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Constraints in code-switching: a case study from Basque and Spanish[1]

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ABSTRACT: In the present study we analyze two features in Basque-Spanish code-switching data: (1) phonological mixing in intraword position involving phoneme /θ/ and (2) switches between pronouns and verbs. Both features have been discussed for several language pairs but have so far remained unexplored in the case of Basque and Spanish. The MELAN corpus on Basque-Spanish language contact is used in this study to obtain code-switching data and test the predictions of the two most influential theoretical frameworks for code-switching (the Matrix Language Frame (MLF) model and the Minimalist Approach) for these particular features. The results at the phonological level reveal that Basque-Spanish code-switching resembles most other language pairs in avoiding phonemes from different phonological systems within words, although counter-examples are found and should probably be interpreted as signals of sound change in Basque. Conversely, the results from the analysis of pronoun-verb switch cases reveal that in Basque-Spanish data, switches take place in positions disallowed by current models and unaccepted in several other language pairs. The findings suggest that the ergative case marking in Basque may play a role in the grammaticality of the pronoun-verb switch patterns.

KEYWORDS: code-switching; intraword code-switching; MLF model; PFIC; pronouns; Basque; Spanish.

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1. Introduction

Code-switching, the use of two or more languages in speech, has received increasing attention from linguists investigating contact phenomena over the last decades. The first widely known works studying code-switching appeared in early 1980s (Poplack 1980; Sankoff & Poplack 1981) and involved English and Spanish. These initial studies described switch patterns and proposed specific constraints to explain the occurrence of certain language switches in their corpora. In recent decades, new and more divergent language pairs have been introduced into the discussion and this has resulted in analyses that have found evidence against the constraints that were initially postulated (Myers-Scotton 1993; Chan 2003; MacSwan & Colina 2014). Instead, other constraints have been proposed to explain the general patterns governing code-switching.

Among them, the Matrix Language Frame model has been one of the more influential models in explaining the grammatical features of codeswitched sentences (Myers-Scotton 1993). This model is based on the asymmetry between the languages involved in codeswitched sentences and has proven to be useful in explaining a variety of phenomena in the data. The Minimalist Approach has also been introduced by a number of authors for the analysis of code-switching instances (Chan 2003; MacSwan & Colina 2014). Within this framework, the authors have widened the scope of study to include other aspects of code-switching (e.g. phonology), and have claimed that code-switching needs to be understood as restricted only by language faculty characteristics.

In the present study, we aim to study the case of Basque-Spanish code-switching in order to examine the switch typology used by speakers of these languages and further test the predictions made by current approaches. We selected two features for that: (1) the interdental fricative /θ/ in word internal code-switching with Spanish root and Basque affix and (2) the switch between Basque pronouns and Spanish main verbs.

Basque-Spanish code-switching is a relevant study case due to the typological characteristics involved and the scarce attention it has received so far. Basque and Spanish diverge deeply in their core morphosyntactic features: the former is a head-final and ergative language with a case system and postpositions, while the latter is a head-initial and nominative language with prepositions. In contrast to this, at the phonological level Basque and Spanish share several features, including a very similar phoneme inventory. These features make this language pair especially suited to test the hypotheses proposed by the current models at different levels.

The following section (§ 2) will provide a brief account of the two most widely discussed current frameworks to analyze code-switching. The predictions deriving from these frameworks will be laid out and specified for the Basque-Spanish code-switching context considering the typological characteristics involved. Section § 3 will describe the methodology used for collecting data and the results will be subsequently analyzed in § 4. The findings will be discussed in § 5 separately for each feature. A final interpretation of the results will be provided in the conclusion (§ 6), together with a critical evaluation of the current explanatory models of code-switching in light of the data analyzed here.

