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Pronoun interpretation in Right Node Raising: Psycholinguistic evidence for a dual analysis

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Abstract. The syntactic and semantic properties of Right Node Raising (RNR) are still debated. Some prior work analyzes RNR as backward ellipsis, while others argue that the pivot is dominated by multiple nodes (multidominance), and yet others favor a dual analysis, claiming RNR results from ellipsis or multidominance or both. We report three psycholinguistic experiments on pronoun interpretation in RNR constructions, including gender-matching/mismatching pronouns, and identify systematic asymmetries in availability of strict and sloppy readings. We suggest that our results are best interpreted as evidence for a dual-analysis approach, according to which RNR can be derived via ellipsis or multidominance.

Keywords. Right node raising; ellipsis; strict and sloppy; coreference; variable binding; pronouns; psycholinguistics; experimental syntax and semantics

1. Introduction. The fact that verb phrase ellipsis (VPE) in examples like (1) is ambiguous between strict and sloppy readings is well known. In (1), does Mary like Lisa's neighbor or her own neighbor? Both readings are available.

(1) Lisa likes her neighbor and Mary does too.
(i) Mary likes her own neighbor [sloppy]
(ii) Mary likes Lisa's neighbor [strict]

In this paper, we explore another linguistic construction, Right Node Raising (RNR; the term is commonly attributed to Postal 1974). RNR constructions like (2) allow for an even richer range of pronoun interpretational ambiguities but their availability is under-researched. In (2), are we talking about Lisa's feelings about her own neighbor and Mary's feelings about her own neighbor? Or Lisa's and Mary's feelings about Lisa's neighbor? Or their feelings about Mary's neighbor? We refer to the first reading as sloppy and call the next two readings 'strict first subject' and 'strict second subject' respectively.

(2) Lisa likes, and Mary dislikes, her neighbor.
(i) Lisa likes Lisa's neighbor and Mary dislikes Mary's neighbor [sloppy]
(ii) Lisa likes Lisa's neighbor and Mary dislikes Lisa's neighbor [strict first subject]
(iii) Lisa likes Mary's neighbor and Mary dislikes Mary's neighbor [strict second subject]

We report a series of experiments testing pronoun interpretation in RNR constructions, and test configurations with possessive pronouns that gender-match both or only one of the mentioned referents. Our results reveal systematic asymmetries in the availability of strict and sloppy readings. The patterns we observe are in line with recent claims that RNR is best regarded through the lens of a dual-analysis approach, according to which RNR can be derived via two routes: ellipsis or multidominance (multidomination).

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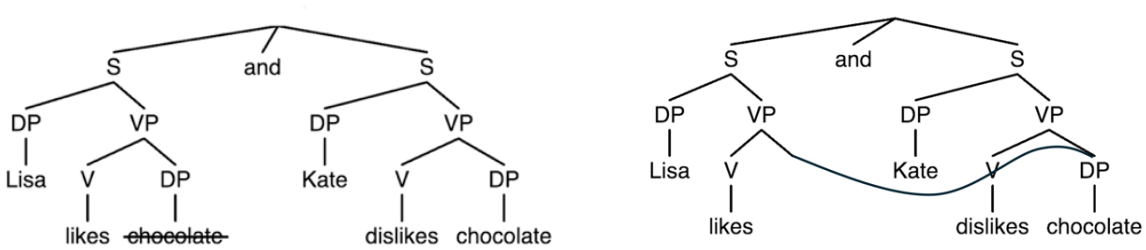
1.1 RIGHT NODE RAISING (RNR). Before reviewing prior analyses of RNR and reporting our experiments, let's take a closer look at the properties of RNR (see e.g. Sabbagh 2014 for an overview). In this construction, there is a string – called the pivot – typically located at the right periphery of the clause and shared with two conjuncts. For example, in (3a), the pivot *chocolate* is associated with the object position of the two preceding conjuncts, *Lisa likes* and *Mary dislikes*. Thus, the pivot is interpreted as the object of both conjuncts. In this paper, we focus on pivots that are DPs, but other constituents can also function as pivots (e.g. VPs as in (3b) or NPs as in (3c)). Furthermore, it seems that RNR can also target non-constituents as well as elements below the word level (see e.g. Ha 2008, Hartmann 2000). RNR is typically associated with structures containing a coordinate structure of some type – and that's the type that we focus on here – but it seems that RNR can occur even in the absence of obvious coordination, as in (3d) (e.g. Hudson 1976).

(3) a. [Lisa likes] and [Mary dislikes] chocolate.
b. [Lisa can] but [Mary cannot] attend the LSA annual meeting.
c. [Right after her] and [right before his] talk, everyone checked their email.
d. [Those who love] are outnumbered by [those who hate] beignets.

Many aspects of the structure and semantics of RNR are still debated. In particular, as we will see in the next section, analyzing RNR is challenging because its properties are not amenable to a unified approach.

