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Short article

The processing of subject and object relative clauses in Spanish: An eye-tracking study

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A normative study and an eye-tracking experiment investigated the influence of animacy on the processing of subject and object relative clauses in Spanish. The results showed that object relative clauses caused more difficulty than subject relative clauses, but that animacy modulated this preference. The overall pattern was similar to findings in other languages. However, because of the syntactic characteristics of Spanish relative clauses, the results give novel insights into the processing mechanisms that underlie relative clause processing.

Keywords: Syntactic processing; Eye movements; Animacy; Subject relative clause.

A central issue in the study of sentence comprehension is the question of how we structure a string of incoming words into a hierarchical representation that allows us to determine the meaning of a sentence. Among the syntactic structures that have proved to be useful in testing theories of sentence processing are subject and object relative clauses. A considerable number of experiments have found that subject relative clauses, such as (1), below, are easier to process than object relative clauses like (2) (Ford, 1983; Gennari & MacDonald, 2008; Gibson, 1998; Gordon, Hendrick, & Johnson, 2001; Just & Carpenter, 1992; King & Just, 1991; Mak, Vonk, & Schriefers, 2002, 2006; Reali & Christiansen, 2007; Traxler, Morris, & Seely, 2002):

1. The senator that attacked the reporter admitted the error.
2. The senator that the reporter attacked admitted the error.

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Until recently, most of the work on the processing of subject and object relative clauses has been in English. In English, the subject and object relative clauses differ in constituent order. One of the consequences of this is that subject and object relative clauses differ not only in syntactic structure, but also in the working-memory load that they impose during processing. While the relative clause subject (*the senator*) is being processed in the object relative clause (2), the expectation for the relative clause verb phrase has to be stored in memory. An equivalent storage cost is not required in (1), where the relative clause verb appears adjacent to the relativizer *that*. Thus, theories based on working memory have proposed that storage cost is an important factor in the difficulty of object relative clauses (Gibson, 1998; King & Just, 1991; Waters & Caplan, 1996a, 1996b).

Another class of theories propose that the difference between (1) and (2) can be traced to the parsing preferences that are used to resolve local ambiguity. These preferences include the *minimal chain principle* (Clifton & Frazier, 1989; De Vincenzi, 1991), which corresponds to a preference to keep unbounded dependencies as short as possible; and the related *active filler hypothesis* (Frazier, 1987), which corresponds to a preference to complete an unbounded dependency as soon as possible, once a filler, such as a relative pronoun, has been processed in the input. These theories predict the subject relative preference because in English, and many other languages, the unbounded dependency is shorter and can be established more quickly in the subject relative than the object relative. Other theories propose that nonstructural preferences, such as those based on animacy, play an important role (Gennari & McDonald, 2008; Mak et al., 2002, 2006; Traxler et al., 2002).

However, English is not an ideal language for testing these theories, because it is effectively impossible to manipulate subject and object relative clauses without also affecting word order and thus memory cost. In order to attain a better understanding of relative clause processing, it is therefore essential to look at a range of languages that exhibit a number of different syntactic structures. Here we investigate the processing of subject and object relative clauses in Spanish, a language that, as we describe below, allows this manipulation without changing the surface order of words.

Cross-linguistic evidence has been useful in the study of animacy effects in relative clause processing. Consider the object relative clauses in (3), (4), and (5) below. When discussing relative clauses, we henceforth use the term "antecedent NP" for the modified noun phrase (e.g., *the director* in Example 3) and "RC-internal NP" for the NP inside the relative clause (e.g., *the producer* in Example 3).

3. The director that the producer liked.
4. The director that the movie pleased.
5. The movie that the director liked.

Previous studies have shown considerable processing difficulty for object relatives (compared with subject relatives) when both the antecedent and RC-internal NP are animate, as in (3) (e.g., Mak et al., 2002), or when the antecedent NP is animate, and the RC-internal NP is inanimate, as in (4) (e.g., Mak et al., 2002, 2006; Traxler et al., 2002; Traxler, Williams, Blozi, & Morris, 2005). However, the difficulty of object relatives is significantly reduced in cases where the antecedent NP is inanimate and the RC-internal NP is animate, as in (5). In addition, Mak et al. (2006) show that object relative clauses also cause marked processing difficulty when both antecedent and RC-internal NPs are inanimate.

Based on data from Dutch, Mak et al. (2006) interpret this pattern of findings in terms of a theory based on topicality. In Dutch, unlike in English, both subject and object relative clauses have a verb-final word order analogous to (3–5), with the relative clause following the antecedent NP and the RC-internal NP preceding the verb. If the two relevant NPs differ in number (i.e., one singular and one plural), the relative clause can be disambiguated either as a subject or an object relative via agreement on the verb or auxiliary. Thus, in many cases the content of both of the relevant NPs will be known before it becomes clear whether the clause is a subject or object relative.

In Mak et al.'s (2006) account, the basic subject relative preference is explained by the fact that the antecedent NP usually coincides with the topic of the relative clause, and topics are generally assigned to subject position. If the antecedent NP is linked to the subject position, a subject relative structure will result. Moreover, Mak et al. assume that, other things being equal, animate entities are preferred as topics over inanimate entities.

One interesting feature of Mak et al.'s (2006) account is their proposal that the processor makes the decision on relative clause structure by weighing up the animacy and/or topicality of the two relevant NPs. In a language like Dutch, Mak et al. assume that the choice of relative clause structure is not made until at least both the antecedent NP and the RC-internal NP have been processed, and, in some cases, the decision is delayed even further. First, consider the case where the antecedent NP is inanimate. If the RC-internal NP is also inanimate, the more topic-worthy antecedent NP is linked to the relative clause subject position, resulting in a subject relative. However, if the antecedent NP is inanimate, and the RC-internal NP is animate, as in (5), there will be a conflict between the two constraints; the topicality of the antecedent NP favours the subject relative analysis, but the animacy of the RC-internal NP favours the object relative analysis. In such cases, Mak et al. (2006) propose that, in Dutch, the commitment is postponed until disambiguating information (i.e., the verb or auxiliary) is encountered, resulting in the lack of difficulty that they observed for this animacy combination for object relatives, compared with subject relatives. In cases where the antecedent NP is animate, it is also possible for the RC-internal NP to be more topic-worthy in some way (e.g., if it coincides with the discourse topic, or if it is a personal pronoun; Mak, Vonk, & Schriefers, 2008). Thus, even with an animate antecedent NP, the choice of relative clause structure will be delayed until the form and content of the RC-internal NP are known. It is possible that this delay in the choice of structure is a strategy that arises due to the characteristics of Dutch relative clause syntax. For example, it is possible that the processor obligatorily commits to the relative clause structure at least at the point where the relative verb is reached, but may leave the structure underspecified while processing preverbal material. This would be compatible with the observation of delays in Mak et al.'s (2006) Dutch experiments, because Dutch relative clauses are verb final. However, it is also possible to imagine a more extreme version of the topicality hypothesis, in which no commitment takes place until the processor knows the animacy of both the antecedent NP and the RC-internal NP, regardless of the position of the verb. One of the aims of the present paper is therefore to test whether similar delays can also be observed in a language with a different relative clause structure, involving an earlier verb position.