2. Theoretical models

2.1. The Matrix Language Frame model

The Matrix Language Frame (MLF) model by Myers-Scotton (1993) accounts for the grammatical constraints governing code-switching in intrasentential position, and is mainly based on the assumption that in every switched sentence there is a Matrix Language (ML) and an Embedded Language (EL). The ML provides the grammatical structure of the sentence and the EL contributes content morphemes. Another crucial distinction in the MLF model is between content morphemes (expressing semantic information, e.g. nouns, verbs, adjectives) and system morphemes (function words and morphemes).

The MLF model posits two main principles to explain how codeswitched sentences are allowed:

> — The Morpheme-Order Principle: In ML+EL constituents consisting of singly-occurring EL lexemes and any number of ML morphemes, surface morpheme order (…) will be that of ML.
> — The System Morpheme Principle: In ML+EL constituents, all system morphemes which have grammatical relations external to their head constituent (i.e. which participate in the sentence's thematic role grid) will come from the ML.
>
> (Myers-Scotton 1993: 83)

The concept of system morpheme is further discussed in Myers-Scotton & Jake (2009) to account for three subtypes within this class: early system morphemes, late bridge system morphemes and late outsider system morphemes. This categorization is used to refine the System Morpheme Principle, so that early system morphemes (such as *the*, *a* determiners in English) are claimed not to be determined by the ML and can therefore come from the EL.

2.2. Minimalist approaches

MacSwan (2005), following Chan (2003) and Mahootian (1993), introduces the Minimalist program's principles into the analysis of code-switching and argues against the idea of code-switching being governed by a specific grammar, as implied in the previous constraint-based programs, such as the MLF model.

MacSwan (2000, 2005) in turn hypothesizes that in code-switching, lexical items enter the computational system (invariant in all languages) in the same way non-switched items do in the case of monolingual sentences. However, at Spell-Out the derivation is split and relevant features are mapped onto the phonetic form (PF), and thus each lexical item is sent to its own phonological system. It follows that complex heads containing morphemes from different languages cannot be realized, since features cannot be sent to both phonological systems at once, as stated in the Phonetic Form Interface Condition (PFIC) (MacSwan & Colina 2014). Thus, MacSwan abandons the constraints-based approach but proposes other constraints based on universal derivation properties of language. This hypothesis makes clear predictions as to the switch instances disallowed in any language pairs: codeswitching cannot occur within syntactically complex heads.

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2.3. Predictions and implications for Basque-Spanish code-switching

The approaches reviewed posit constraints by which code-switching is governed and make specific predictions as to which patterns would be allowed. Under the MLF model, the ML determines word-order as well as outsider system morphemes, and the EL is therefore not allowed in these features or positions. Minimalist approaches in turn hypothesize that code-switching cannot occur within complex heads, since each language is assumed to have its own PF, or at least separate phonological systems to which material from each language is sent.

In the following sections the predictions of these hypotheses are tested at both phonological and morphosyntactic level by analyzing two features in Basque-Spanish codeswitching data: the status of the interdental fricative phoneme /θ/ in intraword switches, and switches between subject pronouns and verbs.

The Spanish and Basque phonological inventories are rather similar (Hualde 1991), and the interdental fricative /θ/ (as in *cielo* 'sky' and *cereza* 'sherry') is one of the few phonemes that is present in the Spanish inventory but not in the Basque one (Oñederra 2004). According to the PFIC hypothesis, Spanish roots not sharing all phonological properties with Basque will not be allowed to combine with Basque affixes (this is, occur in head internal positions), unless Basque phonology is applied and thus the phoneme is adapted. Minimalist approaches thus predict that the phoneme /θ/ will not feature in word-internal switches, e.g. in DPs containing lexical roots from Spanish and postpositions or case markers from Basque. The MLF model does not make any predictions for phonological features in code-switching, as it is formulated based on grammatical constraints.

At the morphosyntactic level, both models forbid switches between pronouns and verbs. The MLF model argues that the ML determines the system morphemes that have grammatical relations external to their head, as would be the case with pronouns in Basque-Spanish code-switching. In the Minimalist Approach, switches between pronouns and verbs are banned in order to avoid complex heads composed of mixed elements that would eventually crash at the PF interface. Complex heads result from the D-to-T movement that pronouns undergo, unlike lexical DPs, which check features in [Spec, TP] and are thus allowed in code-switching (van Gelderen & MacSwan 2008).

