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# Beyond the subject DP versus the subject pronoun divide in agreement switches* 

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## 1. Introduction

The main objective of this paper is to contribute to the characterization of $\mathrm{SU}(\mathrm{bject})-\mathrm{V}$ (verb) codeswitching restrictions. Specifically, we aim at determining whether all English-Spanish subject-verb switches are created equal; that is, whether the categorial nature of the subject (DP or pronoun, as in $1 \mathrm{a}-2 \mathrm{a}$ versus $1 \mathrm{~b}-2 \mathrm{~b}$ ) or the grammatical person (first person, second person or third person pronominal subjects, as in $1 \mathrm{~b}-2 \mathrm{~b}$ versus $1 \mathrm{c}-2 \mathrm{c}$ ) would make English-Spanish bilinguals perceive these switches differently:
(1) a. El niño talks about dogs
[The boy talks about dogs]
b. Él talks about dogs
[He talks about dogs]
c. Yo talk about dogs
[I talk about dogs]
(2) a. The boy habla de los perros
[The boy talks about dogs]
b. He habla de los perros
[He talks about dogs]
c. I hablo de los perros
[I talk about dogs]

DP SU-V switch
pronominal SU-V switch ( $3^{\text {rd }}$ p.s.)
pronominal SU-V switch ( ${ }^{\text {st }}$ p.s.)

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Previous research intended to characterize the categorial nature of the subject in SU-V switches (e.g. Gumperz 1976, Lipski 1978, Jake 1994, MacSwan 1999, 2000 , 2005 and 2009, van Gelderen \& MacSwan 2008, Koronkiewicz 2012, MacSwan \& Colina in press) has shown that while DP subjectverb switches are both produced and accepted, subject pronoun-verb switches do not have the same status in the bilingual grammar (van Gelderen \& MacSwan 2008). It has also been argued (MacSwan 1999 and 2000) that production and acceptance of subject pronoun-verb switches by bilinguals varies. Specifically, while first and second person subject-verb switches may not occur, third person switches are considered to be well-formed, something that is attributed to a difference in the feature matrixes of the languages involved in code-switching.

In this paper, we discuss code-switching acceptability judgment data elicited from a group of child 2L1 (simultaneous Spanish L1 - English heritage) bilinguals, a group of child English L2 (subsequent Spanish L1 - English L2) bilinguals and a group of adult L2 (subsequent Spanish L1 - English L2 ). We further investigate the categorial nature of the subject in subject-verb switches as well as the status of the three grammatical persons in pronominal subject-verb switches. We show that: (i) there are significant differences between subject DPs and subject pronouns both in English and Spanish; (ii) there are significant differences between both English and Spanish third person standard position pronouns and first and second person standard position pronouns; (iii) Spanish third person standard position pronouns differ significantly from their English counterparts with respect to code-switching; (iv) Spanish third person standard position pronouns are closer to DPs than to their first and second person counterparts; and (v) differences between the data from 2L1 and L2 bilinguals point to the fact that these groups do not perceive language properties in the same way when it comes to judging the acceptability of SU-V switches; more specifically, that the need to value person agreement features (i.e. the agreement version of the analogical criterion) is what guides these speakers' code-switching preferences. We analyze these results at the light of linguistic proposals that place features and the way these are valued in the different languages as the locus of interlinguistic differences (Pesetsky \& Torrego 2001, van Gelderen \& MacSwan 2008, Liceras et al. 2008, Koronkiewicz 2012). Our specific aim is to provide an account of the issues that underlie code-switching preferences both across structure-types and across groups of participants.

This paper is organized as follows: section 2 presents previous minimalist accounts on SU-V switches which lead us to formulate the research questions and hypotheses that appear in section 3; a description
of the participants and the task we used to elicit the data are shown in section 4 ; sections 5 and 6 include our results as well and the corresponding discussion; and our conclusions appear in section 7.