In the current study, we use Spanish to make a further investigation of the influence of animacy on relative clause processing. Spanish relative clause syntax differs from both English and Dutch. Unlike English, subject and object relative clauses can exhibit the same surface constituent order. However, unlike Dutch, which has verb-final relative clauses, Spanish allows verb-initial relative clauses. Consider Examples 6 and 7 below:

6. *el atleta que venció al corredor*
   [the athlete who beat the runner]
   (subject relative)
7. *el atleta que venció el corredor*
   [the athlete who the runner beat]
   (object relative)[1]

In (6), *al corredor* ("the runner") includes the determiner *al*, which is the form required for an animate direct object (it is an incorporation of the preposition *a* with the masculine singular definite article *el*). Therefore Example 6 is an example

[1] Spanish also allows an additional relativizer *al que/a la que*, which can be used for object relatives modifying an animate NP. This form is unambiguous in the sense that it rules out a subject relative. In the present paper, we use the ambiguous relativizer *que*, for which object and subject relatives are both grammatical, and the modified NP may be animate or inanimate.

of a subject relative, with *el atleta* ("the athlete") as the modified head noun phrase, coindexed with a subject gap, and *al corredor* as the direct object within the relative clause. In contrast, *el corredor* in (7) can only be interpreted as a subject, because it does not include the determiner form required for an animate direct object (*el* is the standard masculine singular definite article). Therefore, (7) is an example of an object relative. Here, the subject of the relative clause, *el corredor*, is extraposed to the right of the verb *venció*, and this is a natural-sounding word order in Spanish. Thus, the disambiguation in (6) and (7) is through the determiner of the RC-internal NP (*el* vs. *al*) in combination with the head noun of the RC-internal NP (*corredor*). This means that the animacy information of the antecedent NP (*el atleta*) is available before the disambiguating word, but that of the RC-internal NP (*el/al corredor* in Examples 6 and 7) is not. This is in contrast to the Dutch sentences considered by Mak et al. (2006), where animacy and topicality information for both antecedent NP and RC-internal NP were available before disambiguation. The purpose of the experiment was to test whether a subject relative clause preference would be observed under these conditions and, if so, whether and in what manner it would be modulated by animacy. The results can be expected to shed more light on the time-course with which the choice of relative clause structure is made.

EXPERIMENT

The experiment used eye tracking during reading and involved a manipulation of subject versus object relative clauses and the animate versus inanimate antecedent NPs, as shown in the following example:

Subject relative: NP1-animate NP2-animate (A-A):

Conocían al atleta que venció finalmente al corredor el año pasado.

[They knew the athlete that beat the runner finally last year.]

Subject relative: NP1-inanimate NP2-animate (I-A):

Conocían la enfermedad que venció finalmente al corredor el año pasado.

[They knew the illness that beat the runner finally last year.]

Object relative: NP1-animate NP2-animate (A-A):

Conocían al atleta que venció finalmente el corredor el año pasado.

[They knew the athlete that the runner beat finally last year.]

Object relative: NP1-inanimate NP2-animate (I-A):

Conocían la enfermedad que venció finalmente el corredor el año pasado.

[They knew the illness that the runner beat finally last year.]

The design included four conditions, two of which included subject relatives, and two of which included object relatives. In two of the conditions, both the antecedent NP and the RC-internal NP were animate (A-A). In the other two conditions, the antecedent NP was inanimate, and the RC-internal NP was animate (I-A).

Given the position of the disambiguating information in the Spanish sentences, if a subject relative preference is observed, it must be the case that the choice of analysis is made before the RC-internal NP is reached in the input, rather than being delayed until topicality information about both NPs has become available, as Mak et al. (2006) proposed for Dutch. Moreover, by examining how animacy modulates this preference, it is possible to test when the animacy information is taken into account. The I-A conditions are similar to the conditions where Mak et al. (2006) found no evidence of a subject relative preference. If like Mak et al. (2006), we also fail to find a subject relative preference between the two I-A conditions, while finding such a difference between the A-A conditions, it will be compatible

with a model in which the processor delays the choice of relative clause structure when the antecedent NP is inanimate, but not when the antecedent NP is animate. However, if we find evidence of a subject relative preference in the I-A conditions, we can conclude that people sometimes make an early commitment to the subject relative clause, even when the antecedent NP is inanimate.

Before the experiment was run, the stimuli were evaluated with a questionnaire study, which was intended to confirm the naturalness of our materials in both subject and object relative conditions.

Norming study

Readers judged the naturalness of our materials on a scale from 1 to 7 (1 ungrammatical and not making sense; 7 grammatical and making sense).

We presented this questionnaire study to a group of 80 students. They were asked to read subject and object relative clauses with two animate NPs or inanimate NP1 and animate NP2, and they rated the naturalness of these sentences. Example items for each of the four conditions are set out earlier in the paper, under "Experiment".

Four versions of the questionnaire were created from 40 experimental sentences. Filler sentences were added, resulting in 160 sentences, which were randomized. We selected 36 sentences for the experiment, in such a way as to minimize the differences in naturalness ratings between conditions. Analysis of these 36 sentences showed that the mean naturalness ratings for subject relative and object relative sentences overall were 5.17 versus 5.07, respectively; $t(35) = 1.37$, $p = .17$. Thus, no difference in naturalness was found between the two types of sentence; statistically, the object relative sentences sounded as natural as the subject relative sentences. We also evaluated whether there was a difference in naturalness between subject and object relatives in an analysis restricted to the two I-A conditions. This is important because the two conditions involve very different semantics (e.g., an athlete beating an illness vs. an illness beating an athlete). However, there was no effect of subject versus object relative in the analysis restricted to the I-A conditions (subject relative: 5.28 vs. object relative: 5.26); $t < 1$, $p = .67$. The A-A conditions also did not differ reliably (subject relative: 5.07 vs. object relative: 4.87); $t(35) = 1.4$, $p = .1$.

Method

Participants

A total of 28 undergraduate students of University of La Laguna participated in the experiment for course credit. None of them had participated in the questionnaire.

