for child L1 or L2 acquisition in general. If the acoustic signal of ergative –k is not clear enough for learners, they may take longer to figure out how to map the correct form into the correct argument structure. This finding is supported in Ezeizabarrena &

[14] In order to verify whether the same phonological effect is found according to very type, another model was run and results showed that the phonological effect is maintained (β = 0.4523, t = 6.211) in the native group. I owe this comment to José Camacho.

Larrañaga (1996: 972) who find that children omit *–k* in preconsonantal positions more often than in other contexts. These results are also consistent with research in Japanese child acquisition. Japanese allows optional case-marking both in casual speech Tsujimura 2007) and child-directed speech (Aida 1993; Miyata 2008; Rispoli 1989). More recent studies on child acquisition have shown that Japanese children do not produce adult-like case-marking until the age of 5 or 6 (Suzuki, 2005 cited in Tanaka & Shirai, 2012). More recently, Omaki et. al. (2014) attributed the mastering of native-like case-marking in Japanese to literacy effects, in which case-marking is obligatory in Japanese written form. If input has such a strong effect in child (and adult) acquisition, similar findings should be found in Basque. Therefore, future research warrants the systematic study of how the acoustic signal of ergative –k may affect the sentence comprehension and ergative production in child acquisition.

7.4. The role of bilingual type

Another finding that deserves further analysis is the variety of language patterns found according to type of bilingual. Overall, it can be said that three patterns were found. First, there is native speakers' uniform and productive suppliance of the ergative case marker in obligatory contexts with some omissions. It was argued that these omissions were a product of phonological constraints. Second, L2 language learners patterned similarly by showing accurate syntactic knowledge of ergativity but with nominal morphology vulnerable to omission. Lastly, it was shown that early sequential bilinguals pattern very similarly with native speakers in grammatical conditions but were closer to L2 speakers in ungrammatical conditions by also favoring omissions of ergative as plausible sentences. The intermediate stage of early sequential bilinguals (between a native speaker and an advanced L2 learner of Basque) has important implications not only for language acquisition theory but also for language contact theory. We discuss these implications in turn.

An important question that may arise from these findings is the role of age of onset of acquisition as a factor determining the development of acquisition. Early sequential bilinguals who participated in this study acquired the language after the age of 3 in a fully immersed program of Basque. These subjects showed clear differences between natives in ungrammatical domains, which may suggest possible age effects in the course of their development acquiring Basque. These age effects may be the result of attrition in adulthood due to lack of use of Basque – however this is a concern that deserves further investigation in future work, perhaps in a longitudinal study of language development of early sequential children. Research on child L2 acquisition of Basque has shown that children develop syntactic patterns autonomously in Basque and Spanish (Barreña & Almgren, 2013). For instance, Ezeizabarrena (2013) found that successive bilinguals do not differ from simultaneous bilinguals or monolingual children in case marking. If development of ergativity among these children is studied in a longitudinal matter, we will be able to determine what factors, such as age of onset and language use, can be used to predict possible attrition effects; this would also explain why the early sequential bilinguals in the present study are more likely to accept ungrammatical sentences in Basque.

Other studies, on the other hand, have focused on the role of grammatical transfer effects in the acquisition of Basque ergativity. For instance, Austin (2007) found that bilingual children lag behind monolinguals in the acquiring the ergative, and attributes this finding to possible grammatical interference. From a language contact perspective, these conclusions are of extreme importance because they inform us of possible language change effects of language at a larger scale. If 'transfer effects' continue to happen over the course of the development of these children up to adulthood, it may pose a scenario for language change (Meisel, 2013). Although it has been argued that the core properties of a grammar are very unlikely to change in the course of bilingual acquisition, the opposite holds true if L2 learners are the ones providing input to children. In this case, children may reanalyze some parameters, restructuring their system in patterns closer to the dominant language, consequently resulting in contact-induced change. Given the current social scenario of the Basque Autonomous Community, where revitalization processes have led to a boom in learning Basque as a L2, it may well be that grammatical aspects such as case marking are affected by this change as well. This eventuality is consistent with modeling studies that have argued that languages with more L2 learners tend to lose nominal inflection (Winter & Bentz, 2013). If this holds true, the possibilities for change in the ergative case of Basque are high. Focusing on the role that the early sequential bilinguals and advanced learners in our study may have in providing the input to subsequent generations of Basque children advances our understanding of the role of input in theories of SLA and contact linguistics.

8. Conclusion

The main purpose of the present study was to examine inconsistent use of morphological ergative in adult speakers of Basque from a generative perspective, and uncover whether this variation is due to impairment at an abstract level (syntactic knowledge) or a problem at the surface morphology level. Additionally, we wanted to investigate whether the optionality of auxiliary selection and ergative use of some unergative verbs presented a problem in the learning development of ergativity among L2 speakers.

The experimental results obtained in the present study confirm that even though morphology is a vulnerable area in L2 acquisition, speakers do not present syntactic deficits in their abstract representation of Basque ergativity. Lack of overt realization of nominal inflection *–k* was attributed to either a problem at the surface morphological level (as predicted by the Missing Surface Inflection Hypothesis) or to phonological constraints in the language, depending on the type of speaker.

Results also showed that unergative verbs are harder to learn due to the semantic complexity they exhibit. Adopting a mediating interface between syntax and semantics, it was argued that an Optimality Theory approach to semantic-syntax interface could explain the variation displayed among L2 intermediate speakers and the rest of the groups.

Constituting the first systematic study of adult Basque ergativity, we conclude that the role that L2 speakers play in providing input to children is of utmost importance, particularly in the advancement of a theory that bridges child and adult bilingualism and contact linguistics.

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