## 2. Minimalist accounts of $S U-V$ switches

### 2.1. Subject category: DPs versus pronouns

More than three decades ago, researchers such as Timm (1975), Gumperz (1976) or Lipski (1978), among others, stated that while DPs code-switch, pronouns are unable to appear in code-switched structures. However, not all pronouns across languages had the same status and, in this respect, Jake (1994) differentiated 'grammatical' (English-like) subject pronouns from 'lexical' (French or Arabic) strong pronouns showing that it is only the former that cannot code-switch, as the acceptability of the examples in (3) reveals:
(3) a. Moi dxlt
[ Frrench [went-in] $]_{\text {Arabic }}$ ]
(French/Moroccan Arabic)
b. Nta tu vas travailler
[YouArabic [you go work] French]
(French/Moroccan Arabic)
c. Humaya vergelijken de mentaliteit met de islam
[They Arabic [compare the mentality with the islam]Dutch ] (Dutch/Moroccan Arabic)

More recently, van Gelderen and MacSwan (2008), MacSwan (2009) and MacSwan and Colina (in press) have provided a Minimalist account of how the categorial nature of the subject determines the viability of subject-verb switches by bilingual speakers so that switching between the DP subject and the verb in (4) is a grammatical option while switching between the subject pronoun and the verb as in (5) is ungrammatical:
(4) That teacher odia los exámenes [That teacher hates exams]
(5) *She odia los exámenes [She hates exams]

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As shown in (4), lexical DPs check features in [Spec TP] while pronouns in (5) undergo D-to-T movement. Van Gelderen and MacSwan (2008) consider the switch in (5) to be ungrammatical because it results in a mixed-language complex head and so violates the P (honological) F (orm) Disjunction Theorem which rules out code-switching below $\mathrm{X}^{\mathbf{o}}$. However, in the case of strong pronouns (Cardinaletti \& Starke 1999) such as the French or Moroccan Arabic strong pronouns in (3) above, the PF Interface Condition would not be violated because, under van Gelderen and MacSwan's (2008) proposal, they would behave as DPs.

Van Gelderen and MacSwan's (2008) analysis treats Spanish pronouns like English pronouns and so they consider cases like (6a) and (6b) to be ill-formed:
(6) a. *Yo fight all the time [I fight all the time]
(Spanish subject pronoun + English verb)
b. *They zeggen te veel
[They say too much]
(English subject pronoun + Dutch verb)

However, this is not widely accepted and (at least some) Spanish pronouns are considered to be like French or Moroccan Arabic strong pronouns (Alexiadou \& Anagnostopoulou 1988, Kato 1999, Koronkiewicz 2012). This means that not all Spanish pronouns may have the same status in the grammar. In this respect, Koronkiewicz (2012) calls for further refinement and an expansion of Cardinaletti and Starke's (1999) strong, weak and clitic pronominal systems. His proposal is based on the different code-switching behavior attributed to standard subject position pronouns, as in (7), versus non-standard subject position pronouns (prosodically stressed, coordinated or modified), as in (8):

## (7) ??? Ella hates exams

[She hates exams]
(8) a. ELLA hates exams
prosodically stressed
[SHE hates exams]
b. Ella y Marsias hate exams
coordinated
[She and Marsias hate exams]
c. La de sintaxis hates exams modified
[Her _ of syntax hates exams]

Under Koronkiewicz's (2012) approach, only Spanish strong pronouns (8a) would have a different status in S-V switches, while Spanish weak pronouns (7) would yield ill-formed switches like those in (6). According to this distinction, we would expect the same code-switching differences between standard (weak) and non-standard (strong) position Spanish and English pronouns.
2.2. Pronoun type: $1^{\text {st }}-2^{\text {nd }}$ person versus $3^{\text {rd }}$ person

Van Gelderen and MacSwan's (2008) proposal makes no prediction with respect to potential differences among Spanish first, second and third person pronouns and so we would expect the same code-switching behavior for the three. In fact, they treat all switches between a Spanish subject pronoun and an English verb in the same way, as the examples in (9) show:
(9) a. *Yo fight all the time
[I fight all the time]
b. *Ellos fight all the time
[They fight all the time]
c. *Ella fights all the time
[She fights all the time]
(van Gelderen \& MacSwan 2008, p. 774)

However, they do refer to MacSwan (1999) who deals with the asymmetry in the switch between Spanish pronouns and Nahuatl verbs in that first and second person switches are ill-formed, (10a and 10b), while third person ones are well-formed, (10c):
(10) a. *Yo nikoas tlakemetl
[I will buy clothes]
b. *Tu tikoas tlakemetl
[You will buy clothes]
c. Él kikoas tlakemetl

> [He will buy clothes]

They attribute this asymmetry to Nahuatl verb agreement affixes: since Nahuatl third person verbs have no agreement affixes, they do not enter into an agreement relation with T to check features and so no PF Interface Condition violation would occur, contrary to (5) above.