Materials and design

A total of 36 sets of sentences were constructed, based on the results of the questionnaire study (see Appendix). As in the norming questionnaire, an adverbial phrase was included between the verb of the relative clause and the disambiguating region. This was to ensure that any early commitment to a relative clause analysis would be made without parafoveal preview of potentially disambiguating information. The design included animacy (A-A vs. I-A) and relative clause type (subject relative vs. object relative) as within-subjects and within-items factors.

Procedure

The sentences were presented in lower-case letters except where upper case was appropriate. The stimuli were presented on a video screen interfaced with a PC-compatible computer. Each sentence was displayed on one line. Participants' eye movements were monitored by a Fourward Technologies Dual Purkinje eye-tracker. Viewing was binocular, with eye position recorded from the right eye. The signal from the eye-tracker was sampled every millisecond.

Each participant initially read 10 practice sentences to become familiar with the procedure. Then he or she read the 36 experimental sentences intermixed randomly with the 92 filler sentences. The four conditions of each item were distributed across four lists, using Latin square counterbalancing.

Results

We present eye movement data for four regions, which are summarized below:

Verb region: "venció" [beat]

Adverb region: "finalmente" [finally]

Critical region: "al/el corredor" [the (object/subject) runner]

Final region: "el año pasado" [last year].

Before analysis, we removed individual fixations longer than 800 ms and shorter than 80 ms. Extremely long fixations are likely to indicate tracker loss, and little useful information is likely to be accrued during extremely short fixations (Rayner & Pollatsek, 1989). We present the same four eye movement measures that are reported in Traxler et al. (2002): *First-pass reading time* is the summed duration of all initial fixations in the region, between the first rightward saccade into the region and the first saccade out of the region (either leftward or rightward). *Quasi first-pass time* is the summed duration of all fixations in the region, between the first rightward saccade into the region and the first rightward saccade out of the region. *Percentage of first-pass regressions* is the percentage of trials on which first-pass reading in the region was terminated with a regressive saccade. *Total time* is the summed total of all fixations in the region. Trials without any relevant fixations (due to skipping, etc.) were treated as missing data.

Data were analysed using the linear mixed effect regression (LMER) analysis (Baayen, 2008; Baayen, Davidson, & Bates, 2008). LMER provides a model of the experimental data that can be evaluated for goodness of fit. In the experiment reported here we begin by running a null model with participant and items included as simultaneous random factors. In subsequent models we successively add first the main effect of animacy and then the main effect of relative clause type as fixed factors. Finally, we introduce the interaction between the two fixed factors. The increased goodness of fit of each successive model is evaluated using a log-likelihood ratio χ^2 (see Baayen, 2008, p. 276). The percentage regression data are analysed as categorical response data, using a logistic mixed effects regression. A main effect or interaction is considered to be significant if it significantly improves the model fit relative to the previous model. For all analyses, we evaluate the pairwise difference between subject and object relative clauses separately for each of the two animacy levels. The pairwise comparisons are based on the *relative clause type* contrast in the LMER model for the interaction. For the reading-time measures, pairwise comparisons are reported as t statistics, with significance values computed using Monte Carlo Markov chain sampling with 10,000 iterations (see Baayen, 2008, p.270). For the proportion of regression data, we report pairwise comparisons as z-values, taken directly from the logistic LMER model, along with the associated significance level.

Table 1 shows the condition means for all regions and measures. The table also shows the χ^2 statistic, and its significance level, for the two main effects and interaction, as well as statistics and significance levels for pairwise comparisons.

Verb and adverb regions

The only significant effect for the verb and adverb regions was a main effect of relative clause type, for total times, which was obtained in both of these regions: Object relative sentences were read more slowly than subject relative sentences. In the adverb region, there was also a trend towards an interaction in total times, with a reliable object relative penalty of 155 ms for the A-A conditions and a smaller, nonsignificant difference of 39 ms for the I-A conditions. There were no reliable effects involving either of the two experimental factors in the other measures.

Critical region

In the critical region, there was a main effect of relative clause type for all three of the reading-time-based measures, again with object relatives being read more slowly than subject relatives. In addition, both total times and quasi first-pass

Table 1. *Empirical means and statistical results for eye movement measures, by condition, for each analysis region*

			Subject RC		*Object RC*		$\chi^2(1)$			*SRC vs. ORC*	
Region			*A-A*	*I-A*	*A-A*	*I-A*	*Animacy*	*RC-type*	*An × RC*	*A-A*	*I-A*
Verb	"*venció*" [beat]	FPT (ms)	433	432	429	438	0.09 *(ns)*	0.00 *(ns)*	0.14 *(ns)*	$t < 1$	$t < 1$
		QFP (ms)	493	496	484	504	0.70 *(ns)*	0.01 *(ns)*	0.34 *(ns)*	$t < 1$	$t < 1$
		FPR (%)	16.7	18.5	17.1	19.8	0.94 *(ns)*	0.22 *(ns)*	0.03 *(ns)*	$z = 0.21$ *(ns)*	$z = 0.45$ *(ns)*
		TT (%)	605	628	667	671	0.70 *(ns)*	5.88**	0.35 *(ns)*	$t = 2.13$**	$t = 1.30$ *(ns)*
Adverb	"*finalmente*" [finally]	FPT (ms)	536	528	548	544	0.52 *(ns)*	1.30 *(ns)*	0.00 *(ns)*	$t < 1$	$t < 1$
		QFP (ms)	592	582	603	614	0.03 *(ns)*	2.19 *(ns)*	0.16 *(ns)*	$t < 1$	$t = 1.32$ *(ns)*
		FPR (%)	12.3	11.3	12.9	16.8	0.51 *(ns)*	1.80 *(ns)*	1.19 *(ns)*	$z = 0.14$ *(ns)*	$z = 1.71$*
		TT (ms)	711	751	826	791	0.00 *(ns)*	8.97***	3.45*	$t = 3.44$****	$t < 1$
Critical	"*al/el corredor*" [the runner]	FPT (ms)	566	546	625	574	4.81**	7.48***	0.99 *(ns)*	$t = 2.64$***	$t = 1.22$ *(ns)*
		QFP (ms)	607	618	692	632	3.68*	8.89***	4.41**	$t = 3.60$***	$t < 1$
		FPR (%)	11.1	16.9	13.8	16.7	3.87**	0.31 *(ns)*	0.56 *(ns)*	$z = 0.93$ *(ns)*	$z = 0.06$ *(ns)*
		TT (ms)	751	756	945	846	4.09**	31.40****	4.13**	$t = 5.43$****	$t = 2.56$***
Final	"*el año pasado*" [last year]	FPT (ms)	820	781	719	812	1.57 *(ns)*	1.72 *(ns)*	6.80***	$t = 2.80$***	$t < 1$
		QFP (ms)	961	965	999	1027	0.68 *(ns)*	3.52*	0.16 *(ns)*	$t < 1$	t = 1.63
		FPR (%)	56.4	58.2	64.7	66.4	0.68 *(ns)*	7.38***	0.00 *(ns)*	$z = 1.86$*	$z = 2.05$**
		TT (ms)	955	980	980	1,038	1.94 *(ns)*	3.97**	0.86 *(ns)*	$t < 1$	$t = 2.08$**

Note: Analysis regions: First-pass time (FPT), quasi first-pass time (QFP), percentage of regressions (FPR), and total time (TT). RC = relative clause. SRC = subject relative clause. ORC = object relative clause. An × RC = Animacy × Relative Clause Type interaction. A = animate. I = inanimate. The first four columns of data show the means. The following three columns show the χ^2 value and significance levels for the two main effects and interaction. The final two columns show the relevant statistics and *p*-values for the pairwise comparisons between subject and object relatives for the two levels of the animacy factor.