3. Methodology

The MELAN corpus on Basque-Spanish language contact has been used for obtaining data. This corpus was gathered by the authors in 2018-2019 and contains transcriptions of 20 hours of recorded Basque media. Out of the 20 hours of media content, 10 belong to two radio programs (*Dida* and *Gaztea Box*) from the Basque public radio station Gaztea, and 10 belong to the program *Gure kasa* in the public television station ETB1.

All three programs are hosted by young presenters and are directed to a similarly young audience. The main language of the programs is Basque in all cases, used in an informal and semi-spontaneous style. The choice of language and degree of formality is regulated by program policies and thus some speakers are allowed to switch between Basque and Spanish, although with different frequency and density (Elor-

dui 2016, 2019). The corpus has been tagged according to Muysken's (2000) taxonomy in an online-based database.

Additionally, we have enriched the MELAN database with another corpus composed of a collection of text and transcribed audio messages. These data are derived from two group conversations in a messaging platform belonging to 22 native and highly proficient speakers of Basque and Spanish, aged between 25 and 27, over a time spam of 18 months. The collection features naturalistic and spontaneous speech and Basque is the most common language overall, although code-switching is found in both directions. This dataset is aimed at enlarging the scope of the MELAN corpus in order to obtain code-switching patterns that could be inhibited in media due to language policy requirements.

In short, media-based corpus data has been complemented with a smaller dataset containing spontaneous and naturalistic speech in order to test the hypotheses at different sociolinguistic contexts. We have used this data to search for word-internal switches containing the phoneme /θ/ as well as pronoun-verb switch instances. We take a qualitative approach to find out whether these switch instances occur, and if so, how they are distributed in the Basque-Spanish code-switching data.

4. Results

4.1. Phoneme /θ/ in intraword code-switches

Several instances of word internal switches have been found to involve the phoneme /θ/ (transcribed with letter *c* in the examples below). These are composed of Basque affixes and Spanish roots, either nouns (1-2), adjectives (3-5) or verbs (6-8):

(1) Gure *cerebru-a* da multifuntzionala.
brain-DET
'Our brain is multifunctional.'

(2) Abuztuan 1ian itxi zan *censu-a*.
roll- DET
'The electoral roll was closed on August 1.'

(3) Bai, frogatuta dago. *Cientifico-a*.
scientific-DET
'Yes, it is proven. Scientific.'

(4) Ni naz oso *polifacetik-i* eta dana kontrolaten dot.
multifaceted- DET
'I am very multifaceted and control everything.'

(5) Ta oain geoz ta obeto, o sea, eztakit, *conciente-ago*.
conscious-CMPR
'And now getting better and better, I mean, I don't know, more conscious.'

(6) *Coincidi-ru* ezkero, de cine.
coincide-PTCP
'Awesome, if they coincide.'

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(7) Joe, *emociona-ten* naz apur bet, e!
get_excited-DUR
'I get excited quite a bit!'

(8) Nik uste *cancela-u* in bihar dauiela.
cancel-PTCP
'I think they are going to cancel it.'

Together with these switch instances, counterparts occur with the adaptation of the phoneme /θ/ to native Basque sounds /s̻/, /ʂ/ or /ʈʂ/. These can be seen by comparing previous (1), (6), (7) and (8) with the following examples (9-12), where identical lexical roots have now undergone a sound change (/s̻/ transcribed with *z* and /ʈʂ/ with *tz*):

(9) Nik rosado y verde, *zerebru-a* nahastuta.
brain-DET
'I reddish and green, the brain confused.'

(10) Neska horreikin *koinzidi-ru* ginun Portugalen.
coincide-PTCP
'We met those girls in Portugal.'