In order to account for the contrasting facts in (9) and (10) and to determine the code-switching status of Spanish-English pronominal SU-V switches, we propose to take as a point of departure Pesetsky and Torrego's (2001) double feature valuation mechanism concerning nominative case and agreement, as well as Liceras et al.'s (2008) double gender feature valuation mechanism for code-switching in concord structures captured in the so-called analogical criterion. Under Pesetsky and Torrego's (2001) proposal, nominative case is seen as an uninterpretable T feature on D and agreement as an uninterpretable D feature on T. Liceras et al. (2008) assume a parallel relation between inherent lexical Gender (Gen) and Gender Agreement ( $\Phi$ ), so that Gender is seen as an inherent N feature on D and Gender Agreement as an inherent D feature on N , as represented in (11):


Liceras et al. (2008) have shown that the need to implement this double gender feature valuation mechanism underlies code-switching preferences in the case of concord structures such as those in (12) because simultaneous English-Spanish bilinguals and Spanish dominant bilinguals systematically reject clear-cut violations of the analogical criterion, as in (12b), where the Spanish feminine determiner occurs with an English noun whose corresponding Spanish translation is a masculine noun: ${ }^{1}$
a. La house
[+analogical criterion]
[The-fem. house: Spanish casa-fem.]
b. La book
[The-fem. book: Spanish libro-masc.]

We would like to propose that this code-switching formalization of Pesetsky and Torrego's (2001) double feature valuation mechanism could also be extended to SU-V switches. That is, parallel to the concord version of the analogical criterion in (12), SU-V switches could be formally analyzed on the basis of an agreement version of the analogical criterion. The relevant features are nominative case and person agreement and their distribution, as in Pesetsky and Torrego's (2001) proposal, would be as follows: nominative case (NC) involves an uninterpretable Tense feature on D (i.e. subject bears uNC) which would receive an interpretation if it were part of T (i.e. verbal inflection, more specifically T , bears interpretable NC feature); agreement ( $\Phi$ ) involves an uninterpretable $\Phi$-feature on T (i.e. T bears $u \Phi$ feature) which has no semantic interpretation as part of TP but would receive an interpretation if it were part of a nominal (i.e. subject bears interpretable $\Phi$ feature). This is spelled out below for English and Spanish non-switched and switched SU-V structures.

The examples in (13) and (14) show how the SU-V double feature valuation mechanism would take place in English and Spanish non-switched structures with standard position (i.e. weak) pronouns:

| (13) a. Yo | le-o |
| :---: | :---: |
| [I | read] |
| b. Tú | lee-s |
| [You | read] |
| [uNC] [Ф] | [NC] [uФ] |
| c. Él | lee-Ø |
| [ He | reads] |
| [uNC] [Ф] | [NC] [uФ] |

In Spanish $1^{\text {st }}$ and $2^{\text {nd }}$ person SU-V structures, the uninterpretable nominative case feature ([uNC]) on the subject pronoun would be valued on the interpretable one present on the Spanish verb ([NC]); likewise, the uninterpretable person agreement feature on V would be valued on the interpretable one on the subject. This double feature valuation mechanism has a phonological realization. With regards to
the $3^{\text {rd }}$ person (13c), it proceeds in the same way although no phonological realization appears, as marked by the lack of a person agreement marker in the Spanish verb.