*$p < .1$. **$p < .05$. ***$p < .01$. ****$p < .001$. *ns* = nonsignificant.

times showed an interaction. In both cases the A-A conditions showed the larger object relative cost: In total time, the object relative cost was significant for both levels of animacy, though the pairwise difference was larger for A-A than for I-A (194 ms vs. 89 ms), explaining the interaction. In quasi first-pass time, there was a reliable 85-ms object relative cost for the A-A conditions, but the difference for the I-A conditions (14 ms) was not significant. For first-pass time, the two factors did not interact, but the descriptive pattern of means was similar to the other reading-time measures, with a numerically larger object relative cost for A-A than for I-A (62 ms vs. 26 ms). In addition to the main effect of relative clause type, both first-pass time and total time showed a main effect of animacy (with slower times for A-A than for I-A). The only reliable effect for first-pass regressions was the main effect of animacy, with 4% more regressions for the I-A conditions than for the A-A conditions.

Final region

The final region showed a main effect of relative clause type for total time and first-pass regressions. As before, the pattern was for the object relatives to be read more slowly than the subject relatives. The corresponding effect was marginal in quasi first-pass time. An interaction was observed in first-pass times: For the A-A conditions, there was a reliable 101-ms cost for the subject relatives, but for the I-A conditions, there was a nonsignificant 31-ms difference in the other direction, with slower times for the object relative clauses. At first sight, this effect seems at odds with the general pattern of the interaction observed in the critical region, in which the object relative cost is larger for the A-A conditions than for the I-A

conditions. However, the short first-pass reading times for the A-A object relative condition could also be compatible with increased difficulty in this condition, if this difficulty tended to lead to more regressions and/or an earlier launch of regressions to previous parts of the sentence than with the A-A subject relative condition. The first-pass regression data support this interpretation: for the A-A conditions, people regressed approximately 9% more often in the object relatives than the subject relatives, and the pairwise difference was marginally significant.

Discussion

The results show that Spanish readers follow a subject relative preference, but this preference is modulated by animacy, in a pattern resembling data from other languages. The cost for object relatives was greater when both the antecedent NP and the RC-internal NP were animate (the A-A conditions) than when the antecedent NP was inanimate, and the RC-internal NP was animate (the I-A conditions). This aspect of the results resembles the Dutch findings reported by Mak et al. (2002). However, one difference is that while Mak et al. (2002) found no evidence of difficulty at all for object relatives in the I-A conditions, we did find such evidence. In our study, total times were longer for I-A object relatives than for I-A subject relatives, both in the critical region and in the final region. Moreover, there were more regressions out of the final region for I-A object relatives than for I-A subject relatives. Our results could be explained if, at least on some trials, people initially adopt a subject relative preference despite encountering an inanimate antecedent NP. However, the results are not compatible with a model in which the parser delays their choice of relative clause structure until the RC-internal NP has been found in the input. Under an extreme version of such a model, where delays occur regardless of the animacy of the antecedent NP, we would not expect to find any detectable preference at all. The data are also not compatible with a less extreme model, in which the delay only occurs for the inanimate antecedent NPs, because even in the I-A conditions, we did find some evidence of a subject relative preference. This aspect of our results differs from the Dutch data reported by Mak et al. (2006).

There are at least two possible explanations of our results. The first is that the parser initially adopts a subject relative analysis regardless of animacy (for example, due to the minimal chain principle or active filler hypothesis). Processing difficulty subsequently occurs in cases where the sentence is disambiguated as an object relative, due to the need to recover the correct analysis. It is this difficulty that is modulated by the animacy of the two relevant NPs: Recovery is more difficult when both NPs are animate, due to the confusability of the relative clause arguments. Such an account was proposed by Traxler et al. (2002), who report an English eye-tracking experiment where first-pass reading times showed an object relative cost irrespective of animacy, but other measures such as total time showed that this preference interacted with animacy. Although such an account is compatible with our data, recent work puts into question the idea that the parser invariably adopts an initial subject relative analysis. For example, when the RC-internal NP is a personal pronoun or a discourse topic, an object relative preference can be observed in Dutch (see Mak et al., 2008). Moreover, as pointed out by Mak et al. (2006), the word order differences in English relative clauses might have contributed to some component of the object relative cost observed by Traxler et al. (2002).

A second possible account is the adapted version of Mak et al.'s (2006) topicality hypothesis suggested in the introduction of the present paper. According to this account, instead of delaying until the RC-internal NP is read, the processor has to commit to a choice of relative clause analysis at least at the point of the relative verb. In our Spanish verb-initial relative clauses, this means that the processor has to make a choice based only on the antecedent NP and the verb, and it may be that faced with this limited information, the processor always chooses the subject relative analysis. If so, the interaction with animacy

would then have to be explained in terms of the difficulty of recovery, as proposed by Traxler et al. (2002). However, another possibility is that when the antecedent NP is inanimate, the processor may sometimes "gamble" on the appearance of a more suitable relative clause subject later in the input, leading to an initial object relative analysis on some of the I-A trials. This would explain the smaller object relative cost in the I-A conditions. The overall account would remain compatible with Mak et al.'s Dutch results, because their verb-final relative clauses would allow more scope for delays.

The experiment reported here illustrates the value of considering multiple languages in the study of relative clause processing. It is only by considering data from a range of languages with different properties that we can make true progress in our understanding of sentence processing.

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APPENDIX

Experimental stimuli

1. Subject relative: NP1-animate NP2-animate A-A
Conocían al atleta que venció finalmente al corredor el año pasado.
They knew the athlete that finally beat the runner last year.

Subject relative: NP1-inanimate NP2-animate I-A
Conocían la enfermedad que venció finalmente al corredor el año pasado.
They knew the illness that finally beat the runner last year.

Object relative: NP1-animate NP2-animate A-A
Conocían al atleta que venció finalmente el corredor el año pasado.
They knew the athlete that the runner finally beat last year.

