1. Relative clause processing

The attachment of ambiguous relative clause, which may attach to a non-local (N1) or a local noun (N2) - "N1-P-N2-RC structure" - still occupies a prominent position in the field of sentence processing. The attention given to this structure comes from evidences showing that speakers/hearers of some languages exhibit the preference of attaching the RC to N1, while in others the preference is to attach to N2, as in (1) below, challenging the existence of a universal parser (see e.g., Frazier and Fodor, 1978; Cueto and Mitchell, 1988).

(1) O detective procurou o vizinho do criado que estava implicado em vários casos.

(The detective searched for the neighbor of the servant who was implicated in many issues)

2. Gender and number agreement in the Portuguese grammar

- Portuguese is a Romance null subject language; therefore it has a rich inflectional system.
- Morphological features encode nominal and verbal agreement relations. The nominal inflection encompasses gender and number, and the verbal one covers number, person, tense, mood and aspect.
- In NPs gender is marked in nouns, determiners, quantifiers and adjectives.
- Regularly, grammatical gender is encoded through the masculine affix "-o" and the feminine "-a". But this does not work in a systematic way. The NP in (2) exemplifies the most common pattern; (3) is also a frequent one; (4) and (5) show words whose gender is only determined by the previous article.

(2) A aluno; aluna
(3) O professor; a professora
(4) O pianista, a pianista
(5) O cliente, a cliente

- Number features encode singular and plural, and they indicate agreement between the noun and its specifier or adjectival modifiers (6-7), and between subject and verb (8-9).

(6) A estudante; a estudante
(7) O professor; a professora

3. The present study

- This is an exploratory ongoing study focused in theoretical and methodological aspects related to the sentence processing field. We use the N1-P-N2-RC structure, as in (1), to examine linguistic variables related to the disambiguation in the relative clause processing, and more specifically to evaluate influences of morphological features marking gender and number in order to constrain the attachment of the RC to a given antecedent.

Method

- 2 self-paced reading experiments: the sentences were presented word by word, each followed by two alternatives that probed the comprehension of the RC attachment to N1 or to N2.
- 24 items were manipulated as to undo the ambiguity in a full paradigm of number and gender agreement, then forcing the RC attachment in favor of N1 or N2 (10-11)

Experiment 1 — Number

(10) O detective procurou o vizinho[masc] do criado[masc] que estava[sing] implicado[sing] em vários casos. (The detective searched for the neighbor of the servant who was implicated in many cases.)


(12) O aluno[masc] estudou[masc] o livro;
(13) O aluno[masc] estudou[masc] a matéria;
(14) O aluno[masc] estudou[masc] a matéria;

Experiment 2 — Gender


(16) O aluno[fem] estudou[fem] a matéria;

48 fillers

Subjects: 48 (24 in each experiment), native speakers of EP

Results

Confusions are expressed in terms of the ratio of sentences determined by each strategy, and statistical significance between the strategies is assessed by means of the Fisher's Exact Test. All forced disambiguation strategies:

Fisher’s Exact Test:

Pairwise comparisons between the strategies:

SPP vs. SPS: p < .45
SPP vs. SPF: p < .001
SPP vs. SPS: p < .001

Conclusion

Comprehension of the questions: (a) the grammatical strategies of disambiguation of number and gender in EP, commonly employed in other languages throughout the investigation of this structure, reveal significant differences as to the subjects’ behavior; (b) the number agreement strategies imply error rates significantly bigger than gender agreement strategies. Similar results were observed in Brazilian Portuguese in self-paced reading and auditory experiments (Lourenço-Gomes, 2008); and (c) the forced attachment strategy with plural N2 (SPS) induced an error rate twice as bigger as the one of the other number and gender agreement disambiguation strategies. However, experiments realized in EP with the same structure manipulating the way of sentence segmentation, including word by word, showed that the interaction between the disambiguation strategy through number agreement and the way of the segmentation of the sentences in the self-paced reading technique enforce distinct comprehension effects, especially as to the forced attachment strategies with plural N2 – SPS (Lourenço-Gomes, 2011).

References


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