(11) Neure aita *emoziona* itxen zan.
get_excited.PTCP
'My dad would get excited.'

(12) Ez dotzue *kantzela-u* ez ezer?
cancel-PTCP
'Haven't they cancelled it or anything?'

Words with phonological adaptation are more frequent than the equivalent forms without adaptation, although it is difficult to quantify given the large number of forms that could be classified as borrowings. Nonetheless, examples without adaptation are also abundant and can be found in the media-based part of the corpus as well as in the text-message-based database representing the unmonitored and spontaneous speech, across all speakers.

4.2. Switches between pronoun and verb

Switches from Basque to Spanish have been found between the pronoun and the main verb, although only in the first (13-19) and second person (20) pronouns mostly in singular, either with the ergative (13-17) or absolutive (18-20) case markers:

(13) Zuek ez dakitx baina *nik* *paso*, no doy nada.
1SG.ERG ignore-PRS.1SG
'I don't know about you, but I don't care, I don't give anything.'

(14) Joe, pues *nik* en una boda la *quería* al lado a esa.
1SG.ERG want-PST.1SG
'Well, I would like her to be next to me in a wedding.'

(15) *Nik* *voto* por Irati.
1SG.ERG vote-PRS.1SG
'I vote for Irati.'

(16) *Nik* ostegunien un kuku *podría* hacer.
1SG.ERG can-IRR.1SG
'I could make a quick visit on Thursday.'

(17) *Nik* badaezpada, *hago* testamento.
1SG.ERG make-PRS.1SG
'I make a will, just in case.'

(18) Zeozer in bier bada, *ni* *me* *apunto*.
1SG.ABS 1SG.OBJ join-PRS.1SG
'If there is something to be done, I'm in.'

(19) *Ni* 14:30tan *salgo* de currar directo.
1SG.ABS leave-PRS.1SG
'I get out of work at 14.30.'

(20) Galdetu ea nola ikusten duten zuk egindakoa, no *seas* perfecta *zu*.
be.IMP.2SG 2SG.ABS
'Ask how they see what you have done, don't be perfect.'

No examples have been found in the other switch direction, i.e. Spanish pronouns followed by with Basque main verbs.[2] Despite the presence of cases with Basque pronouns combined with Spanish main verbs, constructions where both elements belong to the same language are more common, either forming code-switching at other positions (21-22) or remaining monolingual in Spanish (23) or Basque (24):

(21) *Yo* *hubiera* *dicho* etzauzela Eibarren.
1SG.NOM IRR.1SG say.PTCP
'I would have said you were not in Eibar.'

(22) *Yo* *me* *reservo*, errebentauta nau.
1SG.NOM 1SG.OBJ save-PRS.1SG
'I will save myself, I am exhausted.'

(23) *Yo* *me* *he* *quedado* bajo mínimo.
1SG.NOM 1SG.OBJ PRF.1SG be_left.PTCP
'I have ended up with very few.'

(24) *Nik* be hori *pentza-u* *dot*.
1SG.ERG think-PTCP AUX.PRS.1SG
'I have thought that too.'

[2] The same pattern has been observed in a more recent work, both for Basque-Spanish and Basque-French data (Epelde & Oyharçabal 2020: 87).

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5. Discussion

Contrary to the predictions following from the MLF and Minimalist models, the interdental phoneme /θ/ and pronoun-verb switch boundaries have been attested in the code-switching data presented in this study. In the following lines we discuss the results for each feature separately.

5.1. Discussion of /θ/ in word internal code-switches

The presented results seem to contradict the prediction made for word internal switches following the Minimalist Approach by MacSwan, as phoneme /θ/ has been found to occur in positions disallowed by the PFIC. Similar counterexamples are reported in MacSwan (2005) and MacSwan & Colina (2014), but such cases are explained away by considering them phrase-level affixation cases, where the PFIC would not apply. Part of the data presented here could be reconciled with the hypothesis if such a phrase-level affixation nature could be argued to them. However, this does not seem the case for at least the following examples presented:

(7) Joe, *emociona-ten* naz apur bet, e!
get_excited-DUR
'I get excited quite a bit!'