In English, the valuation of the uninterpretable nominative case feature proceeds as in Spanish. In the case of $1^{\text {st }}$ and $2^{\text {nd }}$ person SU-V structures, there is no phonological reflex of the valuation mechanism. In the $3^{\text {rd }}$ person, as in (14c), the $-s$ marker appears in the English verb:

| (14) | a. I | read |
| ---: | :--- | :--- |
| b. You | read |  |
|  | $[\mathrm{uNC}]$ | $[\mathrm{NC}]$ |
| c. | He | read-S |
|  | $[\mathrm{uNC}]$ | $[\mathrm{NC}]$ |

In Spanish-English SU-V switches, the person agreement valuation mechanism would not be possible for $1^{\text {st }}$ and $2^{\text {nd }}$ person switches, as in (15a) and (15b), because no such feature appears in the English verbs:

| (15) a. Yo | read-ø |
| :---: | :---: |
| [I | read] |
| a. Tú | read-ø |
| [You | read] |
| [Ф] |  |
| c. Él/ella | read-S |
| [He/she | reads] |
| [Ф] | [ ] // [uФ] |

For $3^{\text {rd }}$ person switches (15c), the $-s$ marker in the English verb would allow the person agreement feature in the subject to be valued if the $-s$ marker 'inherits' the corresponding feature that Spanish verbs overtly express in the agreement markers. This 'inheritance' is an instance of the analogical criterion in that English $-s$ maker could be perceived as the locus of the uninterpretable person agreement feature (uФ) that Spanish verbs have, as in (13a) and (13b). That is, the phonological
realization in English $3{ }^{\text {rd }}$ person verbs (the $-s$ marker in 15c) could make bilinguals transfer into the English verb the person agreement feature Spanish verbs have in spite of the fact that it is precisely the $3^{\text {rd }}$ person the one that does not have a phonological realization (as in 13c versus 13a and 13b). This makes Spanish-English $3^{\text {rd }}$ person SU-V switches different from $1^{\text {st }} 2^{\text {nd }}$ ones where no such phonological realization on the English verb occurs. This mirrors the concord facts in (12a) where the English nouns are assigned a gender agreement feature as the English verb here is assigned a person agreement feature. We refer to this as the person agreement version of the analogical criterion as proposed by Liceras et al. (2008).

In English-Spanish SU-V switches, no valuation of the person agreement feature in the Spanish verb would be possible due to lack of this feature in the English subject pronouns, as in (16a) and (16b):

| a. I | le-o |
| :---: | :---: |
| [I | read] |
| b. You | lee-s |
| [You | read] |
|  | [uФ] |
| c. $\mathrm{He} / \mathrm{she}$ | lee-Ø |
| [He/she | reads] |
|  | [uФ] |

The mechanisms depicted in (15) and (16) point to a possible asymmetry between $1^{\text {st }}-2^{\text {nd }}$ person pronouns and $3{ }^{\text {rd }}$ person pronouns in SU-V switches. In the case of Spanish-English switches, the Spanish pronoun (15c) can value its agreement feature on the English verb (which is morphologically marked with an $-s$ ). This would imply that the need to use the agreement feature born by the Spanish pronoun into a feature valuation mechanism (to abide by what we propose as an $\mathrm{SU}-\mathrm{V}$ version of the analogical criterion) supersedes the PF Interface Condition. In the case of English-Spanish switches, the fact that Spanish $3^{\text {rd }}$ person verbs lack an overt marker could make these switches less "offensive" than $1^{\text {st }}$ and $2^{\text {nd }}$ person ones where the agreement feature has a morphological correlate. We will capture these differences in our research questions below.

## 3. Research questions and hypotheses

The Minimalist account of SU-V switches presented above suggests two possible asymmetries in the case of English-Spanish SU-V switches: one concerning the categorical nature of the subject element (DP versus pronoun) and one concerning the grammatical person of the pronoun involved in pronominal SU-V switches ( $1^{\text {st }}, 2^{\text {nd }}$ or $3^{\text {rd }}$ person). In order to analyze whether these asymmetries are so perceived by bilingual speakers, the following research questions and their corresponding hypotheses have been formulated and will be then tested against experimental data:

1. Will the categorial nature of the subject be reflected in a difference between DP versus pronominal subject in SU-V agreement sequences in both English and Spanish? [examples 4 versus 5 above]. Hypothesis \#1. DP+V sequences would differ from standard pronoun+V ones because there is no PF Interface Condition violation, as proposed by van Gelderen and MacSwan (2008) and reformulated in MacSwan (2009) and MacSwan and Colina (in press). Also, and since all pronouns considered are standard position pronouns in both languages, no distinction would appear between English pronouns and Spanish pronouns, as predicted by van Gelderen and MacSwan (2008) and Koronkiewicz (2012).
2. Will the need to value the person agreement feature $(\Phi)$ of Spanish $3^{\text {rd }}$ person pronouns on the verb be reflected in a difference between Spanish $3^{\text {rd }}$ person pronouns and English $3{ }^{\text {rd }}$ person pronouns? [examples 15 c versus 16 c above].

Hypothesis \#2. Spanish $3{ }^{\text {rd }}$ person sequences would have a different status from English $3{ }^{\text {rd }}$ person ones because the double feature valuation mechanism could take place if an uninterpretable feature is assigned to the English verb (relying on the -s affix) which would be valued on the Spanish $3{ }^{\text {rd }}$ person subject pronoun, as suggested by the SU-V agreement version of the analogical criterion.
3. Will the need to value the person agreement features be reflected in a difference between Spanish $3^{\text {rd }}$ person pronouns versus Spanish $1^{\text {st }}$ and $2^{\text {nd }}$ person pronouns? [examples 15 a and 15 b versus 15 c ]. Hypothesis \#3. Spanish $3^{\text {rd }}$ person sequences would be different from Spanish $1^{\text {st }}$ and $2^{\text {nd }}$ person ones if the presence of English -s leads to the assignment of the corresponding uninterpretable feature to the English verb so that the double feature valuation mechanism would take place.
4. Will the need to value the person features be reflected in a difference between English $3{ }^{\text {rd }}$ person pronouns versus English $1^{\text {st }}$ and $2^{\text {nd }}$ person pronouns? [examples 16 a and 16 b versus 16 c].

Hypothesis \#4. English $3^{\text {rd }}$ person sequences would be different from English $1^{\text {st }}$ and $2^{\text {nd }}$ person ones if, even though no feature valuation applies in either case, the absence of this mechanism correlates with a sequence where the person agreement feature cannot be valued but does not have a morphological realization (Spanish $3^{\text {rd }}$ person verb) rather than with a sequence where this feature cannot be valued but does have a morphological realization (Spanish $1^{\text {st }}$ and $2^{\text {nd }}$ person verb).

## 4. Methodology

### 4.1. Participants

In order to address the research questions on English-Spanish SU-V switches above, we have tested two groups of bilingual children and one group of bilingual adults:

TABLE 1. Participants

| Group | Languages |  | Mean age | Age <br> range | \# Participants |
| :--- | :--- | :--- | :--- | :--- | :--- |
|  | English | Spanish |  | $6-12$ | 17 |
| 2L1 | L1 (heritage) | L1 | 9,7 | $10-13$ | 18 |
| L2-children | L2 (immersion) | L1 | 10,9 | $20-30$ | 27 |
| L2-adults | L2 | L1 |  |  |  |

The child participants were a group of L1 Spanish - L1 English heritage bilingual children living in Spain and a group of L1 Spanish - L2 English bilingual children studying English at an immersion school in Spain. The adult group consisted of L1 Spanish - L2 English bilinguals studying English at a Spanish university. None of the three groups are immersed in a code-switching community since in all three cases the language spoken in the community is only Spanish. In the case of the heritage group, English is restricted to the family context.

### 4.2. Data elicitation

We designed an acceptability judgment task in which the participants have to read a short dialogue related to a picture, as in Figure 1, and then rate the answer to the question by means of emoticon faces:

## FIGURE 1. Sample experimental item



While adults completed a written version of the acceptability judgment task, children did an oral version of the same task.

The acceptability judgment task includes 66 short dialogues like the one in Figure 1 out of which 24 contain the experimental items (SU-V agreement switches), 24 are distractors, 10 are fillers and 8 are practice items.

