

Clitics, DOM and ellipsis: an experimental comparative study in three dialects of Spanish

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Abstract

This paper discusses the correlation between clitics, DOM and ellipsis in Spanish. As observed by Cyrino & Ordóñez (2018), strict and sloppy readings can be obtained in both TP ellipsis and argument ellipsis with clitics. However, DOM animate antecedents severely limit the availability of sloppy readings in argument ellipsis with clitics. This is a new observation, and judgments about the lack of sloppy readings is often delicate. We carried out an experimental study in order to confirm the data reported in Cyrino & Ordóñez (2018). We also wanted to test whether this distinction applied to speakers of three different dialects of Spanish where distribution of clitics and doubling differs. The results show a significant statistical anti animacy effect for

obtaining sloppy readings with clitics. This effect is not found with TP ellipsis. In this paper we propose a syntactic approach to account for such effect with clitics. We propose that clitics contain an empty doubled (see also Bošković 2018). We propose an analysis based on the idea that DOM objects are moved out of the vP and that the doubled DOM KP undergoes vehicle change to become a pronoun in the case of argument ellipsis.

Keywords: clitics, DOM, ellipsis, argument ellipsis, Spanish dialects, vehicle change, experimental syntax.

1. Introduction

Studies on silent elements have been centered on classifying and establishing the different kinds of ellipsis they have exemplified from the early beginning. There is ongoing debate as to what should be considered ellipsis in the syntax or what type of syntax should be adopted. This paper studies and compares two elliptical phenomena in Spanish: one involves deletion of the verb and complement, TP ellipsis, and argument ellipsis by a clitic. While TP ellipsis is quite established as an elliptical phenomenon (Saab 2021), we argue that the ellipsis licensed by a clitic should also be considered another type of argument ellipsis (Bošković 2018).

In this paper, we compare the two types of ellipsis and show the differences in behavior. Particularly, we show that argument ellipsis is sensitive to animacy of the antecedent while TP-ellipsis is not. The fact that animacy plays a role in one case and not in the other correlates with the fact that Spanish has DOM, arguably a syntactic phenomenon. Then the question remains as to why DOM plays a role with clitics and not with TP ellipsis. We provide a solution in which DOM objects are moved outside the vP and the DP undergoes vehicle change when there is a clitic.

The paper is organized as follows: in section 2, we introduce Cyrino & Ordóñez (2018), in which they study the effects of animacy in null objects in BP, and argument ellipsis in Spanish; in section 3, we present the results of an experimental study carried out with speakers of three dialects of Spanish to test whether animacy plays a role in clitic argument ellipsis compared to TP ellipsis; in section 4, we discuss the experiment; in section 5, we propose an explanation as to why the dependencies in DOM objects cannot be copied for argument ellipsis based on the idea that they are outside the vP phase and they undergo vehicle change; in section 6, we conclude.

2. Cyrino and Ordóñez (2018)

Cyrino & Ordóñez (2018) (C&O) study compares the distributional properties of null objects in BP and third person clitics in Spanish and their possible interpretations. Cyrino (2017) has shown that null objects in BP permit both sloppy and strict readings. Accordingly, it is assumed that null objects should be analyzed as a subcase of ellipsis in which both readings are available:

(1) **Brazilian Portuguese**

Pedro escondeu	[seu _i dinheiro] _i	no	armário,
Pedro hid	his money	in-the	closet

mas seu amigo gastou ___ na feira.
but his friend spent ___ in-the fair

‘Pedro hid his money in the closet, but his friend spent (it) in the farmer’s market.’

Strict reading: Pedro’s money

Sloppy reading: His friends’ money

In the preceding example, there must be a full syntactic representation of the DP *seu dinheiro*, in which the pronoun *seu* can be interpreted as a variable yielding a sloppy reading. This is represented by having a subindex with the pronoun interpreted as variable. We represent the deleted part in italics:

(2) Pedro_i escondeu seu [seu_i dinheiro] no armário, mas seu amigo_j gastou *seu_{i-j} dinheiro* na feira.

The equivalent of the null object would be expressed with a clitic in other Romance Languages. Quer & Rosselló (2013) analyze the effect of ellipsis with clitics in Catalan. They show both sloppy and strict interpretations are permitted as well:

(3) Catalan

En Pere estima [la seva mare]_i i en Joan també l'_i estima
the Pere loves the his mother and the Joan also CL loves

Strict reading: Pere loves his mother, and Joan loves Pere’s mother too.

Sloppy reading: Pere loves his mother, and Joan loves Joan’s mother too.

C&O showed that similar interpretations can be found with clitics in Spanish as in (4). In the example in (4), *Juan* could have corrected his own homework, and it is possible that *Juan* also corrected *María*’s homework:

(4) Spanish

María corrigió [su tarea], y Juan también *la*_i corrigió.

María corrected her homework and Juan too CL corrected

‘María corrected her homework and Juan corrected it too.’

Strict reading: *la* = María’s homework

Sloppy reading: *la* = Juan’s homework

Both BP and Spanish have in common that there is phonological representation of part of the VP in which the elliptical side is licensed. In BP it involves a null object and in Catalan and Spanish involves a null double of the clitic. Interestingly, there is another elliptical process that deletes the entire TP including the VP altogether, the so-called TP ellipsis. In the examples of TP ellipsis both readings sloppy and strict are also possible. We represent the elided part in italics. The pronoun *su* has two interpretations. Either it can refer back to María or it can refer to Juan:

(5) María corrigió [su tarea], y Juan también [*TP*].
Maria corrected her homework and Juan too

Representation:

María_i [corrigió su tarea], y Juan_j también [**TP corrigió su_{i/j} tarea**]
 María corrected her homework and Juan too *corrected POSS homework*
 'María corrected her homework and Juan too.'