Object relative: NP1-inanimate NP2-animate I-A
Conocían la enfermedad que venció finalmente el corredor el año pasado.
They knew the illness that the runner finally beat last year.

2. Subject relative: NP1-animate NP2-animate A-A
Antonio leyó al periodista que criticó duramente al escritor durante el certamen.
Antonio read to the journalist that harshly criticized the writer during the meeting.

Subject relative: NP1-inanimate NP2-animate I-A
Antonio leyó el artículo que criticó duramente al escritor durante el certamen.
Antonio read the article that harshly criticized the writer during the meeting.

Object relative: NP1-animate NP2-animate A-A
Antonio leyó al periodista que criticó duramente el escritor durante el certamen.
Antonio read to the journalist that the writer harshly criticized during the meeting.

Object relative: NP1-inanimate NP2-animate I-A
Antonio leyó el artículo que criticó duramente el escritor durante el certamen.
Antonio read the article that the writer harshly criticized during the meeting.

3. Subject relative: NP1-animate NP2-animate A-A
Aplaudieron al actor que llevó ese año al director a los Óscars.
They applauded the actor that this year led the director to the Oscars.

Subject relative: NP1-inanimate NP2-animate I-A
Aplaudieron la película que llevó ese año al director a los Óscars.
They applauded the film that this year led the director to the Oscars.

Object relative: NP1-animate NP2-animate A-A
Aplaudieron al actor que llevó ese año el director a los Óscars.
They applauded the actor that this year led the director to the Oscars.

Object relative: NP1-inanimate NP2-animate I-A
Aplaudieron la película que llevó ese año el director a los Óscars.
They applauded the film that the director this year led to the Oscars.

4. Subject relative: NP1-animate NP2-animate A-A
Conocían al abogado que ocultó premeditadamente al político del escándalo.
They knew the lawyer that with premeditation hid the politician from the scandal.

Subject relative: NP1-inanimate NP2-animate I-A
Conocían el informe que ocultó premeditadamente al político del escándalo.
They knew the report that with premeditation hid the politician from the scandal.

Object relative: NP1-animate NP2-animate A-A
Conocían al abogado que ocultó premeditadamente el político del escándalo.
They knew the lawyer that with premeditation hid the politician from the scandal.

Object relative: NP1-inanimate NP2-animate I-A
Conocían el informe que ocultó premeditadamente el político del escándalo.
They knew the report that with premeditation hid the politician from the scandal.

5. Subject relative: NP1-animate NP2-animate A-A
Los socios vieron al contable que censuró duramente al director en la junta.
The associates saw the accountant that harshly censured the director in the meeting.

Subject relative: NP1-inanimate NP2-animate I-A
Los socios vieron el documento que censuró duramente al director en la junta.
The associates saw the document that harshly censured the director in the meeting.

Object relative: NP1-animate NP2-animate A-A
Los socios vieron al contable que censuró duramente el director en la junta.
The associates saw the accountant that the director harshly censured in the meeting.

Object relative: NP1-inanimate NP2-animate I-A
Los socios vieron el documento que censuró duramente el director en la junta.
The associates saw the document that the director harshly censured in the meeting.

6. Subject relative: NP1-animate NP2-animate A-A
Aplaudieron al mecenas que sacó súbitamente al artista del anonimato.
They applauded the patron that quickly brought back the artist from anonymity.

Subject relative: NP1-inanimate NP2-animate I-A
Aplaudieron la escultura que sacó súbitamente al artista del anonimato.
They applauded the sculpture that quickly brought back the artist from anonymity.

Object relative: NP1-animate NP2-animate A-A
Aplaudieron al mecenas que sacó súbitamente el artista del anonimato.
They applauded the patron that the artist quickly brought back from anonymity.

Object relative: NP1-inanimate NP2-animate I-A
Aplaudieron la escultura que sacó súbitamente el artista del anonimato.
They applauded the sculpture that the artist quickly brought back from anonymity.

7. Subject relative: NP1-animate NP2-animate A-A
Denunciaron al cirujano que acusó en público al médico de calumniador.
They denounced the surgeon that overtly accused the doctor of being a slanderer.

Subject relative: NP1-inanimate NP2-animate I-A
Denunciaron el informe que acusó en público al médico de calumniador.
They denounced the report that overtly accused the doctor of being a slanderer.

Object relative: NP1-animate NP2-animate A-A
Denunciaron al cirujano que acusó en público el médico de calumniador.
They denounced the surgeon that the doctor overtly accused of being a slanderer.

Object relative: NP1-inanimate NP2-animate I-A
Denunciaron el informe que acusó en público el médico de calumniador.
They denounced the file that the doctor overtly accused of being a slanderer.

8. Subject relative: NP1-animate NP2-animate A-A
El banco apoyó al director que financiaba fuertemente al ejecutivo de inversiones.

The bank supported the director that strongly funded the executive of the investment fund.

Subject relative: NP1-inanimate NP2-animate I-A

El banco apoyó el proyecto que financiaba fuertemente al ejecutivo de inversiones.

The bank supported the plan that strongly funded the executive of the investment fund.

Object relative: NP1-animate NP2-animate A-A

El banco apoyó al director que financiaba fuertemente el ejecutivo de inversiones.

The bank supported the director that the executive of the investment fund strongly funded.

Object relative: NP1-inanimate NP2-animate I-A

El banco apoyó el proyecto que financiaba fuertemente el ejecutivo de inversiones.

The bank supported the project that the executive of the investment fund strongly funded.

9. Subject relative: NP1-animate NP2-animate A-A

Censuraron al periodista que denunció duramente al político a través de la radio.

They censored the journalist that directly denounced the politician through the radio.

Subject relative: NP1-inanimate NP2-animate I-A

Censuraron el programa que denunció duramente al político a través de la radio.

They censored the program that directly denounced the politician through the radio.

Object relative: NP1-animate NP2-animate A-A

Censuraron al periodista que denunció duramente el político a través de la radio.

They censored the journalist that the politician directly denounced through the radio.

Object relative: NP1-inanimate NP2-animate I-A

Censuraron el programa que denunció duramente el político a través de la radio.

They censored the program that the politician directly denounced through the radio.

10. Subject relative: NP1-animate NP2-animate A-A

Investigaron al testigo que señalaba claramente al asesino durante el juicio.

They investigated the witness that clearly signaled to the murderer during the judgement.

Subject relative: NP1-inanimate NP2-animate I-A

Investigaron la prueba que señalaba claramente al asesino durante el juicio.

They investigated the evidence that clearly pointed to the murderer during the judgement.

Object relative: NP1-animate NP2-animate A-A

Investigaron al testigo que señalaba claramente el asesino durante el juicio.