(8) Nik uste *cancela-u* in bihar dauiela.
cancel-PTCP
'I think they are going to cancel it.'

In particular, it is interesting to compare (7) with the following classic example by Poplack in MacSwan (2005):

(25) *Juan está eat-iendo.
Juan be.3SG eat-DUR
'Juan is eating.' (MacSwan 2005: 71)

In both (7) and (25), the switched element is a verb stem and inflectional morphology has been added to mark the durative aspect. Following MacSwan, (25) is ungrammatical because the word contains phonological material from different languages and the derivation crashes at Spell-Out as each morpheme cannot be sent to separate PF systems. However, the result in (7) is not ungrammatical, even though the same problem could be expected.

A way in which the examples such as (7) and (8) could be congruent with PFIC would be considering phoneme /θ/ to be part of the Basque phonological system as a result of language change over the last decades. Indeed, Oñederra *et al.* (2014) point out that /θ/ has recently been introduced in the sound systems of early and balanced bilingual speakers in the Basque Country. Under this account, the Basque phonological system would suffice in the mapping of intraword switches and thus their grammaticality could be explained. The fact that there is still a tendency to apply originally Basque sounds (whereby /θ/> s̻/, /s̺/ or /t̻s̻/) would suggest that such a change is still an ongoing process and that speakers often prefer a native sound due to articulatory easiness or sensibility towards avoiding foreign features.

Under this explanation, the intraword code-switching cases reported here would not involve phonological mixing strictly. This account would be favored by findings by Stefanich *et al.* (2019), where 57 intraword code-switching cases from different languages are analyzed to conclude that bilinguals do not switch between their phonological systems within words. Nonetheless, the language pairs they analyzed involved diverging phonological systems and it is unclear whether the conclusions would generalize to phonologically more similar languages. The results reported in the present study suggest that language change dynamics may also be involved in the mixing of phonological systems in intraword position in language pairs such as Basque and Spanish. Other factors such as bilingual profile types or context-specific requirements would need to be studied as well in order to better account for the distribution of sound patterns in code-switching between phonologically similar languages.

5.2. Discussion of pronoun-verb switches

Contrary to the predictions by both the MLF model and Minimalist Approach, code-switching has been found to occur between subject pronouns and verbs in Basque-Spanish data.

In the Minimalist Approach, van Gelderen & MacSwan (2008), despite arguing for a general ban on code-switching between pronouns and verbs, explain that exceptions may be found in cases such as the ones in the Spanish–Nahuatl data, where pronoun-verb switches are allowed in third person forms, although not in the rest:

(26) *Yo nikoas tlakemetl
yo ni-k-koa-s tlake-me-tl
I 1s-3os-buy-FUT[3] garment-PL-NSF
'I will buy clothes.'

(27) *Tú tikoas tlakemetl
tú ti-k-koa-s tlake-me-tl
you.SG 2s-3os-buy-FUT garment-PL-NSF
'You will buy clothes.'

(28) El kikoas tlakemetl
él ø-ki-koa-s tlak-eme-tl
he 3s- 3os-buy-FUT garment-PL-NSF
'He will buy clothes.' (van Gelderen & MacSwan 2008: 772)

Van Gelderen and MacSwan (2008) derive the grammaticality of (28) from the fact that the subject agreement morpheme is null in the third person in Nahuatl verbs, which results in the verb not entering in the agreement relation with the pronoun and consequently avoiding a mixed head. Nonetheless, this account fails to ex-

[3] In the glosses for these Nahuatl examples, the following specific abbreviations apply, consistent with the abbreviations in the original article: 1S = First person subject agreement (unspecified for number); 2S = Second person subject agreement (unspecified for number); 3S = Third person subject agreement (unspecified for number); 3os = third person singular object agreement; NSF = noun suffix (sometimes called absolutive).