Strict reading: María's homework

Sloppy reading: Juan's homework

Since all these constructions allow both readings it would look like they should be treated as instances of ellipsis in the syntax. Sloppy and strict readings occur when the possessive in the antecedent is either interpreted as a variable or dependent (sloppy reading) or independent (strict reading). The fragment in italics and bold corresponds to the deleted part:

- (6) a. María_i vio [su_i carro] y Juan_j también [**TP vio su_{i/j} carro**].
 Maria saw her car and Juan too saw *POSS_{i/j} car*
- b. María vio [su carro]_i, y Juan_j también lo vio [**DP su_{i/j} carro**].
 Maria saw her car and Juan too CL saw *POSS_{i/j} car*
 TP ellipsis: [*TP saw POSS_{i/j} car*]
 Argument ellipsis: [*DP POSS_{i/j} car*]

However, as pointed out by C&O, there is an interesting contrast between both ellipsis processes with respect to DOM. Spanish is a language with differential object marking, and animate specific objects are marked with the *a* preposition:

- (7) a. Juan vio *a* Pedro. (DOM)
 Juan saw to Pedro
- b. Juan vio el libro.
 Juan saw the book

C&O and Cyrino (2017) observe that DOM objects antecedents do not allow sloppy interpretation for the cases of argument ellipsis. They also observe that TP ellipsis is not sensitive to the antecedent DOM object. Thus, sloppy readings are possible with TP ellipsis:

Argument ellipsis

- (8) Juan_i vio [a su_i madre] y Pedro_j también *la* vio [**KP a su_{i/j} madre**].
 Juan saw to his mother and Pedro too CL saw to POSS mother
 'Juan saw his mother and Pedro saw her too.'
 Sloppy reading: *la* = ?? Pedro's mother

TP ellipsis

- (9) Juan_i vio a su_i madre y Pedro_j también [**TP vio a su_{i/j} madre**].
 Juan saw to his mother and Pedro too saw to POSS mother
 'Juan saw his mother and Pedro too.'
 Sloppy reading: Pedro's mother

The effects are not found with non-DOM objects. Thus, sloppy readings are possible when no DOM is involved in both TP ellipsis and argument ellipsis:

Argument ellipsis

(10) Pedro_i limpió [su_i casa], y María_j también la limpió [*su_{i/j} casa*].
Pedro cleaned his house and María too CL cleaned POSS house
'Pedro cleaned his house and María cleaned it too.'
Sloppy reading: *la* = María's house

TP ellipsis

(11) Pedro_i limpió su_i casa, y María_j también [TP limpió *su_{i/j} casa*].
Pedro cleaned his house and María too cleaned POSS house
'Pedro cleaned his house and María too.'
Sloppy reading: María's house

C&O observe that the restrictions on animacy for clitic-DP ellipsis recalls the fact that in BP animate objects antecedents, generally, cannot be constructed as null objects. Animate objects must be overt and the pronoun *ele* must be produced.

(12) Brazilian Portuguese
Pedro escondeu [o amigo]_i no armário
Pedro hid the friend in-the closet
assim que a Maria trouxe *_____i / *ele_i*.
as that the Maria brought him

Cyrino (2017) also points out that sloppy readings with overt pronouns are not permitted as shown in the following example. Although BP does not mark animacy with DOM, it is sensitive to this aspect in the examples of ellipsis that we are examining:

(13) Pedro viu [o seu pai]_i/ [o seu livro]_j e Maria também viu *ele_i*/ *ele_j*.
Pedro saw the his father / the his book and Maria too saw him it
'Pedro saw his father/ his book and Maria saw him/it too.'
Sloppy reading: *ele* = *Maria's father/book

BP and Spanish show sensitivity to animacy in different ways. BP does not allow null objects with animate antecedents. Animate antecedents are represented with overt pronouns and sloppy readings are not permitted. On the other hand, Spanish clitic argument ellipsis constructions do not allow sloppy readings with DOM antecedents. Such restriction does not occur with TP ellipsis. The crucial common point between BP and clitics is their pronominal status and the fact that the antecedent is animate.

There is a long debate as to whether pronouns have any elliptical part and should be treated as cases of ellipsis in the syntax (surface anaphora). Hankamer & Sag (1976) in their work on pronouns and ellipsis claimed that pronominal anaphora is not ellipsis; it is part of discourse or pragmatics (deep anaphora). However, there is no real consensus in this area, and some authors as Elbourne (2013) claim that

pronouns should have empty elliptical structure. Bošković (2018) also assumes that there is an elliptical empty counterpart with clitics in Serbo-Croatian and other languages.

In this paper, we decided to take a syntactic approach to the problem since DOM is a pure syntactic phenomenon that obviously has consequences in the pragmatics. The facts indicate that some empty syntactic representation of the clitic is available for sloppy readings and that representation is not possible with a DOM antecedent. With null objects or with some clitics we have some NP structure that is subject to double interpretation:¹

There are many questions that this asymmetry arises:

- a) How do we represent sloppy readings in argument ellipsis?
- b) Why are sloppy readings affected by animacy (DOM) for argument ellipsis but not in TP ellipsis?
- c) What is this telling us about the syntax and semantics of ellipsis? Is argument ellipsis represented in the syntax or it is just a semantic, pragmatic effect (DP anaphora)?