They investigated the witness that the murderer clearly signalled to during the judgement.

Object relative: NP1-inanimate NP2-animate I-A

Investigaron la prueba que señalaba claramente el asesino durante el juicio.

They investigated the evidence that the murderer clearly pointed to during the judgement.

11. Subject relative: NP1-animate NP2-animate A-A

Criticaron al político que superó ilegalmente al candidato en el partido.

They criticized the politician that illegally overcame the candidate in the party.

Subject relative: NP1-inanimate NP2-animate I-A

Criticaron la votación que superó ilegalmente al candidato en el partido.

They criticized the poll that illegally overcame the candidate in the party.

Object relative: NP1-animate NP2-animate A-A

Criticaron al político que superó ilegalmente el candidato en el partido.

They criticized the politician that the candidate illegally overcame in the party.

Object relative: NP1-inanimate NP2-animate I-A

Criticaron la votación que superó ilegalmente el candidato en el partido.

They criticized the poll that the candidate illegally overcame in the party.

12. Subject relative: NP1-animate NP2-animate A-A

Asaltaron al secretario que recogió esa tarde al ejecutivo en la estación.

They attacked the secretary that picked up the executive this afternoon at the station.

Subject relative: NP1-inanimate NP2-animate I-A

Asaltaron el coche que recogió esa tarde al ejecutivo en la estación.

They attacked the car that picked up the executive this afternoon at the station.

Object relative: NP1-animate NP2-animate A-A

Asaltaron al secretario que recogió esa tarde el ejecutivo en la estación.

They attacked the secretary that the executive picked up this afternoon at the station.

Object relative: NP1-inanimate NP2-animate I-A

Asaltaron el coche que recogió esa tarde el ejecutivo en la estación.

They attacked the car that the executive picked up this afternoon at the station.

13. Subject relative: NP1-animate NP2-animate A-A

El vecino vio al perro que destrozó por completo al motorista en el cruce.

The neighbour saw the dog that completely destroyed the motorist at the crossroads.

Subject relative: NP1-inanimate NP2-animate I-A

El vecino vio el vehículo que destrozó por completo al motorista en el cruce.

The neighbour saw the car that completely destroyed the motorist at the crossroads.

Object relative: NP1-animate NP2-animate A-A

El vecino vio al perro que destrozó por completo el motorista en el cruce.

The neighbour saw the dog that the motorist completely destroyed at the crossroads.

Object relative: NP1-inanimate NP2-animate I-A

El vecino vio el vehículo que destrozó por completo el motorista en el cruce.

The neighbour saw the car that the motorist completely destroyed at the crossroads.

14. Subject relative: NP1-animate NP2-animate A-A

La policía paró al conductor que remolcó ayer al camionero en la carretera.

The police stopped the driver that towed the trucker yesterday on the highway.

Subject relative: NP1-inanimate NP2-animate I-A

La policía paró el tractor que remolcó ayer al camionero en la carretera.

The police stopped the tractor that towed the trucker yesterday on the highway.

Object relative: NP1-animate NP2-animate A-A

La policía paró al conductor que remolcó ayer el camionero en la carretera.

The police stopped the driver that the trucker towed yesterday on the highway.

Object relative: NP1-inanimate NP2-animate I-A

La policía paró el tractor que remolcó ayer el camionero en la carretera.
The police stopped the tractor that towed the trucker yesterday on the highway.

15. Subject relative: NP1-animate NP2-animate A-A

La defensa aceptó al testigo que señalo rotundamente al terrorista durante el juicio.
The defence accepted the witness that signalled emphatically to the terrorist during the judgement.

Subject relative: NP1-inanimate NP2-animate I-A

La defensa aceptó la prueba que señalo rotundamente al terrorista durante el juicio.
The defence accepted the evidence that pointed emphatically to the terrorist during the judgement.

Object relative: NP1-animate NP2-animate A-A

La defensa aceptó al testigo que señalo rotundamente el terrorista durante el juicio.
The defence accepted the witness that the terrorist emphatically signalled to during the judgement.

Object relative: NP1-inanimate NP2-animate I-A

La defensa aceptó la prueba que señalo rotundamente el terrorista durante el juicio.
The defence accepted the evidence that the terrorist emphatically pointed to during the judgement.

16. Subject relative: NP1-animate NP2-animate A-A

Premiaron al asesor que llevó recientemente al candidato al éxito.
They rewarded the advisor that recently led the candidate to success.

Subject relative: NP1-inanimate NP2-animate I-A

Premiaron el programa que llevó recientemente al candidato al éxito.
They rewarded the programme that recently led the candidate to success.

Object relative: NP1-animate NP2-animate A-A

Premiaron al asesor que llevó recientemente el candidato al éxito.
They rewarded the advisor that the candidate recently led to success.

Object relative: NP1-inanimate NP2-animate I-A

Premiaron el programa que llevó recientemente el candidato al éxito.
They rewarded the programme that the candidate recently led to success

17. Subject relative: NP1-animate NP2-animate A-A

Vieron al anciano que arrolló súbitamente al joven durante el desfile.
They saw the old man that suddenly bumped into the youth during the parade.

Subject relative: NP1-inanimate NP2-animate I-A

Vieron el coche que arrolló súbitamente al joven durante el desfile.
They saw the car that suddenly ran into the youth during the parade.

Object relative: NP1-animate NP2-animate A-A

Vieron al anciano que arrolló súbitamente el joven durante el desfile.
They saw the old man that the youth suddenly bumped into during the parade.

Object relative: NP1-inanimate NP2-animate I-A

Vieron el coche que arrolló súbitamente el joven durante el desfile.
They saw the car that the youth suddenly bumped into during the parade.

18. Subject relative: NP1-animate NP2-animate A-A

Conocían al mecenas que promocionó ese año al arquitecto en la ciudad.
They knew the patron that promoted the architect this year in the city.

Subject relative: NP1-inanimate NP2-animate I-A

Conocían el edificio que promocionó ese año al arquitecto en la ciudad.
They knew the building that promoted the architect this year in the city.

Object relative: NP1-animate NP2-animate A-A

Conocían al mecenas que promocionó ese año el arquitecto en la ciudad.
They knew the patron that the architect promoted this year in the city.

Object relative: NP1-inanimate NP2-animate I-A

Conocían el edificio que promocionó ese año el arquitecto en la ciudad.
They knew the building that the architect promoted this year in the city.

19. Subject relative: NP1-animate NP2-animate A-A

Secuestraron al capitán que recogió aquella tarde al coronel en el aeródromo.
They kidnapped the captain that picked up the colonel this afternoon at the airport.

Subject relative: NP1-inanimate NP2-animate I-A

Secuestraron el avión que recogió aquella tarde al coronel en el aeródromo.
They hijacked the plane that picked up the colonel this afternoon at the airport.