1.2 PRIOR ANALYSES OF RNR. Modern analyses of RNR fall into two main camps. We put aside older approaches arguing for an Across-The-Board (ATB) movement approach, as these are viewed today as untenable (see Abels 2004 for discussion, see also Ross 1967, McCawley 1982). First,[1] some argue for backward ellipsis analysis, as illustrated in (2a). Under this view, the pivot in the first conjunct is elided (as shown with strike-through in (4a)) when it is identical with the pivot in the second conjunct. Second, others argue for a multidominance approach, illustrated in (4b). Here, there is no ellipsis and the pivot is dominated by multiple nodes (see e.g. Belk et al. 2023, Malanoski 2024 for recent overviews).

(4) a. Backward ellipsis b. Multidominance (multidomination)



Intriguingly, some new work argues for a dual-analysis approach, according to which the grammar can generate RNR either via ellipsis or multidominance (e.g. Barros & Vicente 2011, Belk et al 2023, Malanoski 2024), or a combination of both (Malanoski 2024). However, at least at first glance, treating RNR as the output of two distinct derivations is not parsimonious, and thus potentially controversial. Thus, the dual-analysis approach merits closer scrutiny. In this

[1] We focus here on approaches that assume the pivot to be internal to the coordinate structure (see e.g. Sabbagh 2014 for discussion).

paper we ask whether we can we find additional evidence for a dual analysis approach from pronoun interpretation patterns.

1.3 BACKGROUND: STRICT AND SLOPPY READINGS IN VP ELLIPSIS. Before considering pronoun interpretation in RNR, we briefly review the possibilities associated with verb phrase ellipsis. As is well-known, VP ellipsis (e.g. (5a)) is ambiguous between a strict reading derived via (discourse-level) coreference, and a sloppy reading (derived via semantic variable binding). On the strict reading in (5b), Lisa likes Lisa's neighbor and Kate likes Lisa's neighbor, whereas on the sloppy reading in (5c), Lisa likes Lisa's neighbor and Kate likes her own neighbor. (There also exists a third-party reading, (5d), where both Lisa and Kate like some third person's neighbor.)

(5) a. Lisa likes her neighbor and Kate does too.
b. Lisa_1 likes her_1 neighbor and Kate_2 does ~~like her_1 neighbor~~ too. [strict]
c. Lisa_1 $\lambda 1$ t_1 likes her_1 neighbor and Kate_2 $\lambda 2$ t_2 does ~~like her_2 neighbor~~ too. [sloppy]
d. Lisa_1 likes her_3 neighbor and Kate_2 does ~~like her_3 neighbor~~ too.

Prior work suggests that the likelihood of strict and sloppy interpretations in VPE is influenced by various factors, including processing economy (e.g. Reuland 2001, Frazier & Clifton 2000), lexical semantic properties of the verb and possessed noun (e.g. Foley et al. 2003, Ong & Brasoveanu 2014), and the nature of the possession relation, e.g. kinship vs inalienable possessesion (e.g. Storbeck & Kaiser 2018).

Of particular relevance for our work is the claim that referential dependencies differ in terms of representational or processing economy. Specifically, a number of researchers argue that binding is less costly than coreference (see e.g. Reuland 2001, Frazier & Clifton 2000, Koornneef et al. 2011, Koorneef & Reuland 2006, see also Grodzinsky & Reinhart's (1993) Rule I). This is often attributed to binding dependencies being construed purely on the grammatical level, without needing to make reference to discourse-level representations, unlike coreference which involves reference to a discourse-level entity.

1.4 SLOPPY READINGS IN RNR. RNR constructions with a pronoun in the pivot, such as (6a), allow sloppy readings as illustrated in (6b,c) (e.g. Ha 2008, Sugawa 2011).

(6) a. Lisa likes, and Kate dislikes, her neighbor.
b. Lisa likes Lisa's neighbor and Kate dislikes Kate's neighbor.
c. Lisa_1 $\lambda 1$ t_1 likes ~~her_1 neighbor~~ and Kate_2 $\lambda 2$ t_2 dislikes her_2 neighbor.

The availability of sloppy readings is typically taken as evidence for an ellipsis-based approach, since it is well-known that ellipsis allows sloppy, bound-variable readings. Furthermore, as noted in prior work, it is unclear how, under multidominance, the pronoun *her* in (6a) could refer to two different entities. Given that multidominance approaches posit only occurrence of the pronoun, as shown in (4), there does not appear to be an easy way to generate a sloppy reading.

1.5 STRICT READINGS IN RNR. The possibility of strict readings in RNR has received little attention in prior work. Logically speaking, there are two possible strict readings for RNR configurations, in contrast to VPE which only has one type of strict reading available. Logically, *her* in (6a) can be construed as coreferential with the first subject *or* with the second subject, as illustrated in (7a) and (7b). On what we call the 'strict first subject' construal, we are talking about how people feel about Lisa's neighbor. On what we call the 'strict second subject' construal, we are talking about how people feel about Kate's neighbor.