But fundamentally, testing elliptical structures in syntax is always challenging given the lack of phonetic evidence. It is still an ongoing debate whether syntactic structure is present in ellipsis. In this paper we are testing a new observation that DOM antecedents limit the readings for argument ellipsis with clitics. This new important observation does not only deserve a new theoretical explanation, but it deserves a careful empirical study. In the area of sloppy and strict readings, judgments are very often unclear. We felt that experimental data needed to be collected in order to provide a good foundation for our theoretical claims. Moreover, because we know that different dialects differ with respect to the distribution DOM and clitics, we decided to test three different varieties of Spanish.

3. Experiment

The experiment was a force-choice task hosted on Qualtrics performed with Spanish speakers from Buenos Aires, Mexico City and Madrid. It investigated the role of animacy for obtaining sloppy readings in both TP ellipsis and argument ellipsis with clitics. The independent variables were *Spanish Dialect* (Buenos Aires, Mexico City, Madrid), *Structure* (clitic / TP-ellipsis) and *Antecedent* ([+animate] / [-animate]), in four experimental conditions: C[+A] (clitic / [+animate] antecedent), C[-A] (clitic / [-animate] antecedent), TP-E[+A] (TP-ellipsis / [+animate] antecedent), and TP-E[-A] (TP-ellipsis / [-animate] antecedent). The dependent variables were *sloppy*, *strict*, and *split* readings.

The main question was whether animacy is relevant to obtain sloppy readings. The hypothesis to be tested was that [+animacy] blocks sloppy readings with argument ellipsis with clitics, but not with TP ellipsis. It predicts that there

¹ If the sloppy reading is due to deep anaphora, there is a big question of what theory of pragmatics one must assume to make such claim. Since nobody has a clear formal analysis of deep anaphora in the pragmatics, we will assume that such distinction is not very informative for the cases that concern us in this study.

should be a contrast with argument ellipsis if the antecedent is animate or not. Furthermore, there should not be any difference between dialects because they all mark animacy with DOM.

The following figure summarizes questions, hypotheses, and predictions:

Figure 1. Questions, hypotheses, and predictions

Q1:	Is animacy relevant for obtaining sloppy reading?
Q1.1:	Is there a difference between TP ellipsis and argument ellipsis?
Q1.2:	Is there dialectal difference?
H:	[+animacy] blocks sloppy reading with argument ellipsis, but not with TP ellipsis.
H0:	There is no association between variables.
H1:	There is association between variables.
P:	There should be a contrast between argument ellipsis with animate antecedents versus not animate antecedents. No dialectal difference is expected to be found.

Source: authors

3.1. Participants

Participants were native Spanish speakers from Buenos Aires, Mexico City and Madrid. For the analysis, we considered 36 participants, 12 speakers of each dialect. They were all over 18 years old. None were bilingual speakers of Romance languages, nor had been students of Arts or Linguistics.

3.2. Material

The linguistic material consisted of four experimental sets with 16 experimental sentences (four for each experimental condition) and 32 fillers. It had a Latin Square distribution and a within-subjects design, which means that participants were exposed to four sets of each four experimental conditions, not to more than one version of an experimental item (i.e., there was not repetition).

We present a sample of experimental sentences below:²

Figure 2. Sample of experimental stimuli in each condition

a. Carmen curó a sus pacientes y José también.	TP-E[+A]
b. Carmen curó sus heridas y José también.	TP-E[-A]
c. Carmen curó a sus pacientes y José también las curó.	C[+A]
d. Carmen curó sus heridas y José también las curó.	C[-A]

Source: authors

The stimulus consisted of a declarative sentence followed by a question. There were always three options:

² We avoid sentences such as “Juan recibió su sueldo y Pedro también (lo recibió)” for pragmatic reasons.

Figure 3. Sample of task questions and answer options

Carmen curó a sus pacientes y José también.
¿A quiénes curó José?

() A las pacientes de Carmen.
() A sus propias pacientes.
() A las pacientes de los dos.

Source: authors

Both the stimuli and the questionnaire options were randomized.

3.3 Procedure

The survey was distributed by email and social media. Participants received basic information with instructions, with no specifics about the study objectives. We followed the ethic protocol:³

Figure 4. Task instructions

Si usted es hablante del **español de Buenos Aires, Ciudad de México o Madrid**, está invitado/a a participar en una investigación lingüística en colaboración entre *Stony Brook University* y *Universidade Federal de Bahia*. Al comenzar el estudio, va a leer una serie de frases. Léelas atentamente. Para cada frase, hay una pregunta y tres opciones de respuesta. Tiene que elegir AL MENOS una respuesta para cada pregunta. No hay respuestas correctas o incorrectas. Todas sus respuestas se mantendrán de manera confidencial.