Object relative: NP1-animate NP2-animate A-A

Secuestraron al capitán que recogió aquella tarde el coronel en el aeródromo.
They kidnapped the captain that the colonel picked up this afternoon at the airport.

Object relative: NP1-inanimate NP2-animate I-A

Secuestraron el avión que recogió aquella tarde el coronel en el aeródromo.
They hijacked the plane that the colonel picked up this afternoon at the airport.

20. Subject relative: NP1-animate NP2-animate A-A

El juez cronometró al aspirante que batió ampliamente al campeón en la carrera.
The judge timed the opponent that easily beat the champion in the race.

Subject relative: NP1-inanimate NP2-animate I-A

El juez cronometró la marca que batió ampliamente al campeón en la carrera.
The judge timed the record that easily beat the champion in the race.

Object relative: NP1-animate NP2-animate A-A

El juez cronometró al aspirante que batió ampliamente el campeón en la carrera.
The judge timed the opponent that the champion easily beat in the race.

Object relative: NP1-inanimate NP2-animate I-A

El juez cronometró la marca que batió ampliamente el campeón en la carrera.
The judge timed the record that the champion easily beat in the race.

21. Subject relative: NP1-animate NP2-animate A-A

Luis defendió al abogado que confundió esa mañana al director del Banco.
Luis defended the lawyer that confused the director of the bank this morning.

Subject relative: NP1-inanimate NP2-animate I-A

Luis defendió el presupuesto que confundió esa mañana al director del Banco.

Luis defended the budget that confused the director of the bank this morning.

Object relative: NP1-animate NP2-animate A-A

Luis defendió al abogado que confundió esa mañana el director del Banco.
Luis defended the lawyer that the director of the bank mistook this morning.

Object relative: NP1-inanimate NP2-animate I-A

Luis defendió el presupuesto que confundió esa mañana el director del Banco.
Luis defended the budget that the director of the bank mistook this morning.

22. Subject relative: NP1-animate NP2-animate A-A

El cirujano operó al policía que salvó finalmente al joven de la muerte.
The surgeon operated on the policeman that finally saved the youth from death.

Subject relative: NP1-inanimate NP2-animate I-A

El cirujano operó el riñón que salvó finalmente al joven de la muerte.
The surgeon operated on the kidney that finally saved the youth from death.

Object relative: NP1-animate NP2-animate A-A

El cirujano operó al policía que salvó finalmente el joven de la muerte.
The surgeon operated on the policeman that the youth finally saved from death.

Object relative: NP1-inanimate NP2-animate I-A

El cirujano operó el riñón que salvó finalmente el joven de la muerte.
The surgeon operated on the kidney that the youth finally saved from death.

23. Subject relative: NP1-animate NP2-animate A-A

Vitorearon al boxeador que tiró duramente al aspirante en el cuadrilátero.
They cheered the boxer that harshly knocked down the candidate in the ring.

Subject relative: NP1-inanimate NP2-animate I-A

Vitorearon el golpe que tiró duramente al aspirante en el cuadrilátero.
They cheered the hit that harshly knocked down the candidate in the ring.

Object relative: NP1-animate NP2-animate A-A

Vitorearon al boxeador que tiró duramente el aspirante en el cuadrilátero.
They cheered the boxer that the candidate harshly knocked down in the ring.

Object relative: NP1-inanimate NP2-animate I-A

Vitorearon el golpe que tiró duramente el aspirante en el cuadrilátero.
They cheered the hit that the candidate harshly launched in the ring

24. Subject relative: NP1-animate NP2-animate A-A

La competencia manipuló al piloto que superó ampliamente al campeón en la final.
The competition affected the pilot that easily overcame the champion in the final.

Subject relative: NP1-inanimate NP2-animate I-A

La competencia manipuló el coche que superó ampliamente al campeón en la final.
The competition affected the car that easily overcame the champion in the final.

Object relative: NP1-animate NP2-animate A-A

La competencia manipuló al piloto que superó ampliamente el campeón en la final.
The competition affected the pilot that the champion easily overcame in the final.

Object relative: NP1-inanimate NP2-animate I-A

La competencia manipuló el coche que superó ampliamente el campeón en la final.
The competition affected the car that the champion easily overcame in the final.

25. Subject relative: NP1-animate NP2-animate A-A

La audiencia ovacionó al solista que llevó ese año al director al certamen.
The audience applauded the soloist that took the director to the competition this year.

Subject relative: NP1-inanimate NP2-animate I-A

La audiencia ovacionó la sonata que llevó ese año al director al certamen.
The audience applauded the sonata that took the director to the competition this year.

Object relative: NP1-animate NP2-animate A-A

La audiencia ovacionó al solista que llevó ese año el director al certamen.
The audience applauded the soloist that the director took to the competition this year.

Object relative: NP1-inanimate NP2-animate I-A

La audiencia ovacionó la sonata que llevó ese año el director al certamen.
The audience applauded the sonata that the director took to the competition this year.

26. Subject relative: NP1-animate NP2-animate A-A

El reportero conocía al abogado que salvó finalmente al millonario de la ruina.
The journalist knew the lawyer that finally saved the millionaire from the crash.

Subject relative: NP1-inanimate NP2-animate I-A

El reportero conocía la inversión que salvó finalmente al millonario de la ruina.
The journalist knew the investment that finally saved the millionaire from the crash.

Object relative: NP1-animate NP2-animate A-A

El reportero conocía al abogado que salvó finalmente el millonario de la ruina.
The journalist knew the lawyer that the millionaire finally saved from the crash.

Object relative: NP1-inanimate NP2-animate I-A

El reportero conocía la inversión que salvó finalmente el millonario de la ruina.
The journalist knew the investment that the millionaire finally saved from the crash.

27. Subject relative: NP1-animate NP2-animate A-A

El botones reconoció al policía que descubrió súbitamente al espía en el hotel.
The bellboy recognized the policeman that discovered the spy by chance in the hotel.

Subject relative: NP1-inanimate NP2-animate I-A

El botones reconoció la firma que descubrió súbitamente al espía en el hotel.
The bellboy recognized the signature that revealed the spy by chance in the hotel.

Object relative: NP1-animate NP2-animate A-A

El botones reconoció al policía que descubrió súbitamente el espía en el hotel.
The bellboy recognized the policeman that the spy discovered by chance in the hotel.

Object relative: NP1-inanimate NP2-animate I-A

El botones reconoció la firma que descubrió súbitamente el espía en el hotel.
The bellboy recognized the signature that the spy discovered by chance in the hotel.

28. Subject relative: NP1-animate NP2-animate A-A

El jurado eligió al vocalista que llevó justamente al grupo al premio final.
The committee chose the vocalist that led the band justly to the final prize.