The experimental items are divided into four different structures, illustrated in (17): 6 English standard position pronominal subject + Spanish verb (2 cases per grammatical person); 6 Spanish standard position pronominal subject + English verb (2 cases per grammatical person); 6 English DP subject + Spanish verb; and 6 Spanish DP subject + English verb:
a. I quiero este vestido
[I want this dress]
b. She lee un libro
[She reads a book]
c. Tú cook every day
[You cook every day]
d. Él runs many kilometers
[He runs many kilometers]
e. The boy bebe agua
[The boy drinks water]
f. The lady toca el violín
[The lady plays the violin]
g. El niño paints landscapes

SP DPs
[The boy pains landscapes]
h. La señora hugs her sister
[The lady hugs her sister]

Practice items include code-switches at different grammatical points, as in (18):
a. La jirafa está near the trees
[The giraffe is near the trees]
b. Esto es un fishito copula verb + PP
[This is a little fish; fish + Spanish diminutive -ito]

Fillers are deverbal compounds in English and Spanish, some of which are possible and some nonpossible, as in (19): ${ }^{2}$
(19) a. Es un salvavidas
[It's a lifesaver]
b. *He is a fighter fire

Distractors are code-switched copulative structures (DP subject + adjectival predicate), as the ones in (20):
a. La mesa is nice
[The table is nice]
b. The table es bonita
[The table is nice]

## 5. Results

### 5.1. Child participants

The results obtained from the two groups of bilingual children appear in figures 2 and 3. In the case of the group of 2L1 (heritage) children, their preferences with regards to the categorial nature of the subject appear in Figure 2.1.:

FIGURE 2.1. 2L1 children: DP versus pronoun SU-V switches


Participants prefer DP-V switches over pronoun-V switches in both Spanish and English. The statistical analysis (ANOVA) shows that there is no main effect for language $(\mathrm{F}(1,10)=.411, p=.536)$ but there is a main effect for subject type $(\mathrm{F}(1,10)=9.965, p=.010)$.

When comparing $1^{\text {st }}-2^{\text {nd }}$ person subject pronouns versus $3^{\text {rd }}$ person ones (Figure 2.2.), 2L1 children show a preference for $3^{\text {rd }}$ person pronouns over $1^{\text {st }}-2^{\text {nd }}$ person ones in Spanish, although the differences do not reach significance $(\mathrm{F}(1,10)=4.26, p=.062)$. No main effect for language appears $(\mathrm{F}(1,10)=$ .958, $p=.873$ ):

FIGURE 2.2. 2L1 children: $1^{\text {st }} \mathbf{2}^{\text {nd }} p$. versus $3^{\text {rd }} p$. pronoun $S U-V$ switches


The results corresponding to the L 2 children are similar to the 2 L 1 's with respect to the categorial nature of the subject, as shown in Figure 3.1.:

FIGURE 3.1. L2 children: DP versus pronoun SU-V switches


Participants prefer DP-V switches over pronoun-V switches in both Spanish and English. And although there is no main effect for language $(\mathrm{F}(1,17)=3.746, p=.070)$, there is a main effect for subject type $(\mathrm{F}(1,17)=52.626, p<.001)$.

In the case of the grammatical person in the pronoun switches L2 children prefer $3^{\text {rd }}$ person Spanish pronouns over the other conditions, while in the case of English pronouns no difference between the three grammatical persons appears, as shown in (Figure 3.2.):

FIGURE 3.2. L2 children: $1^{\text {st }}-2^{\text {nd }} p$. versus $3^{\text {rd }} p$. pronoun $S U-V$ switches


The statistical analysis on the data in Figure 3.2. shows a main effect for language $(\mathrm{F}(1,17)=9.736$, $p=.006$ ) and a main effect for person $(\mathrm{F}(1,17)=19.157, p<.001)$, attributed both to the overall preference for Spanish $3^{\text {rd }}$ person pronouns in these S-V switches.

These results point to the different status of DPs and pronouns in SU-V switches for both groups of children as well as to a preference for Spanish $3^{\text {rd }}$ person pronominal subject-V sequences. No significant differences are found between the two groups (2L1 and L2) in any condition.