Source: authors

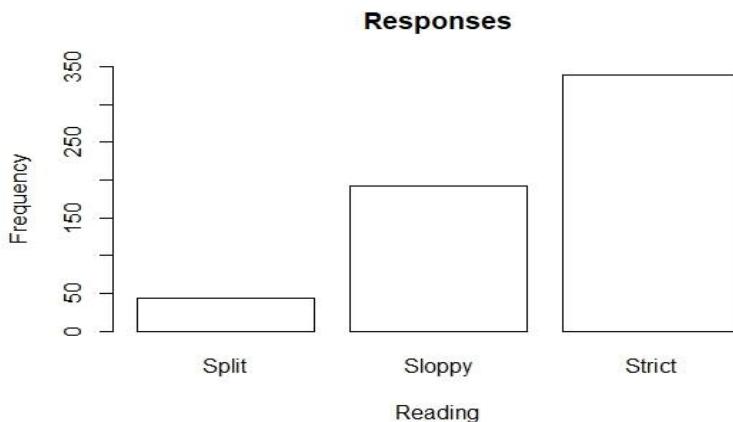
Before the task, they had to mark an answer for questions about their accordance in participating, dialect, age, linguistic profile (if or not bilingual of Romance languages) and academic degree (Arts or Linguistics). Whenever the participant did not meet one of the required criteria, the survey was automatically terminated. It was programmed to select the same number of lists for each group of participants (Buenos Aires, Mexico City, Madrid). In the end, they received a thank you message.

3.4 Results

There were 307 participants. 80 of them completed the questionnaire. For the analysis, we discarded incomplete questionnaires. We also randomly selected the same number of participants for each Spanish dialect. We have worked with a database containing 576 observations: 44 *split*, 193 *slippery*, and 339 *strict* readings.

³ On the same page they could read the term of consent approved by the ethics committee.

Figure 5. Frequency distribution of responses



Source: authors

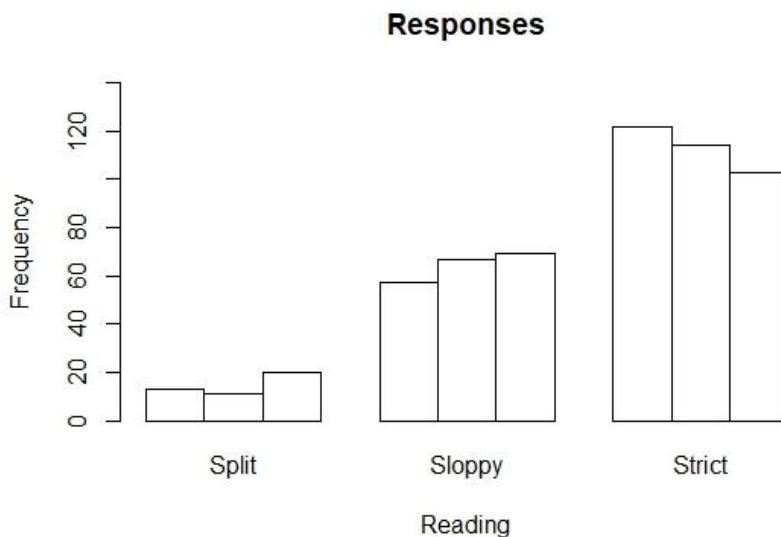
We obtained 192 responses of each Spanish dialect group, in a very similar distribution:

Table 1. Frequency distribution of responses by Spanish dialect

Spanish dialect	<i>Split</i>	<i>Sloppy</i>	<i>Strict</i>	Total
Buenos Aires	13	57	122	192
Mexico City	11	67	114	192
Madrid	20	69	103	192
Total	44	193	339	576

Source: authors

Figure 6. Frequency distribution of responses by Spanish dialect ⁴



Source: authors

⁴ The order is the same as in Table 1: Buenos Aires, Mexico City and Madrid.

Table 2 allows us to see the frequency distribution of responses by condition. As we can observe, there are more strict responses in conditions C[+A], C[-A] and TP-E[+A]. The only condition in which there is more sloppy than strict is TP-E[-A].

Table 2. Frequency distribution of responses by condition

Condition	Split	Sloppy	Strict	Total
C[+A]	18	12	114	144
C[-A]	5	44	95	144
TP-E[+A]	15	50	79	144
TP-E[-A]	6	87	51	144
Total	44	193	339	576

Source: authors

As Table 3 shows, the frequency distribution of responses by condition per Spanish dialect is very similar. Split responses exhibit a very low frequency, reaching n=0. Sloppy is much lower than that of strict in condition C[+A], but higher in condition TP-E[-A].

Table 3. Frequency distribution of responses by condition per Spanish dialect

Condition	Buenos Aires			Mexico City			Madrid			Total
	Split	Sloppy	Strict	Split	Sloppy	Strict	Split	Sloppy	Strict	
C[+A]	6	3	39	6	2	40	6	7	35	144
C[-A]	1	12	35	2	15	31	2	17	29	144
TP-E[+A]	5	13	30	3	21	24	7	16	25	144
TP-E[-A]	1	29	18	0	29	19	5	29	14	144
Total	13	57	122	11	67	114	20	69	103	576

Source: authors

In the exploratory analysis, we performed chi-squared tests in RStudio. Both Structure ($\chi^2 = 51.101$, $p = 8.775\text{e-}13$) and Antecedent ($\chi^2 = 29.341$, $p = 6.07\text{e-}08$) are statistically significant independent variables. We also found a statistically significant Condition effect ($\chi^2 = 226.64$, $p < 2.2\text{e-}16$), regardless of the Spanish dialect ($\chi^2 = 5.941$, $p = 0.2036$). In other words, results were significant for all of them: Buenos Aires ($\chi^2 = 39.16258$, $p = 6.65\text{e-}07$), Mexico City ($\chi^2 = 38.76398$, $p = 7.96\text{e-}07$), Madrid ($\chi^2 = 26.10491$, $p = 0.000213$).