Subject relative: NP1-inanimate NP2-animate I-A

El jurado eligió la canción que llevó justamente al grupo al premio final.
The committee chose the song that led the band justly to the final prize.

Object relative: NP1-animate NP2-animate A-A

El jurado eligió al vocalista que llevó justamente el grupo al premio final.
The committee chose the vocalist that the band led justly to the final prize.

Object relative: NP1-inanimate NP2-animate I-A

El jurado eligió la canción que llevó justamente el grupo al premio final.
The committee chose the song that the band led justly to the final prize.

29. Subject relative: NP1-animate NP2-animate A-A

Tiraron tomates al secretario que llevaba esa tarde al diplomático al mitin.
They threw tomatoes at the secretary that took the diplomat to the rally this afternoon.

Subject relative: NP1-inanimate NP2-animate I-A

Tiraron tomates al coche que llevaba esa tarde al diplomático al mitin.
They threw tomatoes at the car that took the diplomat to the rally this afternoon.

Object relative: NP1-animate NP2-animate A-A

Tiraron tomates al secretario que llevaba esa tarde el diplomático al mitin.
They threw tomatoes at the secretary that the diplomat took to the rally this afternoon.

Object relative: NP1-inanimate NP2-animate I-A

Tiraron tomates al coche que llevaba esa tarde el diplomático al mitin.
They threw tomatoes at the car that the diplomat carried to the rally this afternoon.

30. Subject relative: NP1-animate NP2-animate A-A

Denunciaron al millonario que apoyó económicamente al equipo de inversores.
They denounced the millionaire that economically supported the team of investors.

Subject relative: NP1-inanimate NP2-animate I-A

Denunciaron el presupuesto que apoyó económicamente al equipo de inversores.
They denounced the budget that economically supported the team of investors.

Object relative: NP1-animate NP2-animate A-A

Denunciaron al millonario que apoyó económicamente el equipo de inversores.
They denounced the millionaire that the team of investors economically supported.

Object relative: NP1-inanimate NP2-animate I-A

Denunciaron el presupuesto que apoyó económicamente el equipo de inversores.
They denounced the budget that the team of investors economically supported.

31. Subject relative: NP1-animate NP2-animate A-A

El reportero conocía al político que captó rápidamente al público en el mitin.
The reporter knew the politician that quickly captured the attention of the audience at the rally.

Subject relative: NP1-inanimate NP2-animate I-A

El reportero conocía el discurso que captó rápidamente al público en el mitin.
The reporter knew the speech that quickly captured the attention of the audience at the rally.

Object relative: NP1-animate NP2-animate A-A

El reportero conocía al político que captó rápidamente el público en el mitin.
The reporter knew the politician that the audience quickly captured the attention of at the rally.

Object relative: NP1-inanimate NP2-animate I-A

El reportero conocía el discurso que captó rápidamente el público en el mitin.
The reporter knew the speech that the audience quickly grasped at the rally.

32. Subject relative: NP1-animate NP2-animate A-A

El público aplaudió al jugador que superó fácilmente al defensa en el partido.
The audience applauded the player that easily overcame the defence at the match.

Subject relative: NP1-inanimate NP2-animate I-A

El público aplaudió la jugada que superó fácilmente al defensa en el partido.
The audience applauded the movement that easily overcame the defence at the match.

Object relative: NP1-animate NP2-animate A-A

El público aplaudió al jugador que superó fácilmente el defensa en el partido.
The audience applauded the player that the defence easily overcame at the match.

Object relative: NP1-inanimate NP2-animate I-A

El público aplaudió la jugada que superó fácilmente el defensa en el partido.
The audience applauded the movement that the defence easily overcame at the match.

33. Subject relative: NP1-animate NP2-animate A-A

Encontraron al terrorista que disparó violentamente al policía en el atentado.
They found the terrorist that violently shot the policeman in the attack.

Subject relative: NP1-inanimate NP2-animate I-A

Encontraron el arma que disparó violentamente al policía en el atentado.
They found the weapon that violently shot the policeman in the attack.

Object relative: NP1-animate NP2-animate A-A

Encontraron al terrorista que disparó violentamente el policía en el atentado.
They found the terrorist that the police violently shot in the attack.

Object relative: NP1-inanimate NP2-animate I-A

Encontraron el arma que disparó violentamente el policía en el atentado.
They found the weapon that the police violently shot in the attack.

34. Subject relative: NP1-animate NP2-animate A-A

Vieron al camionero que empujó brutalmente al conductor fuera de la vía.
They saw the trucker that brutally pushed the driver out of the way.

Subject relative: NP1-inanimate NP2-animate I-A

Vieron al coche que empujó brutalmente al conductor fuera de la vía.
They saw the car that brutally pushed the driver out of the way.

Object relative: NP1-animate NP2-animate A-A

Vieron al camionero que empujó brutalmente el conductor fuera de la vía.
They saw the trucker that the driver brutally pushed out of the way.

Object relative: NP1-inanimate NP2-animate I-A

Vieron al coche que empujó brutalmente el conductor fuera de la vía.
They show the car that the driver brutally pushed out of the way.

35. Subject relative: NP1-animate NP2-animate A-A

Acabaron con el soplón que descubrió sagazmente al agente de seguridad nacional.
They finished with the informer that astutely discovered the agent of national security.

Subject relative: NP1-inanimate NP2-animate I-A

Acabaron con la conspiración que descubrió sagazmente al agente de seguridad nacional.
They finished with the conspiracy that astutely revealed the agent of national security.

Object relative: NP1-animate NP2-animate A-A
Acabaron con el soplón que descubrió sagazmente el agente de seguridad nacional.
They finished with the informer that the agent of national security astutely discovered.

Object relative: NP1-inanimate NP2-animate I-A
Acabaron con la conspiración que descubrió sagazmente el agente de seguridad nacional.
They finished with the conspiracy that the agent of national security astutely discovered.

36. Subject relative: NP1-animate NP2-animate A-A
Promocionaron al novato que ganó esa semana al ajedrecista en el campeonato.
They promoted the rookie that beat the chess player in the championship this week.

Subject relative: NP1-inanimate NP2-animate I-A
Promocionaron el ordenador que ganó esa semana el ajedrecista en el campeonato.
They promoted the computer that beat the chess player in the championship this week.

Object relative: NP1-animate NP2-animate A-A
Promocionaron al novato que ganó esa semana el ajedrecista en el campeonato.
They promoted the rookie that the chess player beat this week in the championship.

Object relative: NP1-inanimate NP2-animate I-A
Promocionaron el ordenador que ganó esa semana al ajedrecista en el campeonato.
They promoted the computer that the chess player beat this week in the championship.