### 5.2. Adult participants

The data from the group of L2 adult participants are displayed in figures 4. As in the case of both groups of children, L2 adults prefer DP-V switches over pronoun-V switches in both Spanish and English (Figure 4.1.), and again there is no main effect for language $(\mathrm{F}(1,26)=0.573, p=.456)$ and a main effect for subject type appears $(\mathrm{F}(1,26)=44.670, p<.001)$ :

FIGURE 4.1. L2 adults: DP versus pronoun SU-V switches


As for person (Figure 4.2.), L2 adults prefer $3^{\text {rd }}$ person pronoun switches (main effect for person: $\mathrm{F}(1,26)=12.470, p=.002$ ) but, unlike it was the case with 2 L 1 and L 2 children, this tendency is seen in both languages:

FIGURE 4.2. L2 adults: $1^{\text {st }}-2^{\text {nd }} p$. versus $3^{\text {rd }} p$. pronoun $S U-V$ switches


The adult participants behave like the two groups of child participants when comparing languages since they also favor Spanish $3^{\text {rd }}$ person pronouns (main effect for language: $\mathrm{F}(1,26)=0.026, p=.873$ ).

## 6. Discussion

The results we have presented above allow us to address our initial research questions and hypotheses as follows.

With regard to our hypothesis \#1, acceptability data from the three groups of participants reflect a preference for $\mathrm{DP}+\mathrm{V}$ sequences over pronoun +V ones. In the line of van Gelderen and MacSwan (2008) MacSwan (2009) and MacSwan and Colina (in press), this could be attributed to the lack of a PF Interface Condition violation in the case of switches involving DPs (examples 4 and 5 above). This preference is seen in both English and Spanish so the status of the standard position pronouns in both languages seems to be perceived as similar by these bilingual speakers, as argued by Koronkiewicz (2012).

Hypothesis \#2 addresses the status of $3^{\text {rd }}$ person pronoun switches in Spanish versus English (examples 15 c versus 16 c above). The data from the three groups of speakers analyzed point in the same direction: a preference for Spanish $3^{\text {rd }}$ person standard position pronoun switches versus English ones (significant in the case of the two groups of English L2 speakers). This points to the importance of the double feature checking mechanism, in the case of the Spanish dominant bilinguals, which parallels Liceras et al's (2008) findings with respect to the analogical criterion in concord structures.

This preference for the analogical criterion in agreement structures also shows in the different perception of the three grammatical persons that reflect a different perception of the valuation mechanisms present in each case. Namely, there is a difference between Spanish $1^{\text {st }}-2^{\text {nd }}$ person pronoun switches and $3{ }^{\text {rd }}$ person ones (hypothesis \#3). As for Spanish $3{ }^{\text {rd }}$ person pronoun switches, the agreement version of the analogical criterion seem to hold for the three groups of speakers (both L2 speakers and 2L1 children) and with more strength in the L2 groups: L1 Spanish speakers assign an uninterpretable person agreement feature ( $[u \Phi]$ ) to the English verb (relying on the $-s$ affix) and value it on the Spanish $3^{\text {rd }}$ person interpretable counterpart ([Ф]) in the Spanish pronoun (example 15c above).

The difference between English $1^{\text {st }}-2^{\text {nd }}$ person pronoun switches and $3^{\text {rd }}$ person ones (hypothesis \#4) receives no confirmation in the results we have obtained since no distinction among the three grammatical persons appear. That is, a sequence where the person agreement feature cannot be valued but does not have a morphological realization ( $3^{\text {rd }}$ person Spanish verb forms) is not preferred over a
sequence where the person agreement feature cannot be valued but has a morphological realization ( $1^{\text {st }}$ $2^{\text {nd }}$ person Spanish verb forms). In other words in the case of English $3^{\text {rd }}$ person pronoun switches (example 16c above), neither the 2L1 nor the L2 speakers prefer the Spanish verb form that has no morphological marker (i.e. in the $3{ }^{\text {rd }}$ person) and, consequently does not require the implementation of the double feature checking mechanism.

Thus, following Liceras et al.'s (2008), we argue that, as it is the case with concord structures, with third person standard position pronouns, Pesetsky \& Torrego's (2001) double feature valuation hypothesis leads Spanish dominant bilinguals' intuitions when judging code-switching structures.

## 7. Conclusions

In this study we have used code-switching as a window to investigate how language is represented in the mind of the bilingual. We propose a formal account (i.e. the analogical criterion applied to agreement structures) as a framework to capture native speakers' intuitions independently of frequency of production. The acceptability judgment data indicate that the PF Interface Condition is clearly rooted in the mind of the bilingual. The data also show that bilinguals (more specifically Spanish dominant bilinguals) can 'relax' the requirements of the PF Interface Condition to value person agreement features (as it is the case with the analogical criterion in concord structures).