(7) a. Strict first subject: Lisa$_1$ likes her$_1$ neighbor and Kate$_2$ dislikes her$_1$ neighbor.
b. Strict second subject: Lisa$_1$ likes her$_2$ neighbor and Kate$_2$ dislikes her$_2$ neighbor.

The existence of two strict readings raises the questions of (i) whether both are in fact available and (ii) if so, whether they are equally available. Furthermore, the ellipsis accounts and multidominance accounts seem to differ in their predictions regarding the strict readings.

On a multidominance account, both first and second subject strict readings can be straightforwardly generated if we treat *her* as a pronoun interpreted via (discourse-level) coreference: it is simply a regular pronoun that can be construed as coreferential with either Lisa or with Kate, akin to pronouns in non-RNR contexts that are ambiguous between two feature-matching antecedents (e.g. *Lisa$_1$ called Kate$_2$ and she$_{1/2}$ said hello*). Thus, under a multidominance analysis, both readings should be available. Furthermore, just like with regular pronouns in non-RNR configurations, we might expect to find one reading preferred over the other, given that pronoun interpretation is sensitive to factors like subjecthood, topicality and word order (e.g. Arnold 1998, Garnham 2013, Kaiser & Trueswell 2008 and many others).

However, the predictions are less clear under an ellipsis account of RNR. Can an ellipsis account generate both strict first subject and strict second subject construals? A full discussion of this question is beyond the scope of this work and constitutes an important avenue for future work. We might speculate as follows: Let's follow (i) 'compulsory binding' accounts (using Fleischer 2023's term) which require binding over coreference (e.g. Grodzinsky & Reinhart's (1993) Rule I, see also Fox 2000, Büring 2005) and let's speculatively extend to RNR (ii) Fox's Referential Parallelism (for VPE), according to which NPs in the antecedent VP and elided VP have the same referential value. (In the case of RNR, we would presumably have to posit that pronouns in the pivot and the elided pivot have the same referential value.) These two components might yield the speculation that ellipsis accounts can generate the strict second subject reading. However, given the linear order differences between VPE and RNR, it is not clear whether such a reading could actually be successfully derived (see also Fleischer 2023 for other reasons why the original formulation of Referential Parallelism should be revised.) Thus, ultimately the question of whether ellipsis accounts can generate strict first subject and strict second subject construals of RNR is a question that merits further work.

In sum, a sloppy reading is easily captured by an ellipsis account but not by multidominance. Furthermore, the strict first subject and strict second subject readings (which have not been systematically tested in prior work, to the best of our knowledge) appear to be easily captured by multidominance, but it is unclear if they can be generated under ellipsis.

To provide systematic experimental data concerning pronoun interpretation in RNR, we report a series of experiments testing availability of strict and sloppy construals in RNR. To the best of our knowledge, this is the first systematic large-scale experimental investigation of these issues. Ultimately, while many questions remain open, we suggest that our results cannot be captured by multidominance-only or an ellipsis-only account and thus provide new evidence for the emerging dual-analysis approach.

2. Experiment 1: Effects of verb semantics. Before turning to Experiments 2 and 3 which test the availability of different pronoun interpretation options in RNR, this first experiment explores the semantic and pragmatic properties of the verbs in the two conjuncts. As shown by the contrast in (8a-b), from Ha (2008), not all verb pairings sound natural in RNR. While two contrasting verbs sound natural, repeating the same verb sounds odd.

(8) a. Bill likes, and Mary dislikes, the TV show.

b. *Bill likes, and Mary likes, the TV show.

In fact, Hartmann (2000) posits that presence of contrastive focus before the pivot is needed to license RNR (see also Féry & Hartmann 2005) and similarly Ha (2008) provides an ellipsis-based analysis of RNR and argues that contrastive focus is required to license the ellipsis feature involved in RNR. Further evidence for the role of contrast comes from the observation that, in a typical RNR construction, a L+H* pitch accent follows the focused elements (Selkirk 2002). However, based on the examples presented in prior work, it is not always entirely clear what kind of semantic relation is needed for two verbs to count as being felicitously contrastive. Thus, we conducted Experiment 1 to identify what kinds of verb pairs are felicitous in RNR, to ensure that the stimuli we used in Experiments 2 and 3 are grammatical and felicitous.

2.1 PARTICIPANTS, DESIGN, PROCEDURE. Experiment 1 tests three types of verb pairs, namely pairs of (i) synonymous verbs (e.g. *left, exited*), (ii) related verbs (e.g. *washed, vacuumed*) and (iii) opposite verbs (e.g. *praised, criticized*). We report data from 36 native US English speakers who completed an acceptability rating task online, using Qualtrics. Participants were recruited via Prolific.

The targets in Experiment 1 did not involve pronouns and had the form "Name1 verbed and Name2 verbed object", as our focus is on testing how verb semantics influences RNR acceptability. The study included 24 targets and 36 fillers, which participants rated on a five-point scale (1=completely unacceptable; 5=completely acceptable). Screenshots of two sample items are shown in Figure 1. All targets used transitive clauses with two same gender names and verbs in the simple past. Each item was presented on its own screen.

Targets included a comma after each verb, as illustrated in the screenshots. We chose this punctuation option because piloting and prescriptive descriptions indicate that it is the option that most people tend to prefer. Furthermore, as all three conditions (synonymous, related and opposite verbs) used the same punctuation, any differences between the conditions cannot be due to punctuation. We used the same kind of punctuation in all three studies reported in this paper.

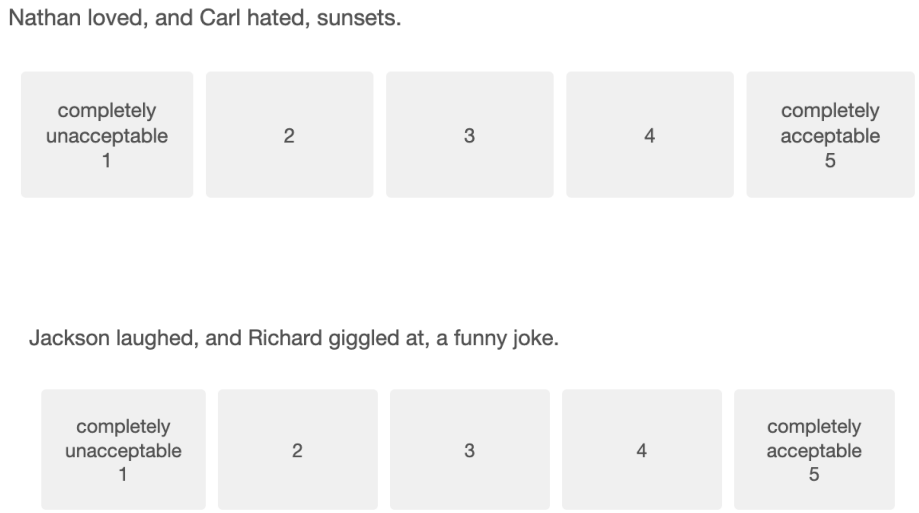


Figure 1. Screenshots from Experiment 1. (Each item was presented on its own screen)

2.2 RESULTS FOR EXPERIMENT 1: VERB SEMANTICS. Figure 2 shows participants' z-scored acceptability ratings. It's clear from the figure that acceptability ratings are lowest when the two verbs are close in meaning, i.e. the '(near-)synonymous verbs' condition (e.g. *hid/concealed, left/exited*). In contrast, verbs with opposite meanings (e.g. *found/lost, adored/despised*) and verbs whose meanings are related in some way but not the same (e.g. *peeled/sliced, tasted/smelled*) receive equally high ratings.

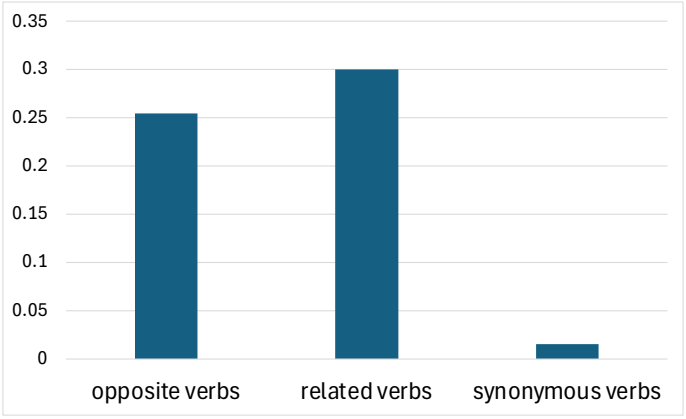


Figure 2. Results of Experiment 1: Z-scored acceptability ratings of RNR

The finding that RNR structures with two verbs with opposite meanings yield relatively high acceptability ratings fits well with prior claims that felicitous RNR requires contrastive focus (e.g. Hartmann 2000, Ha 2008). The finding that related verbs – i.e., verbs whose meanings are not the same but are in some way related, e.g. *washing* and *vacuuming* are both part of cleaning – also receive high ratings presumably follows from this same characterization, as they can be construed as contrasting with each other. Washing and vacuuming, say, can be construed as being contrasting aspects of cleaning. Thus, this study provides experimental support for prior claims that the notion of contrast is an important part of RNR.

In light of these results, in Experiments 2 and 3 we used verb pairs with related or opposite meanings, to avoid any infelicity or ungrammaticality.

3. Experiment 2: Right Node Raising with two same-gender antecedents. Having identified the kinds of verbs to use, in Experiments 2 and 3 we test pronoun interpretation in RNR. Experiment 2 tests sentences where the pronoun gender-matches both subjects (e.g. *Lisa likes, and Kate dislikes, her neighbor*), whereas Experiment 3 tests sentences where the pronoun only gender-matches the second subject (e.g. *Bob likes, and Kate dislikes, her neighbor*.)

3.1 PARTICIPANTS, DESIGN, PROCEDURE. In order to test availability of strict and sloppy readings, in Experiments 2 and 3 we used schematic visual depictions to convey the different readings. An example is provided in Table 1 and Figure 3. Each target image includes four figures, each labeled to ensure it's clear who is who (e.g. Chad, Will, Chad's neighbor, Will's neighbor). Arrows are used to indicate who is the subject of each action/verb (see also Song & Kaiser 2023, 2025; Eldem-Tunç et al. 2025 for other studies using directional arrows in similar ways). The study has four conditions, as illustrated in Table 1, which we refer to *sloppy, strict first subject, strict second subject* and *crossed*. The crossed reading (e.g. Chad despises Will's neighbor and Will despises Chad's neighbor) is not expected to be available and thus serves as an unavailability baseline.

Each critical sentence uses two same-gender names and the pronoun in the pivot matches both names. Half of items used two male names and the other half used two female names.

For Experiment 2, we report data from 61 native US English speakers. Participants were recruited via Prolific and the experiment was conducted via Qualtrics. Participants indicated how well the image matches the meaning of the sentence, using a scale from "does not match at all" (1) to "matches very well" (6). The critical sentence, image and rating scale were show on the screen, so there was no memory load. An example screenshot is shown in Figure 3.

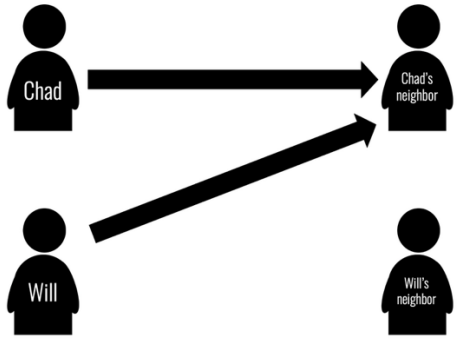
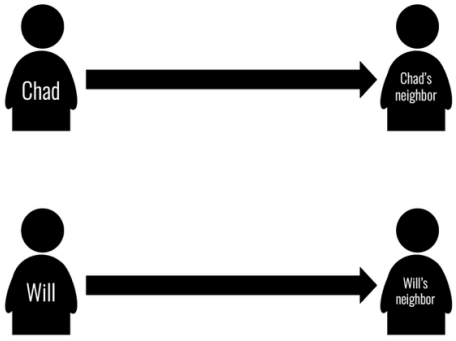
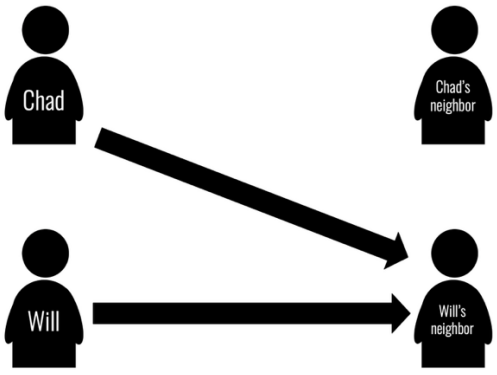
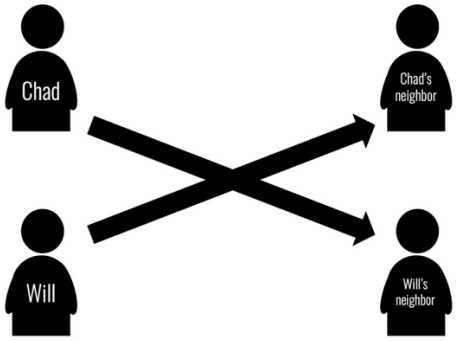
<table>
<tr><td colspan="2">Target sentence: Chad despised, and Will cherished, his neighbor.</td></tr>
<tr><td>Strict first subject (below)
Meaning depicted: Chad despised Chad's neighbor and Will cherished Chad's neighbor.</td><td>Sloppy (below)
Meaning depicted: Chad despised Chad's neighbor and Will cherished Will's neighbor.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td>Strict second subject (below)
Meaning depicted: Chad despised Will's neighbor and Will cherished Will's neighbor.</td><td>Crossed (below)
Meaning depicted: Chad despised Will's neighbor and Will cherished Chad's neighbor.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

Table 1. Sample item in Experiment 2. On each trial, the target sentence was paired with one of the images, as illustrated in the screenshot in Figure 3.

We wanted to ensure that both strict and sloppy construals are in principle available. Thus, the nouns used in targets (e.g. *neighbor* in Table 1) were human relational non-kinship nouns that are plausible with both sloppy and first/second subject strict construals (e.g. *landlord, dentist, teacher, colleague, rival*). For example, one can plausibly despise one's own neighbor or

landlord as well as someone else's neighbor or landlord. In addition, we were guided by earlier experimental work by Storbeck & Kaiser (2018) who show that the availability of strict vs. sloppy readings in VP ellipsis is modulated by the nature of the possession relation, such that inalienable relations (e.g. *her nose*) and relations ownership (e.g. *her jacket*) elicit mostly sloppy readings, kinship relations (e.g *her son*) elicit mostly strict readings, and non-kinship animates relations (e.g. *boss, colleague, opponent*) fall in between (see also Storbeck & Kaiser 2021 on animate vs. inanimate nouns outside of ellipsis contexts). Thus, by using non-kinship animate relation nouns in the current experiment as well, we aim to ensure that both strict and sloppy interpretations are available.

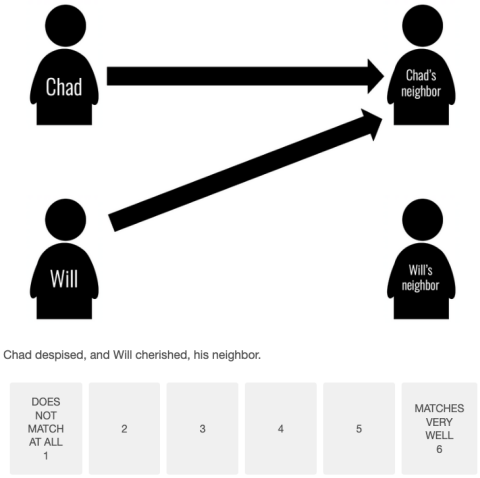


Figure 3. Screenshot from Experiment 2.
(Task: Rate how well the image matches the meaning of the sentence.)

Given the results of Experiment 1, we used verbs that were opposed in meaning (e.g. *cherish/despise, irritate/delight*) and related verbs that differ in their meaning (e.g. *insult/threaten, contact/visit*), to ensure that the sentences are felicitous.

In addition to 24 targets presented to participants in a Latin-Square design, the study also included 36 fillers. Fillers were designed to elicit a range of (mis)matching ratings. The sentences used in fillers did not involve RNR but some include other kinds of ambiguities (e.g. lexical ambiguities such as *seal, ruler, fan*).

3.2 RESULTS FOR EXPERIMENT 2: PRONOUN INTERPRETATION. Participants' ratings for how well the image matches the meaning of the sentence are shown in Figure 4. As expected, the 'crossed' condition receives the lowest ratings. This serves as a sanity check that confirms that the participants are paying attention.

Numerically, sloppy construals receive the highest ratings, in line with prior claims that RNR structures can receive sloppy interpretations. It's worth noting that none of the conditions receive very high ratings, which we attribute to the relatively complex and rare nature of RNR constructions. Thus, we focus more on the relative differences between conditions; one should be careful to not read too much into the absolute numbers.

As is clear in Figure 4, the strict first subject and strict second subject readings do not differ from each other (emmeans, Bonferroni-corrected, z-scores, $t < |.9|$, $p = 1$). The fact that the first subject and the second subject are, essentially, equally likely as antecedents of the pronoun sug-

gests that there are no overwhelming locality effects (which would favor the second subject) or primacy/topicality effects (which might favor the first subject).

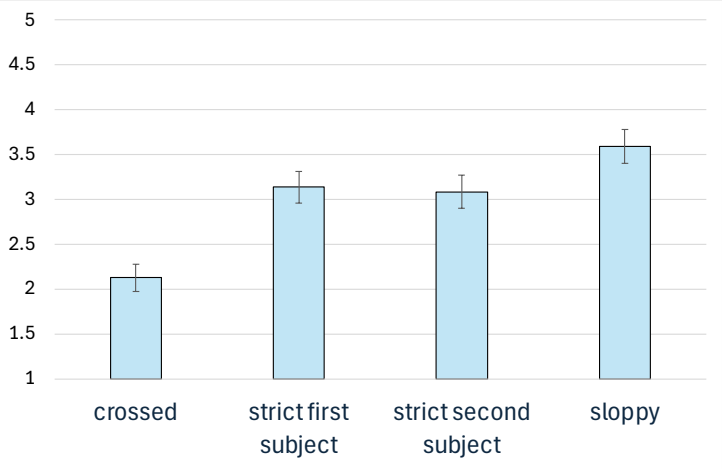


Figure 4. Results of Experiment 2: How well does the image match the sentence's meaning? (1=does not match at all; 6=matches very well)

However, as is also visually clear in Figure 4, both of the strict readings are rated higher than the crossed reading but lower than the sloppy reading (t's > |3.6|, p's < .005, emmeans, Bonferroni-corrected, z-scores).

3.3 DISCUSSION. Experiment 2 yields two main findings: First, the sloppy reading is favored. Second, both strict readings are also available, as shown by the fact that they are rated significantly better than the 'crossed' reading. The fact that the sloppy reading is favored can be taken as evidence that the economy considerations proposed more generally also extend to RNR: If we assume that semantic binding is easier/less costly than coreference (e.g. Reuland 2000), we can derive the preference for sloppy readings.

One might wonder whether the nature of the connective plays a role. Experiment 2 used 'and'. We also conducted a follow-up study with 54 new participants that was otherwise the same as Experiment 2 but used the connective 'but' instead of 'and.' The results of this follow-up study are very similar, showing that the results replicate with another connective as well.

Overall, we regard the high ratings for sloppy readings as evidence for an ellipsis-based approach and take the acceptability of strict readings as supporting a multidominance-based approach. In sum, we regard the results of Experiment 2 as pointing towards a dual-analysis approach.

4. Experiment 3: Right Node Raising with two different-gender antecedents. If the reasoning sketched out in the preceding section on the right track, we should be able to find additional evidence for the claim that sloppy readings arise from an ellipsis RNR structure and strict readings from a multi-dominance RNR structure. In Experiment 3, we test these ideas using sentences like (9), where the pronoun gender-matches only the second subject. (In Experiment 2, the pronoun gender-matched both referents.)

(9) Bob likes, and Kate dislikes, her neighbor.

Let's first consider properties of ellipsis. If sloppy readings are due to an ellipsis mechanism, we might expect such sloppy readings to also exhibit other characteristics of ellipsis. In particular,

prior work argues that ellipsis is 'somewhat tolerant' to mismatches, e.g. in gender (e.g. Kitagawa 1991, Sag 1979, but see also Storoshenko & Weir 2022).

(10) a. Bill washed his car, and Susan did, too. [gender mismatch VPE]
b. Bill washed his car, and Bob did, too. [gender match VPE]

Specifically, it's been claimed that in VP ellipsis cases like, the sloppy reading slightly degraded under gender mismatch (10a), where the gender of the pronoun mismatches the gender of the subject of the elided clause, relative to configurations like (10b) where the gender of the pronoun matches both referents. Thus, given claims about gender mismatch affecting VP ellipsis, Experiment 3 tests whether gender mismatch in RNR similarly decreases or 'degrades' availability of sloppy readings. If yes, this would point to ellipsis being involved.

Now, let's turn to multidominance. Note that in a multidominance structure as in (4), a discourse-level pronoun is resolved via coreference. Thus, if strict readings in RNR stem from multidominance, they should exhibit other characteristics of discourse-level coreference resolution. In particular, we build on the observation from prior work that pronoun resolution is facilitated by lack of ambiguity (e.g. Stewart et al 2007, see also Givón 1983, Arnold et al. 2000). For example, Stewart et al. (2007) tested sentences like (11) and manipulated whether the preceding clause contains one or two gender-matching antecedents. When participants were asked comprehension questions that encourage them to engage in deep processing, Stewart et al. found that presence of two gender-matching antecedents resulted in reading time slowdowns, but when only one gender-matching referent was present, no competition arises and reading times were faster (see also Kaiser & Do 2011 for related work). Thus, discourse-level coreference is facilitated when no ambiguity is present.

(11) Paul lent {Rick/Kate} the CD before he left for the holidays.

Thus, Experiment 3 also tests whether presence of only one gender-matching antecedent in RNR facilitates or 'boosts' availability of the strict reading (which relies on discourse-level coreference), compared to Experiment 2 with two gender-matching antecedents. If yes, this would provide evidence for a multidominance structure being involved.

4.1 PARTICIPANTS, DESIGN AND PREDICTIONS. In Experiment 3, we report data from 54 native US-English speakers. Like Experiments 1 and 2, this study was implemented using Qualtrics and participants were recruited via Prolific. The four image types and the targets were the same as Experiment 2, but the names in the target sentences were changed so that now, the pronoun only gender-matches the second subject, as illustrated in (12).

(12) Ann despised, and Will cherished, his neighbor.

Half of the items used 'her' and the other half used 'his.' The pronoun always gender-matched the second subject but not the first subject. Other than this, the logic of the design and the images were the same as in Experiment 2. The fillers were also the same as Experiment 2. As in Experiment 2, participants rated how well the image matches the meaning of the sentence, using a six-point scale.

Our predictions for the four conditions are as follows: As in Experiment 2, the crossed condition serves as a 'sanity' check and is expected to yield low match ratings. Now, the strict first-subject condition is also expected to yield low ratings since it is ruled out by the gender mismatch *(Ann$_1$ despised #his$_1$ neighbor and Will$_2$ cherished #his$_1$ neighbor*). If we follow the stereotypical gender signaled by the names, we do not expect *Ann* to be the antecedent of *his*. As

regards the sloppy condition: If ellipsis is involved, we expect the sloppy reading to be degraded but not completely impossible (lower match ratings), in light of other work on ellipsis and gender mismatch as mentioned above. As regards the strict second subject condition, if we are dealing with pronoun interpretation via 'regular' coreference, as the multidominance approach seems to assume, prior work on pronoun interpretation outside of RNR suggests that the availability of the strict second subject reading may be boosted (higher match ratings) because there is no competing referent present in this study.

4.2 RESULTS AND DISCUSSION FOR EXPERIMENT 3: PRONOUN INTERPRETATION. The results of Experiment 3 are shown in Figure 5. The crossed condition again yields low ratings and thus confirms that participants are paying attention. Furthermore, the strict first subject condition is rated as low as the crossed condition (no significant difference). Thus, as expected, the gender mismatch yields low ratings and confirms participants are attending to the task.

Strikingly, the sloppy condition in Experiment 3 receives significantly lower ratings than in Experiment 2 ($t > |4.2|$, $p < .0001$): a mismatch causes some degradation, as in ellipsis. Nevertheless, the sloppy condition in Experiment 3 is still rated significantly better than the crossed and the strict first subject conditions in the same experiment (sloppy vs. strict first subject ($t > |4|$, $p < .005$), sloppy vs. crossed, $t > |8|$, $p < .001$). This suggests that the sloppy reading is degraded but not ungrammatical. The finding that sloppy readings are degraded with gender mismatch is exactly what we predict if ellipsis is involved. Thus, this provides further evidence for an ellipsis-based account of RNR.

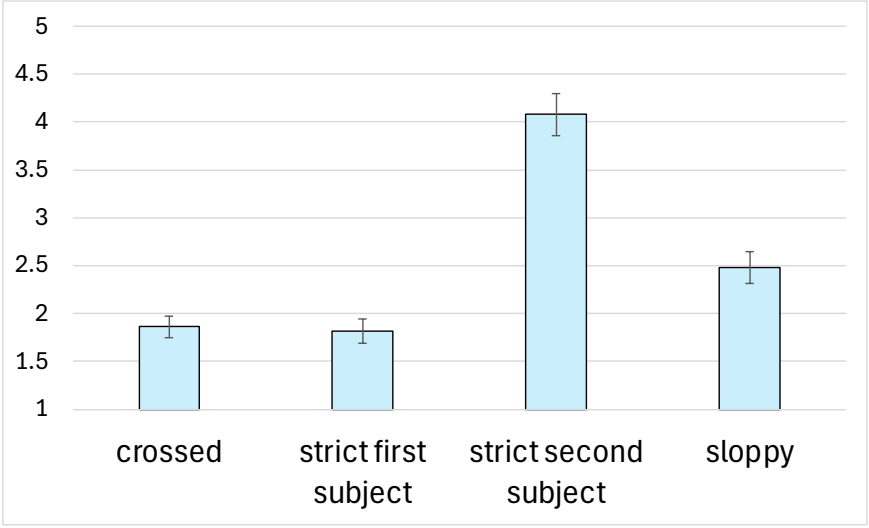


Figure 5. Results of Experiment 3: How well does the image match the sentence's meaning? (1=does not match at all; 6=matches very well)

In addition, we see that the strict second subject condition now receives the highest ratings overall: it is rated significantly better than all other conditions (p's $< .01$). It is worth noting that the pronoun matches the second subject's gender in both Experiments 2 and 3 – i.e., the strict second subject reading is in principle available in both studies. However, the significant boost we observe in Experiment 3 fits with the idea that, in the absence of a gender-matching competitor, the strict second subject construal becomes more available. In other words, this is evidence for behavior associated with 'regular' pronoun interpretation (see e.g. Stewart et al. 2007), which we view as diagnostic of multidominance.

Put together, the results of Experiment 3 provide additional evidence compatible with the claim that RNR can be generated via ellipsis or via multidominance.

5. General discussion and conclusions. This paper reports a series of experiments on pronoun interpretation in Right Node Raising (RNR) constructions. To the best of our knowledge, this is the first systematic experimental investigation on the availability of strict and sloppy construals in RNR, including two kinds of strict readings. We used an image-based task and show that this methodology allows us to obtain reliable and meaningful judgments from naïve (i.e. non-linguistically trained) participants, even for complex semantic judgments such as the strict-sloppy distinction.

After assessing what kinds of verbs are most felicitous in RNR constructions in Experiment 1, in Experiments 2 and 3 we tested the availability of strict and sloppy readings. Our results show that in the absence of gender mismatch (Experiment 2), sloppy construals are preferred but both kinds of strict readings (strict first subject and strict second subject) are also available. The preference for sloppy readings supports prior claims concerning the economy of different kinds of dependencies, namely the idea that binding is less costly than discourse-level coreference. Furthermore, the fact that both strict and sloppy readings are rated better than the (ungrammatical) crossed condition suggests that dual-analysis approaches of RNR might be on the right track.

Furthermore, Experiment 3 shows that when the pronoun in the pivot only matches the gender of one of the two preceding referents, (ii) sloppy readings are available but degraded, and (ii) availability of the gender-matching strict reading is boosted. The degraded status of sloppy readings is what we expect if ellipsis-type representations are at play, and thus provides additional evidence for the role of ellipsis in deriving RNR. At the same time, the increased availability of the strict reading aligns with the coreference processes associated with a multidominance (multidomination) analysis, suggesting that this mechanism is also relevant for RNR.

Many questions still remain open, including the division of labor between the ellipsis and multidominance mechanisms (see also Belk et a. 2023). Our work is best regarded as an initial investigation. Broadly speaking, we tentatively conclude that the pronoun interpretation patterns we observe are in line with a dual-analysis approach to RNR – i.e., the idea that RNR can be the output of two distinct syntactic derivations, namely ellipsis or multidominance.

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