

Inflectional ϕ -Feature Mismatches Under Ellipsis: An Eye-Tracking Study

Introduction: Theories of ellipsis differ on whether they posit syntactic structures in the ellipsis site, and whether ellipsis is resolved under syntactic or semantic identity. Central to this debate is the grammatical status of ellipsis-antecedent mismatch. Previous studies have primarily focused on voice mismatch [1-7]. In the current study, with two eyetracking experiments on (Iberian) Spanish, we observe both increased online processing cost and decreased acceptability judgments when semantically uninterpretable inflectional ϕ -features (number and gender) on adjectival predicates are mismatched between ellipsis and their antecedents, providing strong evidence for syntactic identity under ellipsis, and challenging previous hypotheses that ϕ -feature agreement is a post-syntactic process and inconsequential for ellipsis resolution [8]. We also show that similar sensitivity to ϕ -feature (mis)match is not (immediately) present for either non-elliptical counterpart structures, or deep-anaphora conditions where ellipsis is substituted with the neuter clitic “*lo*”, suggesting two different processes underlying deep (clitic-*lo* conditions) and surface (ellipsis conditions) anaphora resolution [9]. All together, our findings are not compatible with purely semantic accounts of ellipsis.

Design and Procedure: The ellipsis, full, and clitic-*lo* structures are tested in two experiments. All three constructions shared a 2 (ϕ -Feature: Gender vs Number) x 2 (Matchness: Matched vs Mismatched antecedent) x 2 (Subject of the Second Clause: Marked vs Unmarked ϕ -Feature value) design resulting in 8 conditions for each construction type. The Ellipsis construction was tested in Experiment 1 (subj. n=24; item n= 80; fillers n=50). The other two structures were tested in Experiment 2 (subj. n=20; item n=80; fillers n=50). In both experiments, subjects read sentences while their eye movements were tracked. After each trial, subjects made a binary (yes-no) grammaticality judgment on the sentence.

Table 1. ϕ -F: Gender SSC=Subject of the Second Clause, **Match \pm** =(Mis)match with the antecedent

SSC	Match	{Ellipsis Full <i>Lo</i> }
Unmarked (Masculine)	+	El asistente es organizado y el jefe {es organizado is organized.m} es organizado lo es} también. ‘The.m assistant.m is organized.m and the.m boss.m {is organized.m is organized.m CL+cop} too.’
	-	La asistenta es organizada y el jefe {es organizado is organized.m} es organizado lo es} también. ‘The.f assistant.f is organized.f and the.m boss.m {is organized.m is organized.m CL+cop} too.’
Marked (Feminine)	+	La asistenta es organizada y la jefa {es organizada is organizada.f} es organizada lo es} también. ‘The.f assistant.f is organized.f and the.f boss.f {is organizada.f is organizada.f CL+cop} too.’
	-	El asistente es organizado y la jefa {es organizada is organizada.f} es organizada lo es} también. ‘The.m assistant.m is organized.m and the.f boss.f {is organizada.f is organizada.f CL+cop} too.’

Table 2. ϕ -F: Number SSC=Subject of the Second Clause, **Match \pm** =(Mis)match with the antecedent

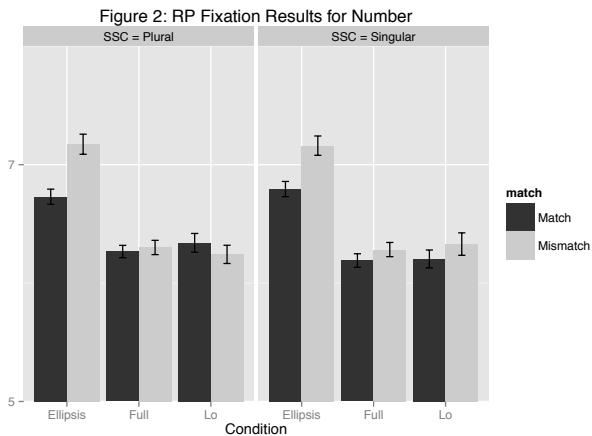
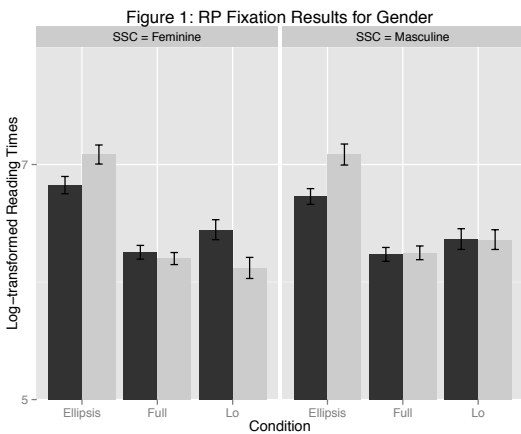
SSC	Match	{Ellipsis Full <i>Lo</i> }
Unmarked (Singular)	+	El fugitivo es peligroso y el preso {es peligroso is peligroso.sg} es peligroso lo es} también. ‘The.sg fugitives is dangerous.sg and the.sg prisoner {is peligroso.sg is peligroso.sg CL+cop} too.’
	-	Los fugitivos son peligrosos y el preso {es peligroso is peligroso.sg} es peligroso lo es} también. ‘The.pl fugitives are dangerous.pl and the.sg prisoner {is peligroso.sg is peligroso.sg CL+cop} too.’
Marked (Plural)	+	Los fugitivos son peligrosos y los presos {son peligrosos are peligrosos.pl} son peligrosos lo son} también. ‘The.pl fugitives are dangerous.pl and the.pl prisoners {are peligrosos.pl are peligrosos.pl CL+cop} too.’
	-	El fugitivo es peligroso y los presos {son peligrosos are peligrosos.pl} son peligrosos lo son} también. ‘The.sg fugitive is dangerous.sg and the.pl prisoners {are peligrosos.pl are peligrosos.pl CL+cop} too.’