Our study has focused on two main issues regarding English-Spanish S-V switches. With respect to subject type, S-V switches involving DPs are perceived differently from standard position pronouns and are highly preferred over switches involving pronouns (as in van Gelderen \& MacSwan 2008). Regarding pronoun type, the need to value formal features (Liceras et al. 2008) in S-V switches makes Spanish-English bilinguals favor Spanish $3{ }^{\text {rd }}$ person pronoun sequences. In this case, our findings point to a relaxation of the PF Interface Condition requirement in order to value person agreement features, that is, in order to implement the agreement version of the analogical criterion.

Even though subject pronoun-V switches may seldom occur in spontaneous production, we interpret these results as evidence that spontaneous production and experimental data elicited via acceptability judgments are not at odds but rather tap different cognitive abilities (contra Valdés Kroff et al. 2011). Valdés-Kroff et al.'s (2011) work is concerned with the auditory processing of gender in EnglishSpanish code-switched DPs by examining and comparing production (i.e. naturalistic) and
comprehension data elicited via the eye-tracking methodology. They tested a group of code-switchers in the US and a group of non-code-switchers in Spain (although it is not clear whether these are L2 English speakers or English heritage speakers). In the US group, a preference for masculine as a default option appears and this is not seen in the Spanish group. They conclude that the gender of the article in code-switched DPs is processed differently by each group of participants and that only in the case of the US group, who are the ones exposed to the pattern attested in production data, comprehension data reflected the asymmetry found in production (i.e. that feminine gender is more restricted). This leads them to propose that in order to investigate code-switching, individuals who code-switch need to be investigated. In this respect, our acceptability judgment experiment accurately depicts how both the PF Interface Condition and the need to value formal features are rooted in the mind of the Spanish dominant English-Spanish bilinguals. However, the differences between balanced and non-balanced bilinguals (2L1 versus L1 Spanish-L2 English) point to the need to gather experimental data from code-switching communities to further explore how language is represented in the mind of these groups of bilinguals. What we would like to argue is that, as it is the case in the analysis of non-code-switched language, the analysis of data elicited via different techniques (e.g. naturalistic versus experimental, online versus off-line) as well as data gathered from different participant profiles (e.g. L2 versus L1, code-switchers versus non-code-switchers) could only but contribute to complete the picture (Gullberg, Indefrey \& Muysken 2009). For instance, and concerning acceptability judgment data, results from formal and informal judgment collection methods (Sprouse, Schütze \& Almeida 2013) have been shown to converge. However, it has also been shown that production and comprehension data may not converge (Jakubowicz et al. 1998, Jakubowicz \& Roulet 2004, 2008).

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[^0]Roca 1989, Harris 1991) and on the acquisition of Spanish (e.g. Franceschina 2001, White et al. 2004, Liceras et al. 2006, 2008, 2012).
${ }^{2}$ A reviewer wonders whether the incorporation of non-switched fillers could pose a methodological problem in that the non-switched structures could yield different results. In this respect, we would like to argue that there seems to be a consensus in that fillers, as opposed to distractors (which are also part of our study), involve a totally different structure from the one being tested. We chose as fillers non-switched deverbal compounds because they are an obvious and clear-cut different structure. As for results, possible compounds were rated significantly higher than non-possible ones for both languages and, of course, the results were more categorical than the ones obtained for code-switched sentences. This has always been the case with grammaticality judgments involving code-switching because it is obvious that prescriptive knowledge plays a role in experimental code-switching. However, what we have systematically argued (e.g. Liceras et al. 2008) is that it is not the degree of categorical judgment that is obtained but the significant difference between expected versus non-expected code-switches that is important.


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    ${ }^{1}$ Examples like el table (the-masc table-fem in Spanish) could receive two interpretations. It could be an instance of [-analogical criterion], as in (12b), where the uninterpretable gender feature carried by the Spanish determiner is masculine (uGen: masc.). Alternatively it could be the so-called masculine by default option where the gender feature of the Spanish determiner is sub-specified. In this case gender feature matching is cancelled. The masculine determiner as a default form has been proposed in a number of studies on Spanish grammar (e.g.

