

The effect of coargumenthood on the on-line processing of clitic pronouns

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Empirical research has played a pivotal role in the development and revision of the binding principles. In Romance languages, children's difficulties with Principle B are restricted to complements of perception and causative verbs (Baauw et al. 1999; Brunetto 2015), suggesting that the traditional notion of local domain is problematic, and that the absence of *coargumenthood* in these structures can explain their special status. In the processing literature, this notion has been less extensively explored. Studies on the processing of English full pronouns in simple clauses have reported processing disruption (longer reading times) when the sentence fails to provide a structurally licit antecedent for the pronoun, as in (1) (Badecker and Straub 2002; Kennison 2003; Chow et al. 2014). This *grammaticality effect* typically appears early. However, another recurring finding is that an illicit local antecedent that matches the pronoun in gender can also exert an *inhibitory interference*, causing longer reading times in (1) than in (2), where the pronoun has no matching antecedent. One hypothesis is that, having exhausted the search for a licit antecedent, the parser attempts a repair strategy which may temporarily consider illicit antecedents.

In this study, we explore the adult on-line processing of Italian clitic pronouns in two types of restructuring predicates: with modals (3) and perception verbs (4). 36 Italian university students participated in a self-paced, word by word reading task. The experiment consists of a 3x2 design with factors: non-local subject gender (match/mismatch); (ii) local subject gender (match/mismatch); coargumenthood (yes/no). Since all the structures in question involve clitic climbing, we predict that the effect of coargumenthood should be seen at the infinitive region or immediately after. Average RTs by region and condition are plotted in Fig.1. For each condition, we fitted a linear mixed effect model including fixed effects of accessible (non-local) subject, inaccessible (local) subject, and their interaction. The results show a different time course of interpretation in the two sentence types. In sentences containing a modal, we found an early effect of non-local subject match at the infinitive region ($t=-2.97$, $p=.003$) and at the infinitive+1 region ($t=-2.38$, $p=.01$): comprehenders were significantly faster when the accessible antecedent matched the clitic in gender. No interference effects were observed at any region (no effect of local antecedent match), suggesting that comprehenders never considered illicit antecedents. This "grammaticality effect" emerged much later in ECM predicates (see fig.1). In fact, at the infinitive+2 region we found both a marginally significant effect of non-local antecedent ($t=-1.99$, $p=.04$) and of local antecedent ($t=-2.04$, $p=.04$): comprehenders were also faster when the local antecedent matched the clitic.

This convergence of adult processing and acquisition evidence has several implications. First, it is striking that clitics, unlike full pronouns, do not give rise to interference effects from illicit antecedents in coargumenthood contexts at any point during processing. This cross-linguistic selectivity suggests that interference effects cannot be simply agreement attraction effects. We hypothesize that the strong binding effects with clitics arise derivationally: given that a clitic crosses over a vP-internal subject in its derivation, movement gives rise to a Principle C configuration, which blocks intrasentential coreference in simple clauses on structural grounds. This means that, upon processing the trace of the clitic immediately after the infinitive, the parser has already discarded the local antecedent. This account is furthermore consistent with the evidence that the no gender interference effects are attested in sentences with a wh- filler and a pronoun in crossover configurations (Kush et al. 2017). In ECM clauses, just like children accept intrasentential antecedents in off-line tasks, adult comprehenders appear to temporarily

consider a matching local antecedent at a relatively late point during processing. We argue that this is a challenge for any account of the so-called Delay of Principle B Effect which capitalizes on processing breakdown or pragmatic immaturity.

- (1) [Anne thought [that Bill should owe him another chance to solve the problem]]
- (2) [Anne thought [that Jane should owe him another chance to solve the problem]]
- (3) {Emilio/Emilia} ha sognato che [{Sandro/Sandra} la voleva licenziare _ dopo gli scioperi
Emilio/Emilia dreamed that Sandro/Sandra her_{cl} wanted to.sack _ after the strikes
- (4) {Gabriele/Gabriella} sapeva che {Claudio/Claudia} la vide prelevare il denaro al bancomat
Gabriele/Gabriella knew that Claudio/Claudia her_{cl} saw _ withdraw the money at the cash machine.

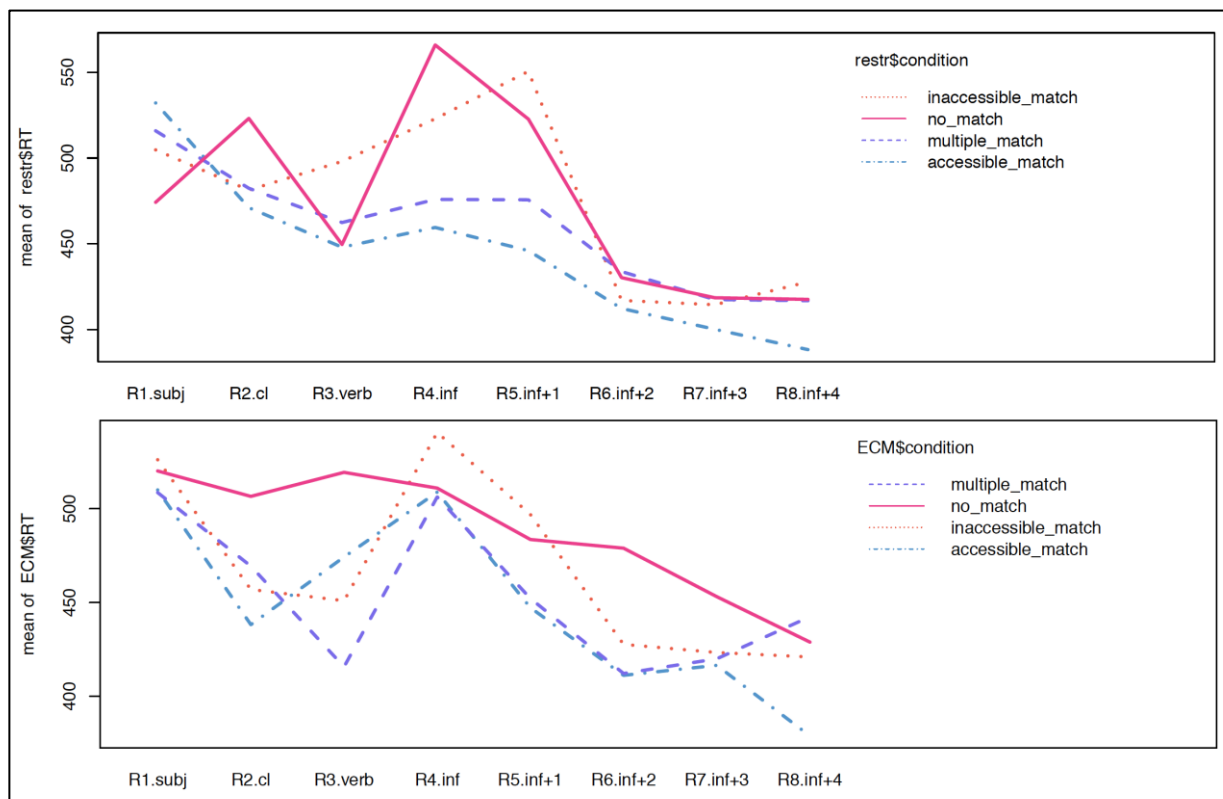


Fig.1. Average word-by-word RT in the restructuring condition (with modals) and in the ECM condition.

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