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plain the pronoun-verb switch pattern found in Basque-Spanish data, since switches at this position are allowed with Spanish verbs containing overt subject agreement morphemes:

(17) *Nik* badaezpada, *hago* testamento.
1SG-ERG make-PRS.1SG
'I make a will, just in case.'

The MLF model equally fails to account for the data presented here. Myers-Scotton and Jake (2009) review some instances of code-switching in case-marking languages and state that case-markers are outsider morphemes governed by the ML, as seen in the following Turkish-Dutch data, in which the noun *terras* 'terrace' in Dutch receives locative case from the ML, Turkish:

(29) evet, terras-ta oturuyorlar
yes cafe-LOC sit.PROG.3PL
'Yes, they are sitting at the outdoor cafe.' (Myers-Scotton & Jake 2009: 347)

This is however not the case in the Basque-Spanish data analyzed in this study, where the ergative case markers come from the EL language Basque, as seen in (14-18). Thus, the assumptions of the MLF model for case-marking languages in code-switching do not explain the pronoun-verb switch patterns in Basque-Spanish and further make the present data incompatible with the model in yet another way.

In the light of the evidence presented here, we suggest that the case marking system may play a role in explaining the pronoun-verb switch patterns found in Basque-Spanish data. Basque pronouns are allowed with Spanish verbs if they are marked following the ergative alignment. In such cases, Spanish verbs seem to enter in an ergative-type agreement with their subjects. The opposite direction does not seem to be accepted, given that Spanish pronouns are not found with Basque verbs.[4] Examples such as (30) are absent in the MELAN corpus and seem to be judged as ungrammatical by native speakers:

(30) **Yo* korapilo bat *egin* *dut*.
1SG.NOM make AUX.PRS.1SG
'I have made a knot.'

Thus, the current evidence suggests that code-switching between pronouns and verbs is only allowed when the ergative system prevails and the subject pronoun agrees with the verb following the ergative alignment. Other ergative-nominative language pairs would need to be studied in order to ascertain whether the case marking plays a role in the switch patterns beyond this particular language pair, but the evidence provided in this study seems to point in that direction. So far, very few studies have analyzed code-switching involving ergative languages (Khan & Muysken 2014; Stoll *et al.* 2015) and none of them has focused on the morphosyntactic patterns resulting from the mixing of case marking systems.

[4] As we have pointed out earlier, French pronouns are not found with Basque verbs either (Epelde & Oyharçabal 2020: 87).

6. Conclusion

We have analyzed two features in Basque-Spanish code-switching data in order to test the predictions by the MLF model and the Minimalist approaches, and to see whether their constraints can generalize to typologically different language pairs.

At the phonological level, the results for intraword switches indicate that the Spanish phoneme /θ/ can be either preserved or adapted to a Basque fricative sound when combining with Basque affixes. This twofold tendency seems to be a consequence of an ongoing sound change by which /θ/ is becoming part of the Basque phonological system. Thus, we propose that Basque-Spanish phonological mixing at this level conforms to the predictions of the PFIC hypothesis in the Minimalist Approach, given that no different phonological systems would be necessarily involved. In turn, this finding suggests that code-switching signals phonological change and can measure the extent to which a phoneme has been introduced in the language system in bilingual communities.

As for the pronoun-verb switches, the present results show that Basque pronouns are allowed to combine with Spanish verbs. This result contradicts both the PFIC hypothesis and the System Morpheme principle by the MLF, as they do not allow switches between pronouns and verbs, especially in those cases where case marking is involved. We suggest that the ergative case marking in Basque could at least partially explain the grammaticality of this switch pattern, although evidence from other ergative languages as well as data from experimental methodologies is needed to shed more light on this topic (Bellamy *et al.* 2022). Further studies of case-marking languages in code-switching should also contribute to improving the current theoretical frameworks to account for a typologically more diverse set of data.

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