Reading times on the CW: Critical region (CW) was defined as the first phrase where the relevant structure was unambiguously signaled (Table 3).

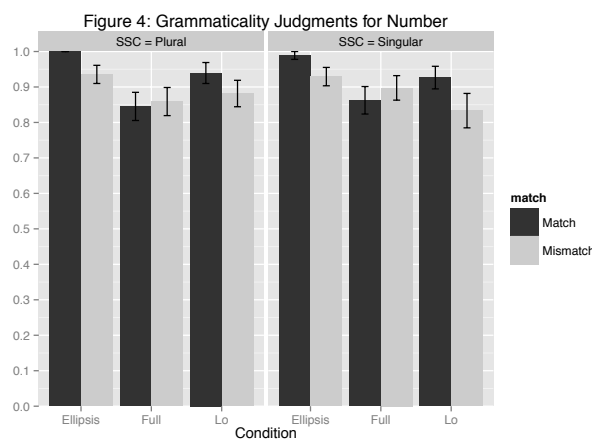
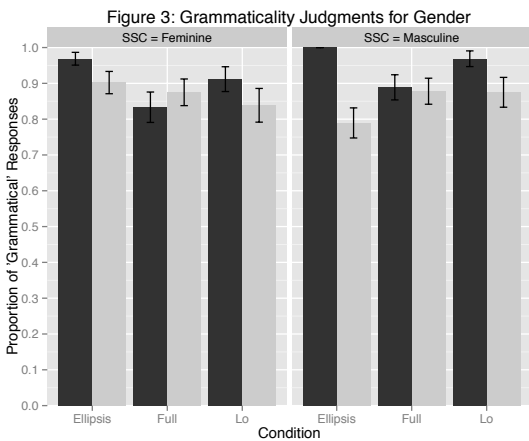
Table 3. CW for Each Construction

Ellipsis	Full	Clitic- <i>lo</i>
<i>también.</i> (‘too.’)	copula+Adj. (e.g. <i>es organizado</i>)	<i>lo es</i> (‘lo+copula’)

On the CW, the ellipsis construction showed a significant effect of Match ($p < 0.001$) for the Regression Path measure (RP, Figure 1-2), such that conditions with ϕ -feature mismatch incurred longer regression reading times than those with no mismatch. The same effect was also found on total reading time ($p < 0.001$). Mismatch penalty was NOT found for either the Full or clitic-*lo* conditions (If anything, the “*lo*” construction showed slower reading times on some of the matched conditions).



Grammaticality judgment results: Overall, all experimental items are grammatical (>80%, Figure 3-4). However, participants still preferred—by a small but significant margin—sentences with matched ϕ -features to those with mismatched ϕ -features for both the clitic-*lo* construction ($p < .001$) and Ellipsis construction ($p < .001$), but crucially, no difference was found for the Full condition.



Discussion and Conclusion: Our results clearly show that ϕ -feature agreement mismatches under ellipsis are being computed immediately in online processing, consistent with previous ERP results on English number agreement under nominal ellipsis [10], suggesting that (i) agreement is not post-syntactic; and (ii) syntactic identity holds for ellipsis. The online effect is mirrored in acceptability judgments. The further distinction between ellipsis and clitic-*lo* constructions also sheds light on how surface and deep anaphora are differentially resolved.

References:

[1] Tanenhaus & Carlson (1990); [2] Merchant (2014); [3] Kim *et al.* (2011); [4] SanPietro *et al.* (2012); [5] Arregui *et al.* (2006); [6] Kehler (2000); [7] Kertz (2013); [8] Bobaljik & Zocca (2009); [9] Hankamaker & Sag (1984); [10] Xiang & Vegh (2013).