

ORDER OF MENTION AND SYNTACTIC INFORMATION IN PRONOUN RESOLUTION: A VISUAL WORLD STUDY

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10th International Symposium of Psycholinguistics
Donostia-San Sebastian . Spain . April 13th-16th, 2011

1. Introduction

Accordingly to Ariel (1996), the form of an anaphoric expression signals the accessibility of its antecedent and so the more salient an antecedent is, the less marked will be the anaphoric expression referring to it. Many authors (for instance, Costa et al., 1998, and Costa et al., 2004, for European Portuguese; Corrêa, 1998, and Melo & Maia, 2005, for Brazilian Portuguese; Carminatti, 2002, for Italian; Alonso-Ovalle et al., 2002, for Spanish) have already demonstrated that, in pro-Drop languages, the null pronoun is preferred to refer to Subject entities. However, in all these studies, the Subject was always the first referred entity, and, as Gernsbacher (1998) defends, first mentioned entities are very salient, regardless of their syntactic status. So, in the referred studies, it is not clear if the relationship between the null pronoun and the Subject may be attributed only to syntactic factors or if it was due to the combination of syntactic and order of mentioned information.

Aim of the present study: contrast the impact of order of mention – First *versus* Second mentioned entity – and of syntactic function in pronoun resolution – SUBJECT *versus* OBJECT*

* In this study, the term Object is used in a general sense, referring to obliques prepositional phrases. In our conditions, when the PP is moved to the beginning of the sentence, the preposition will work as a cue to the processor/parser to point out that it is not the Subject that is in the first position, preceding the verb, but a complement or an adjunct.

2. Experiment

Participants: 24 adult native speakers of EP from the University of Lisbon

Materials: 60 pairs picture + sentence (orally presented): 20 experimental items in 4 conditions + 40 fillers

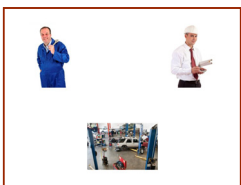
Main clause in SVO order + Subject pronoun in subordinate clause

Null	O mecânico trabalhou com o engenheiro na oficina quando remodelou o carro de competição.
Overt	O mecânico trabalhou com o engenheiro na oficina quando ele remodelou o carro de competição.
Null/Overt	The mechanic worked with the engineer in the garage when \emptyset /he remodeled the competition car.

Main clause in OVS order + Subject pronoun in subordinate clause

Null	Com o engenheiro trabalhou o mecânico na oficina quando remodelou o carro de competição.
Overt	Com o engenheiro trabalhou o mecânico na oficina quando ele remodelou o carro de competição.
Null/Overt	With the engineer worked the mechanic in the garage when \emptyset /he remodeled the competition car.

Task: Hear a sentence while viewing a picture + Answer a multiple choice question (*Who remodeled the car?* a) *the mechanic* b) *the engineer*)



All sentences were previously tested with an off-line multiple choice questionnaire. Some were readjusted or replaced.

Procedure: Eye movements were registered with an IVIEW X™ HI-SPEED (500Hz)

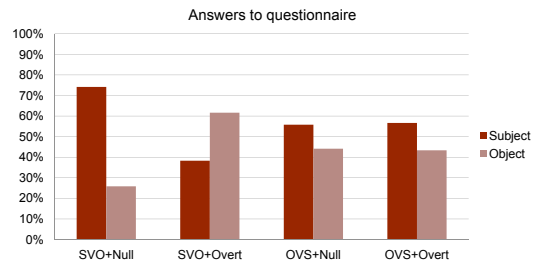
Analysis: Off-line – percentage of SUBJECT/OBJECT choice on each condition

On-line – contrast the number of fixations on each entity (SUBJECT *versus* OBJECT) since the onset of the pronoun, on the Overt pronoun condition, or since the onset of the Verb, on the null pronoun condition, and for a 1000ms time window

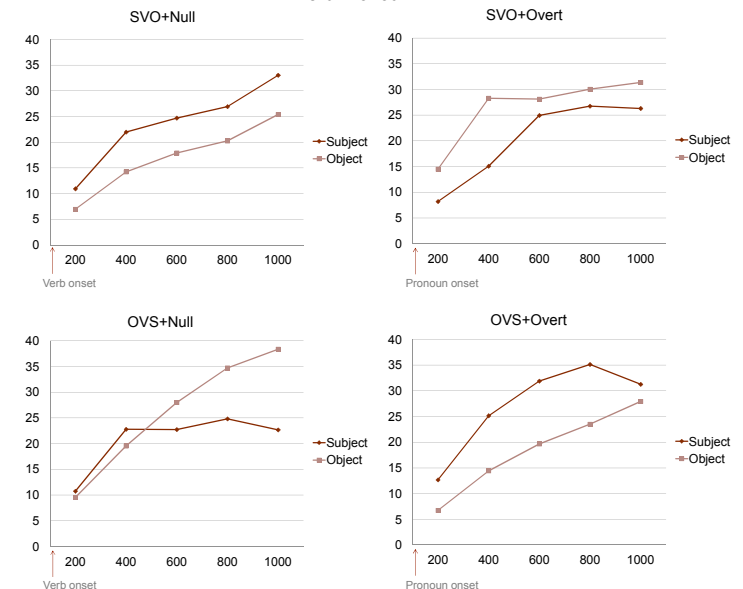
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3. Results



Number of fixations on the preceding SUBJECT/OBJECT since the onset of the Verb/Pronoun



4. Discussion

- When antecedents are on their canonical ordering, the expected tendency is confirmed both on the off-line and on the on-line data: the null pronoun retrieves the SUBJECT and the overt one retrieves the OBJECT
- When SUBJECT and OBJECT are not on their canonical ordering, there are changes in the antecedent retrieving preference
 - Off-line: SUBJECT is preferred both for null and overt pronoun, although the difference between SUBJECT and OBJECT is very narrow
 - On-line: OBJECT is preferred for null pronoun while SUBJECT is the preferred antecedent for the overt pronoun

5. Conclusions

Our results suggest that Order of Mention plays an important role on saliency establishing and, consequently, on antecedent retrieving: (i) although the off-line results show a preference for SUBJECT, the difference between OBJECT and SUBJECT is not as clear as when they are on their canonical ordering; (ii) during on-line processing, Order of Mention may for a while overcome Syntactical role: if the OBJECT is moved to the head of the sentence, appearing as the first mentioned entity, it may become more salient than the SUBJECT, being for that reason the best candidate to co-refer with the null pronoun.



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Acknowledgments: FCT Fundação para a Ciência e a Tecnologia
PTDC/LIN/67854/2006 MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR