

# Condition C, Pronoun Strength, and the Raising Analysis of Relative Clauses

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## 1. Introduction

This paper uses Condition C reconstruction to argue that a raising analysis must be available for relative clauses, and suggests that pronoun strength and focus may be responsible for variability in Condition C reconstruction judgements. First we provide some experimental evidence that there is reconstruction for Condition C in English finite relative clauses. Then we present introspective judgements on English and French infinitival relative clauses, which fit a general pattern whereby Condition C reconstruction effects are clearer with silent pronouns. We suggest that the differing strength of reconstruction effects is related to pronoun strength, in that overt pronouns have the potential to bear focus. When they do, Condition C is obviated via the structure of focal meaning. This gives rise to the hypothesis, to be tested in future work, that varying judgements on Condition C reconstruction in finite relative clauses and questions might arise from the pronoun being read as focused.

### 1.1. Condition C reconstruction and relative clauses

Much theoretical work builds on the judgement that Condition C effects in sentences like (1a) (Chomsky 1981) persist after A-bar movement (1b) (Barss 1986, Lebeaux 1988, Heycock 1995, Fox 1999, Takahashi & Hulsey 2009, Hulsey & Sauerland 2006, i.a.). That is, A-bar movement ‘reconstructs’ to its base position for Condition C:

- (1) a. \* He<sub>i</sub> framed [ the picture of Harry<sub>i</sub> ] .  
b. (\*) [ Which picture of Harry<sub>i</sub> ]<sub>j</sub> did he<sub>i</sub> frame [ picture of Harry<sub>i</sub> ]<sub>j</sub> ?

But the existence of Condition C reconstruction is disputed. Experimental investigations have reached opposite conclusions against (Adger et al. 2017, Bruening & Al Khalaf 2019) and for (Stockwell et al. 2021, 2022, Salzman et al. 2023) the existence of reconstruction in questions like (1b).

There is further controversy as to whether relative clause heads reconstruct for Condition C, with the two main families of analyses making contrasting predictions. Raising analyses of relative clauses (2a) predict Condition C effects, since the base position of A-bar movement is c-commanded by a coindexed pronoun (Schachter 1973, Vergnaud 1974, Kayne 1994, i.a.). Matching analyses (2b), on the other hand, can circumvent Condition C by not verbatim representing the R-expression in the relativised position; mechanisms for which include vehicle change to a pronoun (as shown here, Safir 1999, i.a.), recoverable deletion (Citko 2001), or operator movement (Chomsky 1973, Partee 1975, i.a.):

- (2) a. \* the [ picture of Harry<sub>i</sub> ]<sub>j</sub> that he<sub>i</sub> framed [ picture of Harry<sub>i</sub> ]<sub>j</sub> *raising*  
b. the [ picture of Harry<sub>i</sub> ]<sub>j</sub> that he<sub>i</sub> framed [ picture of him<sub>i</sub> ]<sub>j</sub> / it<sub>j</sub> *matching*

In presenting evidence of Condition C reconstruction in relative clauses, this paper argues in favour of raising analyses and further shores up the empirical basis for theoretical proposals which take Condition C reconstruction to be foundational.

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## 2. Experiment on English finite relative clauses

This section reports a formal, large scale acceptability rating experiment to investigate the presence of Condition C reconstruction effects in English finite relative clauses.

### 2.1. Design

The task was presented to participants as shown in (3). The target item, a prompt, and two responses were displayed simultaneously:

#### (3) Task

“the picture of Harry that he framed”																	
What is this about?																	
	<div style="display: flex; justify-content: space-between; font-size: small;"> <span>less natural</span> <span>more natural</span> </div> <div style="display: flex; align-items: center; justify-content: center;"> <span style="margin-right: 5px;">A picture that Harry framed</span> <table style="border-collapse: collapse;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">0</td> <td style="text-align: center; border-bottom: 1px solid black;">1</td> <td style="text-align: center; border-bottom: 1px solid black;">2</td> <td style="text-align: center; border-bottom: 1px solid black;">3</td> <td style="text-align: center; border-bottom: 1px solid black;">4</td> <td style="text-align: center; border-bottom: 1px solid black;">5</td> <td style="text-align: center; border-bottom: 1px solid black;">6</td> <td style="text-align: center; border-bottom: 1px solid black;">7</td> </tr> <tr> <td colspan="4"></td> <td style="text-align: center;"><input type="radio"/></td> <td colspan="3"></td> </tr> </table> </div>	0	1	2	3	4	5	6	7					<input type="radio"/>			
0	1	2	3	4	5	6	7										
				<input type="radio"/>													
	<div style="display: flex; align-items: center; justify-content: center;"> <span style="margin-right: 5px;">A picture that someone else framed</span> <table style="border-collapse: collapse;"> <tr> <td style="text-align: center; border-bottom: 1px solid black;">0</td> <td style="text-align: center; border-bottom: 1px solid black;">1</td> <td style="text-align: center; border-bottom: 1px solid black;">2</td> <td style="text-align: center; border-bottom: 1px solid black;">3</td> <td style="text-align: center; border-bottom: 1px solid black;">4</td> <td style="text-align: center; border-bottom: 1px solid black;">5</td> <td style="text-align: center; border-bottom: 1px solid black;">6</td> <td style="text-align: center; border-bottom: 1px solid black;">7</td> </tr> <tr> <td colspan="4"></td> <td style="text-align: center;"><input type="radio"/></td> <td colspan="3"></td> </tr> </table> </div>	0	1	2	3	4	5	6	7					<input type="radio"/>			
0	1	2	3	4	5	6	7										
				<input type="radio"/>													

Participants were asked to imagine they were joining an ongoing conversation at a party – an ‘eavesdropping’ scenario chosen to be neutral as to co- or disjoint reference for the pronoun in the target item. Of the two responses, one contained the same name as the question, corresponding to a coreferential reading for the pronoun. The other contained *someone else*, corresponding to disjoint reference. Participants were asked to rate the naturalness of each response independently on separate 0-7 sliding Likert scales labelled to range from less to more natural.<sup>1</sup>

Our core design was 2×2.<sup>2</sup> The first factor was **CONDITION C**, probing reconstruction. We alternated the potential for a Condition C effect to arise by manipulating the base position of A-bar movement. In the YES items (4), A-bar movement launches from object position. Reconstruction to this position, below the pronoun, would result in a Condition C effect. In the No items (5), on the other hand, A-bar movement launches from subject position. Reconstruction to this position, above the pronoun, would not result in a Condition C effect:<sup>3</sup>

- |     |   |        |
|-----|---|--------|
| (4) | the [ statue of Elizabeth ] that she unveiled <i>t</i>                              | CC YES |
|     | a) a statue that Elizabeth unveiled      b) a statue that someone else unveiled     |        |
| (5) | the [ statue of Elizabeth ] that <i>t</i> made her smile                            | CC No  |
|     | a) a statue that made Elizabeth smile      b) a statue that made someone else smile |        |

The second factor was **RESPONSE**, probing the presence of Condition C effects. **NAME** corresponded to a coreferential reading for the pronoun, with low ratings signalling a Condition C effect. **ELSE** corresponded to disjoint reference, raising this possibility to salience. While **ELSE** is always grammatically possible, it may still be dispreferred compared to **NAME** when co-reference is available, since experimental participants

<sup>1</sup> Compare Salzmann et al.’s (2023) different, forced choice task, which did not uncover Condition C reconstruction effects with relative clauses in German, though with far less statistical power ( $n = 32$ ).

<sup>2</sup> Our full design included a third factor of **DISTANCE**, contrasting the **SHORT**, monoclausal relatives presented in (4)-(5) with **LONG**, biclausal relatives. We omit this factor here for reasons of space, but the pattern was similar to the one we found in our previous study on questions (Stockwell et al. 2021, cf. Adger et al. 2017): while **CONDITION C** had a similar effect across **SHORT** and **LONG** items, **NAME** received overall higher ratings in **LONG**.

<sup>3</sup> See Stockwell et al. (2022: sect. 4.1) in light of Pesetsky (1995) for discussion of the role of the ultimate A-movement base position in (5).

are biased towards establishing pronominal reference with existing discourse entities (Gordon & Hendrick 1998). Participants were asked to rate the naturalness of the NAME and ELSE responses independently.<sup>4</sup>

We created twelve sets of items and distributed them in a Latin square design across four lists. The target item was always a definite noun phrase containing a *that*-relative clause (presented without brackets, traces, etc.), with each item accompanied by both the NAME and ELSE responses simultaneously. The order of presentation of the two responses was consistent for a given participant but balanced across lists; i.e., NAME above ELSE in two lists, ELSE above NAME in the other two lists.<sup>5</sup>

In addition to twelve varying critical items, each participant saw the same eight baseline items. All were relative clauses, so as to blend in with the critical items, but were designed to be uncontroversially good or bad with coreference, regardless of A-bar movement. The four BAD items were straightforward Condition C violations; in (6), *he* c-commands *Gary*. The four GOOD items, by contrast, straightforwardly allowed coreference; in (7), *she* is separated from *Flo* by a clause-boundary, so there is no potential for a Condition C effect to arise:

- (6) the [ statue ] that he said Carol made Gary sell *t* BAD  
 a) a statue that Gary was speaking about    b) a statue that someone else was speaking about
- (7) the [ statue ] that Flo had said she bought *t* GOOD  
 a) a statue that Flo bought    b) a statue that someone else bought

## 2.2. Results

336 native English speaking undergraduate participants took the survey online on their own laptops via Qualtrics. Of these, 293 were included in the analysis.<sup>6</sup> We analysed the data in the R programming environment (R Core Team 2013) and created models using mixed effects linear regression in the lmerTest package (Kuznetsova et al. 2017).

The baseline items confirmed that our participants understood the task and that our experiment was sensitive to Condition C effects. As displayed in (8), the average ratings for NAME were as expected – appropriately low on BAD (1.77), indicating a Condition C effect, and high on GOOD (6.21):

- (8) *Baseline averages*

	NAME	ELSE
BAD	1.77	5.56
GOOD	6.21	2.17

The ratings for ELSE were expectedly high on BAD (5.56), but unexpectedly low on GOOD (2.17), in that disjoint reference is a grammatical possibility in (7) just as much as (6). We interpret this behaviour as reflecting a bias for co-reference (Gordon & Hendrick 1998): when NAME is good, the preference for co-reference depresses the ratings for ELSE.<sup>7</sup>

<sup>4</sup> Across a broad survey of binding phenomena, Koval & Sprouse (2023) find methodologically in favour of coreference judgement tasks over acceptability judgement tasks like ours. We still found significant effects, as reported in the next subsection, though based off hundreds of participants. In the future work outlined in the conclusion, we intend to use Koval & Sprouse’s (2023) recommended version of the coreference judgement task, labelling opposite ends of the same scale with the modal statements “can refer to the same person” (+3) for coreference and “must refer to different people” (-3) for disjoint reference.

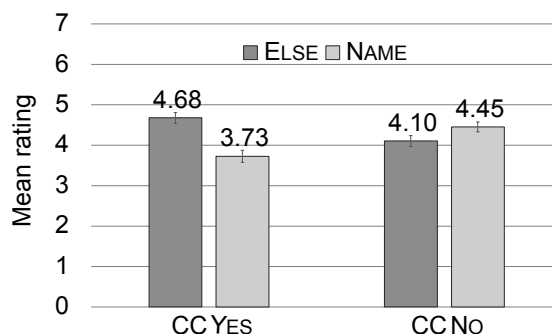
<sup>5</sup> See <https://osf.io/4mdkz/> for the full list of stimuli and other documentation of our experiment.

<sup>6</sup> Participants were excluded on two grounds. The first was taking a time to complete the survey above the 97.5 percentile (1853 seconds  $\approx$  31 minutes) or below the 2.5 percentile (285 seconds  $\approx$  < 5 minutes). This resulted in the exclusion of 18 participants. The second ground for exclusion was having an average rating of the BAD baselines like (6) higher than one’s mean rating across the experiment overall. This resulted in the exclusion of a further 25 participants. The remaining 293 participants were not evenly distributed across lists. List 1 had 76 participants, list 2 had 68, list 3 had 71, and list 4 had 78.

<sup>7</sup> Indeed, while our task aimed to probe separate referential possibilities, our participants seem to have responded, at least in aggregate, with ‘complementary’ ratings – the rows in (8) and the pairs of bars to follow in (9) each add up to around 8.

Mean ratings for the four main conditions are plotted in (9) with  $\pm 1$  standard error of the mean. The darker bars represent ELSE responses; the lighter bars, NAME responses. We found a main effect of RESPONSE, with ELSE rated higher than NAME ( $t = 3.709$ ,  $p < .001$ ). Importantly, there was a significant crossover interaction between CONDITION C and RESPONSE ( $t = 8.034$ ,  $p < .001$ ). Whereas NAME (4.45) was somewhat preferred over ELSE (4.10) in CC No, ELSE (4.68) was preferred over NAME (3.73) in CC YES:

(9) *Results*



Visually, Condition C reconstruction flips the preference for NAME over ELSE in CC No to a preference for ELSE over NAME in CC YES. This is especially notable in light of the coreference bias established by the baseline items. Here too the preference for coreference in CC No is overcome by the effect of Condition C reconstruction in CC YES.

### 2.3. Discussion

We interpret these results as evidence that there is reconstruction for Condition C in English finite relative clauses. Some caveats remain, however. For one, the effect is significant but not large, and certainly smaller than we found and replicated previously for Condition C reconstruction in English questions (Stockwell et al. 2021, 2022). Moreover, it is not immediately clear how to interpret the results in light of the varying introspective judgments of Condition C reconstruction in English finite relatives like (2) (e.g. Schachter 1973, Vergnaud 1974 vs. Hulsey & Sauerland 2006).

One potential explanation for the variability in the literature and our experimental results is that relative clauses are structurally ambiguous between matching and raising analyses (Bhatt 2002, Hulsey & Sauerland 2006). Participants might then randomly pick a varying analysis on each item and respond accordingly (cf. Stockwell et al. 2022: sect. 4.1). This would predict a bimodal distribution of low and high responses on CC YES, NAME, given a raising vs. matching parse, respectively. Yet there was no clear evidence for bimodality in our data, suggesting that such a raising/matching alternation is not what underlies our results.

We go on to reject structural ambiguity as the explanation more firmly based on the data presented in the next section. The clear Condition C effects to follow in (10)-(14) support the raising analysis, and would be puzzling if matching analyses were available for relative clauses at all, even ambiguously.

## 3. Pronoun strength and focus

Our experiment provided some evidence that there is reconstruction for Condition C in English finite relative clauses, with the small effect size mirroring the contested judgement in the literature. In this section, we suggest that variability in Condition C reconstruction judgements is related to pronoun strength and the structure of focal alternatives. In contrast to overt *s/he*, we observe that weak and covert pronouns give rise to clearer Condition C reconstruction effects. We then suggest that pronoun strength correlates crucially with the potential to bear focus. Overt and increasingly strong pronouns have the potential to bear focus, which we propose obviates Condition C via the structure of focal meaning. Weak and covert pronouns, which cannot bear focus, accordingly incur clearer Condition C reconstruction effects.

### 3.1. Silent pronouns

Further to the empirical contribution of our experiment on English finite relative clauses, we add our introspective judgements on English and French infinitival relative clauses. In our judgement, infinitival relatives, with their silent *PRO* subjects, show clear Condition C effects in (10) and (11). The versions of (a) and (b) with the proper name in the head of the relative clause are ungrammatical on the crucial reading where Anna is the subject of the relative clause. In English, these judgements are clearer than for their finite counterparts with overt pronoun subjects (c):

- (10) a. La [ photo d'elle<sub>i</sub>/\*Anna<sub>i</sub> ] à PRO<sub>i</sub> utiliser *t* sur sa page Web est celle ci.  
 b. The [ photo of her<sub>i</sub>/\*Anna<sub>i</sub> ] PRO<sub>i</sub> to use *t* on her webpage is this one.  
 c. The [ photo of her<sub>i</sub>/??Anna<sub>i</sub> ] (that) she<sub>i</sub> should use *t* on her webpage is this one.
- (11) a. Les meilleures [ photos d'elle<sub>i</sub>/\*Anna<sub>i</sub> ] à PRO<sub>i</sub> prendre *t* avec elle sont ici.  
 b. The best [ pictures of her<sub>i</sub>/\*Anna<sub>i</sub> ] PRO<sub>i</sub> to take *t* home with her are here.  
 c. The best [ pictures of her<sub>i</sub>/??Anna<sub>i</sub> ] (that) she<sub>i</sub> should take *t* home with her are here.

The same pattern holds of infinitival questions (12):

- (12) a. La question de quelles [ photos d'elle<sub>i</sub>/\*Anna<sub>i</sub> ] PRO<sub>i</sub> mettre dans son album reste en suspens.  
 b. The question of which [ photos of her<sub>i</sub>/\*Anna<sub>i</sub> ] PRO<sub>i</sub> to put *t* in the album went unresolved.  
 c. The question of which [ photos of her<sub>i</sub>/??A<sub>i</sub> ] she<sub>i</sub> should put *t* in the album went unresolved.

The crucial factor in (10)-(12) is not the finiteness of the clause but the silence of the subject pronoun. The two can be dissociated by turning to a *pro*-drop language. Clear Condition C effects have been reported for Italian finite relative clauses with silent *pro* subjects (e.g. Bianchi 1999):

- (13) a. \*Quelle e l' [ amico di Gianni<sub>i</sub> ] a cui pro<sub>i</sub> ha offerto un lavoro *t*.  
 this is the friend of Gianni to whom he has offered a job  
 b. Quelle e l' [ amico di Gianni<sub>i</sub> ] a cui lui<sub>i</sub> ha offerto un lavoro *t*.

Note the contrast between (a) with *pro* and (b) with overt *lui*. As we will argue, the overt strong pronoun is capable of bearing focus, which independently ameliorates Condition C effects.

Pronouns silenced by ellipsis also give rise to clear Condition C reconstruction effects. In spite of previous findings against the existence of Condition C reconstruction (Adger et al. 2017, Bruening & Al Khalaf 2019; *pace* Stockwell et al. 2021, 2022, Salzmann et al. 2023), Yoshida et al. (2019) reported an experimental contrast between 'stripping' pairs like (14):

- (14) a. A: Mary<sub>i</sub> said the manager assigned the job to Bill.  
 B: No, [to her<sub>i</sub>]<sub>j</sub> ~~she<sub>i</sub> said the manager assigned the job~~ *t<sub>j</sub>*.  
 b. A: She<sub>i</sub> said the manager assigned the job to Bill.  
 B: \*No, [to Mary<sub>i</sub>]<sub>j</sub> ~~she<sub>i</sub> said the manager assigned the job~~ *t<sub>j</sub>*.

In contrast to the baseline (a), in (b) the elided subject pronoun *she* c-commands the base-position of the A-bar moved remnant, giving rise to a reconstructed Condition C effect.

The presence of clear Condition C effects with silent *PRO*, *pro* and elided pronouns across (10)-(14) supports the raising analysis, and would be puzzling if matching analyses were available at all for relative clauses, even ambiguously.

### 3.2. Stronger pronouns

Compared to silent pronouns, overt and increasingly strong pronouns (in the sense of Cardinaletti & Starke 1999) have been reported to alleviate Condition C effects. Accenting a pronoun has been said to lessen Condition C effects in Italian, as in (13b) (Bianchi 1999: 112-5, Cinque 2020: ch.2, fn.9). The same goes for French and Greek (Angelopoulos & Sportiche 2021). Georgi et al. (2018), meanwhile, found a

contrast in German between strong (*diese*, etc.) and weak (*er*, etc.) pronouns with respect to Condition C reconstruction.

Increasing further in strength, it has long been noted that focus amnesties Condition C effects, even in non-movement configurations like (15) (cf. Evans 1980, Reinhart 2006, i.a.):<sup>8</sup>

(15) (Only)  $SHE_i$  ( $HERSELF_i$ ) thinks  $Mary_i$  is nice.

In relatives, too, coreference improves with emphatic reflexives and focused or otherwise contrastive pronouns (16):

(16) The [ portrait of  $him_i$  / (?) $John_i$  ] that {  $he_i$   $himself_i$  painted  $t$  / only  $he_i$  painted  $t$  /  $he_i$  painted  $t$   $himself_i$  } sold for \$1m.

Overall, it seems that Condition C reconstruction effects are clearer with weaker pronouns. From silent, hence ‘ultimately weak’, pronouns through to emphatic reflexives, the weaker the pronoun c-commanding a copy of a name, the clearer the Condition C effect, per the hierarchy in (17):

(17) *PRO*, *pro*, elided pronouns > (weak French) *il* > *he* > *himself*, *lui* (*même*)

The next subsection suggests an explanation for this hierarchy by relating pronoun strength to the ability to bear focus.

### 3.3. Focal structure

The previous subsection arrived at the generalisation that Condition C reconstruction is clearer with weaker pronouns. We suggest that a pronoun’s morphosyntactic strength (Cardinaletti & Starke 1999) correlates crucially with its potential to be contrastive by bearing focal accent. When a pronoun is focused, we propose that Condition C is obviated by structural aspects of focal meaning (inspired by but different from Heim 2009). Semantically, focus on a pronoun generates alternatives to its referent. We take this to have the structural consequence of embedding the pronoun in a conjunction-like structure where it no longer c-commands out into the clause; e.g. for (15) as in (18):

(18) [ Nobody (relevant) but  $her_i$  ] thinks  $Mary_i$  is nice.

While the details of this analysis remain to be fleshed out, the contrast between focused and unfocused subject pronouns thus comes to mirror the contrast in (19):

(19) a. Nobody but  $her_i$  praised  $Mary_i$ .  
b. \* $She_i$  praised nobody but  $Mary_i$ .

Accordingly, we hypothesize that the effect size in our experiment and the varying reports in the literature arise from the pronoun being read as contrastive in finite relative clause items like (2), thereby obviating Condition C. Judgements are clearer with infinitival *PRO*, null subject *pro* and ellipsis, since silent pronouns cannot be prosodically focused.<sup>9</sup>

<sup>8</sup> Reinhart’s (2006) explanation for (15) crucially relies on the name being in the scope of the pronoun, but this need not be so in our cases. Reconstruction for Condition C shows only that the trace is an exact copy of the head, not that the head must scope inside the relative.

<sup>9</sup> It does seem possible for silent pronouns to be F-marked in association with focus sensitive operators. In (i), *PRO* associates with *too* (Romero 2013: 87, fn. 8, ex. ii; see references therein for further discussion):

(i) It would be strange [ $PRO_F$  to be invited too].

Absent an operator, we assume that focus must be marked prosodically.

## 4. Conclusion

This paper presented evidence that there is reconstruction for Condition C in relative clauses. Since Condition C reconstruction is not predicted by matching analyses, raising analyses must be available for relative clauses. While reconstruction is experimentally detectable in English finite relative clauses, the effect size is small, mirroring the contested judgement in the literature. In our judgement, Condition C reconstruction effects are clearer with infinitival relatives, which fits a general pattern that Condition C reconstruction is clearer with silent pronouns. Stronger pronouns ameliorate Condition C effects due to their ability to bear focus. When they do, Condition C is obviated via the embedded conjunction-like structure of focal meaning. With silent pronouns, by contrast, there is no possibility for focal stress, hence no obviation.

This gives rise to the clear hypothesis that varying judgements on finite relative clauses, as reported in the literature and reflected in the effect size in our experiment, arise from the pronoun being read as focused. We intend to test this hypothesis in future work by controlling for focus on the pronoun. The lead-ins in (20) and (21) attempt to do this for English questions (a) and relatives (b), respectively. While (20) contextualises contrastive focus on the pronoun, (21) keeps focus off it by contrasting the verb:

- (20) I'm not interested in the picture of Harry that Mary framed.
- a. Instead, please tell me: Which picture of Harry did HE frame?
  - b. Instead, please point me to: the picture of Harry that HE framed.
- (21) I want to know more about what Harry does with pictures.
- a. So please tell me: Which picture of Harry did he FRAME?
  - b. So please point me to: the picture of Harry that he FRAMED.

With focus controlled in this way, we would expect (20) with pronoun focus to be relatively good compared to unobviated Condition C reconstruction effects in (21), and equally so across questions and relatives. The greater unclarity with relatives observed thus far could be due to their being more generally inviting of focus on the pronoun than questions.<sup>10</sup> In questions, the *wh*-phrase is in focus, with the rest usually presupposed. In relatives, by contrast, the head noun phrase is not usually in focus, leaving more scope for focus to fall inside the relative clause, and crucially on the pronoun.

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<sup>10</sup> Differences between restrictive and appositive relative clauses may also feed into their greater unclarity compared to questions.

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