Because we had very low frequencies of split responses under certain conditions (less than 5 and reaching 0), even performing Fisher's Exact Test, these last statistical values could not be reliable. Therefore, we decided to disregard them, and focus on strict and sloppy ones. Anyway, we found a statistically significant association ($\chi^2 = 83.409$, $p < 2.2\text{e-}16$), regardless of the Spanish dialect ($\chi^2 = 2.6615$, $p = 0.2643$). The response rates are similar and significant in all Spanish dialects: Buenos Aires ($\chi^2 = 32.02776$, $p = 5.16\text{e-}07$), Mexico City ($\chi^2 = 32.19599$, $p = 4.76\text{e-}07$) and Madrid ($\chi^2 = 23.19051$, $p = 3.69\text{e-}05$).

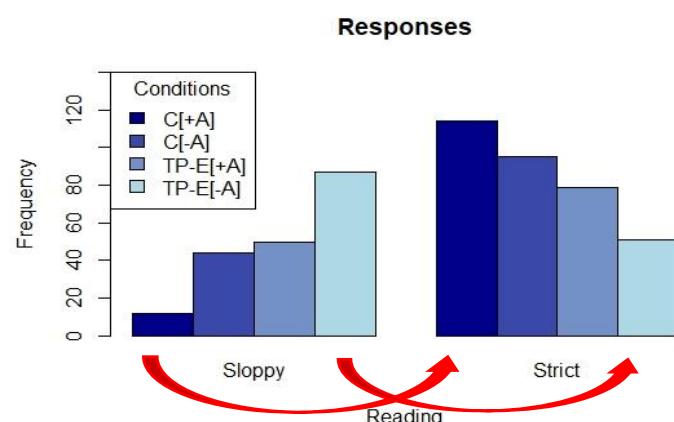
Table 4. Count, expected count, percentage, standardized residual per condition.

	Count	Expected count	Percentage	Standardized residual
	Sloppy	Strict	Total	
C[+A]	12	114	126	
	45.7	80.3		
	9.5%	90.5%	23.7%	
	-4.986	3.762		
C[-A]	44	95	139	
	50.4	88.6		
	31.7%	68.3%	26.1%	
	-0.905	0.683		
TP-E[+A]	50	79	129	
	46.8	82.2		
	38.8%	61.2%	24.2%	
	0.468	-0.353		
TP-E[-A]	87	51	138	
	50.1	87.9		
	63.0%	37.0%	25.9%	
	5.220	-3.939		
Total	193	339	532	
Statistics for all factors				
Pearson's Chi-squared test				
X-squared = 83.40861 g.l. = 3				p-value < 2e-16
Minimum expected count: 11				

Source: authors

It is worth mentioning that the frequency of sloppy readings increases while that of strict ones decreases in the sequence C[+A] (9.5%, 90.5%), C[-A] (31.7%, 68.3%), TP-E[+A] (38.8%, 61.2%), TP-E[-A] (63.0%, 37.0%), as shown in Figure 7:

Figure 7. Frequency distribution of responses by condition



Source: authors

Looking at the conditions, the chi-squared test shows up statistically significant results for C[+A] and TP-E[-A], but not for C[-A] and TP-E[+A]:

Table 5. Pearson's chi-square test results per condition

	<i>Sloppy</i>	<i>Strict</i>	x-squared	p-value
C[+A]	12	114	= 49.617	= 1.869e-12
C[-A]	44	95	= 1.4798	= 0.2238
TP-E[+A]	50	79	= 0.32298	= 0.5698
TP-E[-A]	87	51	= 56.191	= 6.576e-14

Source: authors

We also performed a logistic regression model for binary response variables (in a binomial distribution) having two possible outcomes: success (1) or failure (0). This model allows us to model response choices (sloppy or strict) in sentences, with predictor variables Structure and Antecedent. We have assigned 1 to sloppy and 0 to strict. The reference (intercept) in the table below is Structure C and Antecedent[-A]:

Figure 8. Logistic regression model with the predictors Structure and Antecedent

Call:										
glm(formula = Response ~ Structure + Antecedent, family = binomial(link = logit), data = bco1)										
Deviance Residuals:										
Min	1Q	Median	3Q	Max						
-1.4488	-0.8399	-0.4979	0.9284	2.0733						
Coefficients:										
	Estimate	Std.	Error	z value	Pr(> z)					
(Intercept)	-0.8606	0.1665	-5.168	2.36e-07 ***						
StructureTP-E	1.4792	0.2035	7.268	3.65e-13 ***						
Antecedent[+A]	-1.1648	0.2029	-5.742	9.37e-09 ***						

Signif. codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1										
(Dispersion parameter for binomial family taken to be 1)										
Null deviance: 696.92 on 531 degrees of freedom										
Residual deviance: 608.16 on 529 degrees of freedom										
AIC: 614.16										
Number of Fisher Scoring iterations: 3										

Source: authors

As we can see, the variable StructureTP-E increases the odds of a sloppy response by 4.38 (438%) over a strict one – $\text{Exp}(1.4792) = 4.389433$. The variable Antecedent[+A] decreases the odds of a sloppy response by 0.31 (31%) over a strict one – $\text{Exp}(-1.1648) = 0.3119851$.

In the follow logistic regression model, the reference (intercept) is ConditionC[-A]:⁵

⁵ Notice that the previous model is the best fit as its AIC (Akaike Information Criterion) is lower (AIC 614.16 / AIC 614.85).

