Online processing of an elided r-expression

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Vehicle Change: Ellipsis constructions tolerate mismatch between the ellipsis site and the antecedent ([1]). For example, in (1), although the possessor NP in the antecedent is *John's*, the VP-ellipsis site (VPE-site) presumably contains *his*. This must be the case because, if the possessor NP in the VPE-site is *John's*, co-reference between the subject pronoun and the possessor NP should be impossible (*He_1 loves $John_1$'s dog.) [2]

(1) Mary [$_{VP}$ loves John's dogs] and he_1 does [$_{VP}$ ~~love his$_1$ dog~~] too

This particular mismatch is called Vehicle Change (VC) effect ([1,3]). The VC effect poses an interesting challenge to incremental parsing. In the resolution of the VPE-site, the parser needs to identity the antecedent and retrieve the content of that antecedent ([4]). In (1), the antecedent is the VP [$_{VP}$ *loves John's dog*]. However, to resolve and interpret the VPE-site in (1) (the VC-reading), the parser needs to 'convert' the retrieved name *John* to a pronoun *his*. Is the VC-reading accessed by the parser in the first place, and if so, how does the parser achieve this?

This Study: How can we test the VC-effect in online reading? We propose to investigate the availability of the VC-reading to the parser by testing the backward VPE construction as in (2).

(2) Since **he** didn't [$_{VPE}$ ø] loudly, the students [$_{VP}$ said **Norman**'s name] clearly.

In (2), the VPE-site is in the adverbial clause (*Since...*). In this configuration, the only appropriate antecedent for the VPE-site is [$_{VP}$ *said Norman's name*] in the second clause. If the parser recovers the content of the antecedent VP as is into the VPE-site [5] then it obtains [$_s$ *he didn't* [$_{VP}$ *say **Norman's name** clearly*]. Importantly, the subject of the first clause is a pronoun *he*. [6] shows that in this backward pronoun configuration, the parser tries to link the pronoun to the name as soon as possible *only* when the pronoun does not c-command the name. In (2), the recovered VP includes the name *Norman's* and it is c-commanded by the pronoun. If *Norman's* is present unchanged then the parser should **not** try to link the pronoun to the name. Alternatively, if the parser can convert the name to a pronoun to achieve the VC-reading, then the parser obtains [$_s$ *he didn't* [$_{VP}$ *say **his** name] clearly*], where linking is possible. Thus, if the VC-reading can be obtained online, it is likely that the pronoun is linked to the recovered pronoun. These processes should take place when the parser encounters the VP in the second clause. Thus, we should observe the effect of VPE-resolution in the area of the second VP.

Experiment: An eye tracking while reading experiment was conducted, in which the position of a pronoun (Nominative vs. Possessive) and the gender congruency of the pronoun and a potential antecedent (Match vs. Mismatch) were manipulated in 2x2 factorial design. In conditions (3a/b) the pronoun is in a position to c-command the R-expression 'Norman', which is illicit if the R-expression remains as is. In conditions (3b/d) there is a gender mismatch between the pronoun and the R-expression of the elided material. Adopting [6]'s methodology ,if the parser attempts to link the pronoun to an antecedent of mismatching gender a slowdown is predicted (Gender Mismatch Effect, GMME) [7].If VC occurs, then a GMME is predicted for both (3b/d), however, if no VC has occurred, then 'Norman' should be unavailable to resolve the pronoun in (3a,b), and only a GMME in (3d) is predicted.

3.a./b.Since he/she didn't loudly, the students said Norman's name clearly, and Nathan/Nancy...
c./d.Since his/her teacher didn't loudly, the students said Norman's name clearly, and Nancy...

Model comparison revealed a main effect of Gender at the second spillover region ("and Nathan/Nancy") in first pass duration ($X2 = 7.5$, $p<.01$) and a marginal effect in first fixation time ($X2 = 4.3$, $p=.08$), such that gender mismatch elicited longer durations.

Conclusion: The observation of a GMME in both (3b,d) indicates that the parser attempts to link the pronoun to the recovered material, providing evidence that VC has occurred. This result suggests that new material is introduced during the resolution of ellipsis, namely that the R-expression becomes pronominal during online sentence processing.

References:[1] Merchant (01) [2] Chomsky (81); [3] Fiengo and May (94); [3] Merchant (01);[4] Martin and McElree (08); Frazier and Clfton (01); [6] Kazanina et al. (07) JML; [7] Sturt (03) JML.

First fixation at spillover 2

First pass duration at spillover 2

Total time at spillover 2