Figure 9. Logistic regression model with the predictors C[+A], C[-A], TP-E[+A], TP-E[-A]

Call:
glm(formula = Response ~ Condition, family = binomial(link = logit), data = bco1)
Deviance Residuals:
Min 1Q Median 3Q Max
-1.4110 -0.8725 -0.4474 0.9606 2.1686
Coefficients:
Estimate Std. Error z value Pr(> z)
(Intercept) -0.7697 0.1824 -4.221 2.43e-05 ***
ConditionC[+A] -1.4816 0.3540 -4.185 2.85e-05 ***
ConditionTP-E[-A] 1.3038 0.2537 5.139 2.76e-07 ***
ConditionTP-E[+A] 0.3123 0.2567 1.216 0.224

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Dispersion parameter for binomial family taken to be 1
Null deviance: 696.92 on 531 degrees of freedom
Residual deviance: 606.85 on 528 degrees of freedom
AIC: 614.85
Number of Fisher Scoring iterations: 4

Source: authors

ConditionC[+A] decreases the odds of a sloppy response by 0.22 (22%) over a strict one – $\text{Exp}(-1.4816) = 0.2272738$. ConditionTP-E[-A] increases the odds of a sloppy response by 3.68 (368%) over a strict one – $\text{Exp}(1.3038) = 3.683267$. ConditionTP-E[+A] increases the odds of a sloppy response by 1.36 (136%) over a strict one – $\text{Exp}(0.3123) = 1.366565$.

4. Discussion

According to the results, we can assume that animacy is relevant for obtaining sloppy reading (Q1). We expected [+animacy] to block the sloppy reading with argument ellipsis, but not that of [-animacy] to favor the sloppy reading in TP ellipsis (Q1.1). There is no dialectal difference (Q1.2). We also rejected H0 as there is association between variables: (i) Structure and Antecedent as well as Condition are relevant; (ii) Conditions C[+A] and TP-E[-A] are relevant to obtain strict reading and sloppy reading, respectively. We confirmed H0 in the case of Conditions C[-A] and TP-E[+A] because they were not relevant in obtaining responses. As predicted, there was a contrast between argument ellipsis with animate antecedents versus not animate antecedents in all dialects.

What we did not predict and deserves further clarification was that there would also be a contrast between TP ellipsis with animate antecedents versus not animate antecedents (i.e., TP-E[+A] vs TP-E[-A]). As we can see in Table 2, Table 3 and Table 4, the rate of sloppy (n= 87, 63.0%) over strict (n=51, 37.0%) is higher in condition TP-E[-A], regardless of the Spanish dialect: Buenos Aires (n=29 / n=18), Mexico City (n=29 / n=19) and Madrid (n=29 / n = 14). According to the chi-squared test results in Table 5, we may assume that there is statistically

significant animacy effect in TP ellipsis: TP-E[+A] ($p>0.01$) and TP-E[-A] ($p<0.01$).

At first, the exploratory analysis of results could lead us to conclude that our hypothesis (see Figure 1) is not supposed to be confirmed, given that animacy would be playing a role in both type of structure (i.e., C and TP-E). However, the observed frequencies and percentages of sloppy vs strict responses in C[+A] ($n=12$, 9.5% / $n=114$, 90.5%) and TP-E[-A] ($n=87$, 63.0% / $n=51$, 37.0%) are considerably different: in the former, it seems there is a block for sloppy readings, but in the latter, there would not be a block for strict readings.

Furthermore, the logistic regression models at hand provide us with evidence that in fact animacy does not play an equivalent role to obtaining responses in both structures. In Figure 8 –with the predictors Structure and Antecedent–, the StructureTP-E increases the odds (438%) of a sloppy response over a strict one, while Antecedent[+A] decreases the odds (31%) of a sloppy response over a strict one. Overall, TP-E displays an increasing odd for sloppy readings, and [+A] displays a decreasing odd for sloppy readings. Recall now that, in Figure 9 –with the predictor Condition–, both ConditionTP-E[+A] and ConditionTP-E[-A] increase the odds (136% and 368%, respectively) of a sloppy response in relation to the intercept (i.e., ConditionC[-A]). The only condition that greatly decrease the odds ratio (22%) of obtaining a sloppy response in relation to the intercept is that of C[+A].⁶

Considering the results of the chi-square tests as well as the logistic regression models, we can conclude that there is an effect of animacy in both types of structure, but in one case (i.e., C[+A]) there is a sloppy reading blocking and in the other (i.e., TP-E[-A]) a preference for sloppy reading (not strict reading blocking). It may be that there is a grammatical restriction preventing obtaining sloppy reading in condition C[+A], and a preference for sloppy reading in condition TP-E[-A], which requires further investigation. Would it have to do with parsing?

5. Theoretical Consequences

The minimal pair contrast between TP ellipsis and argument ellipsis is clearly indicating that the distribution of sloppy and strict reading cannot be just pragmatics. In both cases the context of evaluation of the situation by the speaker is the same; however, only argument ellipsis is restricting sloppy readings. Therefore, we must find the answer to this puzzle in a) the internal structure of the elided constituent and b) the different identity conditions imposed to such elided constituents. Here we represent the elided parts in italics and bold. Example (14) repeats the example of argument ellipsis with a DOM antecedent and the

⁶ An anonymous reviewer pointed out to validate Cyrino & Ordóñez's (2018) claims that sloppy reading is sensitive to the animacy with clitics of the antecedent, but not with TP-ellipsis, it is necessary (i) to establish whether there is a statistically significant interaction between STRUCTURE:clitic and ANTECEDENT:animate, and (ii) there must be no (statistically significant) interaction between STRUCTURE:TP-ellipsis and ANTECEDENT:animate. We implemented another model –(glm(formula = Response ~ Structure + Antecedent + Structure * Antecedent, family = binomial(link = logit), data = bco1)–, but it seems that the interaction does not explain more than the regressors separately.

impossibility of sloppy reading. Example (15) is a case of TP ellipsis with DOM antecedent, sloppy reading permitted. Examples (16) argument ellipsis and (17) TP ellipsis both have no DOM antecedents and sloppy readings are permitted:⁷

Argument Ellipsis

(14) Juan_i vio [K_p a su_i madre] y Pedro_j también la_k vio [K_p a POSS_{i/*j} madre]_k.
 Juan saw to his mother and Pedro too CL saw to POSS mother
 ‘Juan saw his mother and Pedro saw her too.’
 Sloppy reading: *la* = ?? Pedro’s mother

TP Ellipsis

(15) Juan_i vio a su_i madre y Pedro_j también [TP vio a su_{i/j} madre].
 Juan saw to his mother and Pedro too saw to POSS mother
 ‘Juan saw his mother and Pedro too.’
 Sloppy reading: Pedro’s mother

Argument Ellipsis

(16) Pedro_i limpió [su_i casa], y María_j también la_k limpió [DP su_{i/j} casa]_k.
 Pedro cleaned his house and María too CL cleaned POSS house
 ‘Pedro cleaned his house and María cleaned it too.’
 Sloppy reading: *la* = María’s house

TP ellipsis

(17) Pedro_i limpió [su casa]_i, y María_j también [TP limpió su_{i/j} casa].
 Pedro cleaned his house and María too cleaned POSS house
 ‘Pedro cleaned his house and María cleaned it too.’
 Sloppy reading: *la* = María’s house

The difference between TP ellipsis and argument ellipsis is the size of the elided structure. For sloppy readings, we will use lambda abstraction to indicate the new dependency of the possessive with the subject in the second conjunct.⁸ (18a) is TP ellipsis with sloppy reading of not DOM and (18b) is argument ellipsis with sloppy reading of not DOM. We indicate in italics the elided constituent.

(18) a. Juan $\lambda x. x$ *limpió x casa*
 Juan cleaned house
 b. Juan $\lambda x. x$ la *limpió x casa*
 Juan. CL cleaned house

⁷ In some cases, TP ellipsis can be more restrictive as for examples with WCO as studied by Saab & Zdrojewski (2012).

⁸ Lambda abstraction is a common way to represent sloppy readings. A different approach to sloppy readings is presented by Fiengo & May (1994). In their system dependencies are copied. We could easily reformulate our explanation in Fiengo & May’s proposal as well.

What this representation indicates is that the possessive in the elided TP or DP in the second conjunct can be rebound by the subject in that conjunct. However, this is not the case with DOM objects with argument ellipsis. Both clitic and DOM make the sloppy reading unavailable. In order to explain such constraint on sloppy reading with clitics, we will adopt an analysis of DOM in which the DOM object moves overtly outside the vP (see López 2012, Rodríguez-Mondoñedo 2007, Ordóñez & Roca 2016 a.). (19) shows a vP with DOM *a su madre*, which is moved outside vP.⁹ This contrasts with the example where the object is not DOM as in (20):

(19) [Juan vio [αP [KP **a** su madre]_i [vP **t_i**]]]
 Juan saw a POSS mother

(20) [Juan limpió [vP [DP su piso]]]
 Juan cleaned POSS apartment

The deletion is marked in italics and bold in the following examples with argument ellipsis. DOM contrast with non-DOM:

Argument Ellipsis

(21) ...y Juan_i también la_k vio [αP [KP **a** *su_i* **madre**]_k [vP]]
 and Juan too CL saw a POSS mother

(22) ...y Juan_i también lo_k limpió [vP [DP *su_i* **piso**]_k]]
 Juan too CL cleaned POSS apartment

In view of the results of our experiment, the representations of (21) and (22) indicate that KPs DOM moved out of the vP are not subject to rebinding in the second conjunct. *Juan* does not qualify as a possible antecedent in (21), but it does in (22) with non-DOM. The question is why XP moved out of the vP should not be subject to rebinding. We can speculate at this moment that only DP in vP can be rebound. This has obvious consequences for scrambling languages, which we are not able to explore here.

However, if this is the correct way of characterizing the lack of sloppy readings with DOM antecedents in argument ellipsis, we need to explain why such restriction does not apply in TP ellipsis with DOM antecedents.

The difference between TP ellipsis and argument ellipsis is the lack of clitics in TP ellipsis. This is shown in (23) versus (24):

TP ellipsis

(23) ...y Juan también /TP vio [αP [KP **a** su madre [vP]]
 Juan too saw POSS mother

⁹ López calls this αP .

Argument ellipsis

(24) ...y Juan también la_k vio [_{oP} [**KPa** **su** **madre**]_k [_{vP}]]
Juan too CL saw POSS mother

Both things being equal, then no sloppy readings should be permitted when the KP DOM is outside vP. However, that is not the case. Being outside the vP is a necessary condition but not sufficient condition to explain the contrast between TP ellipsis and argument ellipsis. In order to distinguish TP ellipsis and argument ellipsis with DOM object, the appearance of the clitic in the remnant is crucial. We are going to propose a solution based on vehicle change. When there is a clitic the DOM elided part necessarily becomes a strong pronoun. Instead of the representation in (24), vehicle change would turn the DP *su madre* into strong pronoun *ella* as in (25).

Argument ellipsis

(25) ...y Juan también la_k vio [_{oP} [**a** **ella**]_k [_{vP}]]
Juan too CL saw to her

The step-by-step derivation we propose for argument ellipsis with DOM is as follows:

a. Movement of DOM objects outside the vP

(26) ...y Juan_i también la_k vio [_{oP} [**KPa** **su** **madre**]_k [_{vP}]]
Juan too CL saw POSS mother

b. Vehicle change of DP DOM into a pronoun.

(27) ...y Juan_i también la_k vio [_{oP} [**KPa** **ella**]_k [_{vP}]]
Juan too CL saw to her

Once vehicle change occurs there is no internal structure in the KP and there is no possibility of rebinding by the subject.¹⁰ Strong pronouns do not allow sloppy readings as we observed in BP overtly. We repeat the BP example below:

¹⁰ An anonymous reviewer finds our use of vehicle change inadequate. Vehicle change Fiengo & May (1994) is just a description of changes that must be postulated in the deleted part of the sentence in order to explain that certain binding principles are not violated. Our approach does not make claims about binding principles being violated but a change in the limitation of sloppy interpretation with clitics. We explain this by converting the structure of the empty DP into a strong pronoun in the deleted counterpart. This represents a **new** observation and generalization on the limitations of sloppy readings with clitics. This is not observable in a language that lacks clitic, as English. But it nicely ties the lack of sloppy readings in Spanish with the same limitation with strong pronouns in Brazilian Portuguese. We think this generalization expands the coverage of principles like vehicle change. Vehicle change simply indicates the lack of isomorphism between an antecedent sentence and the deleted part. We could call this change something different like *Change to strong pronoun*

(28) Pedro viu [o seu pai]_i/ [o seu livro]_j e Maria também viu ele_i/ ele_j.
 Pedro saw the his father / the his book and Maria too saw him it
 'Pedro saw his father/ his book and Maria saw him/it too.'
 Sloppy reading: *ele* = *Maria's father/book

In the case of argument ellipsis with non-DOM as in (29), rebinding is always available since the DP does not move out and does not require vehicle change. In TP ellipsis with DOM in (30) the conditions of vehicle change are not met since there is no clitic.

Argument ellipsis

(29) ...y Juan_i también lo limpió [_{vP} [_{DP} *su_i* **piso**]]]
 Juan too CL cleaned POSS apartment

TP ellipsis

(30) ...y Juan_i también **vio** [_{aP} [_{KP} **a** *su_i* **madre**] _k [_{vP} **t**]]
 and Juan too saw to POSS mother

One interesting prediction of this approach comes from indirect object clitics. It is well known indirect object clitics can be doubled in all dialects of Spanish. They all require the indirect object to be doubled by a-marking which is the same marker as DOM. The observations made here would predict that sloppy readings are not possible in argument ellipsis with dative clitics. This is exactly our intuitions. We can compare sentence (31) with TP ellipsis, which allows sloppy readings on the indirect object. However, sentence (32) with argument ellipsis, sloppy readings are more difficult.

(31) Juan_i le dio un libro a su_i hijo, y María también [_{TP}]
 Juan CL-DAT gave a book to his son and María too.
 Sloppy reading: TP = gave a book to María's son.

(32) Juan_i le dio un libro a su_i hijo, y María también se lo dio.
 Juan CL-DAT gave a book to his son and María too CL-DAT CL-ACC gave
 Sloppy reading: *se* = ??María's son

Obviously, further experimental data would have to confirm these intuitions. But we leave this as an open research question that remains to be studied in the future. In case it is confirmed it shows that argument ellipsis with clitics requires the empty counterpart to be a strong pronoun with DOM and IO.

Finally, this discussion takes us to the important generalization made by Saito (2007). He claims that agreement blocks argument ellipsis and therefore blocks the possibility of sloppy readings. If this is correct then, this would indicate that clitics

with argument ellipsis. However, we would like to point out that vehicle change is a mere description, and it should be enriched as new binding data from different languages is available.

referring to DOM antecedents should be treated as agreement markers, as opposed to clitics referring to inanimate antecedents. This conclusion has important implications for languages that double inanimates DO, which is the case of some varieties of Río Plata Spanish. However, our experiment did not test inanimate KP doubled by clitic in the antecedent clauses. This is an open question that remains to be explored.

6. Conclusions

In this experimental study we examined difference between TP ellipsis and argument ellipsis in Spanish in three different varieties. We corroborated and concluded that argument ellipsis restricts sloppy readings with DOM antecedent. When there are no clitics (TP ellipsis) and when antecedent is not DOM (argument ellipsis and TP ellipsis), no restriction on sloppy identity is found. The work also shows that there is no dialectal variation between the speakers in Buenos Aires, Madrid, and Mexico City.

In the final section, we provided possible solution on why argument ellipsis does not give us sloppy reading with DOM antecedents. We propose that the identity condition of argument ellipsis must be different from TP ellipsis. We think that further work should explore some other consequences of this experiment. For instance, we should explore sentences in dialects in with DOM and doubling is also possible with inanimate DO in Río Plata Spanish. Also, we should explore dialects in which the clitic used for DOM is different from clitic used for non-DOM, like Basque Spanish or Paraguayan Spanish. We leave this for future work.

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Competing interest declaration

Francisco Ordóñez declares that the article he co-authored was entirely handled by the other editors, that he had no access to the names of the reviewers nor any saying in their selection at any point of the publication process. His article was handled in conformity with the principles laid down by the Committee on Publication Ethics (COPE) in the Code of Conduct and Best Practice Guidelines for Journal Editors (<http://publicationethics.org>).

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