At-issueness and the Right Frontier: An Investigation of Dutch

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Abstract

In multi-clause sentences, which clause carries the at-issue point is expected to be influenced by whether a clause is at the Right Frontier: Last-uttered clauses or clauses that subordinate these are expected to be at-issue. In a Dutch forced-choice experiment, we measure the rate at which comprehenders interpret an ambiguous pronoun to refer to one of two possible antecedents in a preceding sentence. We manipulated the type (matrix vs. subordinate) and position (sentence-early vs. sentence-final) of the clauses hosting the antecedents, as well as the topicality of the subject (mentioned in context vs. not mentioned in context). We find no effect of topicality, but we find that clause position and type influence the at-issue status of clauses within multi-clause sentences in Dutch: When multiple clauses are at the Right Frontier, sentence-final clauses are more likely hosts for at-issue content, and matrix clauses more so than subordinate clauses in this position.

Keywords: coreference; the Right Frontier; at-issueness; appositive relative clauses; topicality; Dutch

Introduction

When communicating, speakers make assumptions about which parts of sentences contribute the main point of a sentence, and which parts are more peripheral. While it may seem that these assumptions follow naturally from the content of what has been said, there are structural features that influence whether a proposition conveys, or can convey, the main – at-issue – point of a sentence. Sentences that consist of multiple clauses are expected to contain one clause that contributes the at-issue point and one or more other clauses that are more peripheral and therefore not-at-issue. Whether a clause is – or can be – at-issue, is studied under the umbrella of "at-issueness" (Jasinskaja, 2016; Koev, 2018; Potts, 2005, 2007).

The current paper investigates whether the content of a clause is interpreted as conveying the at-issue point depending on the type of clause that content is presented in – matrix clause or appositive relative clause (ARC) – and the position of this clause – sentence-early or sentence-final. Consider the following examples (1) & (2) with ARCs (underlined) in sentence-early position:

(1) Kathy, who owns a Persian cat, baked **a cake** for Alex.
It's a birthday funfetti cake.

(2) Kathy, who owns **a Persian cat**, baked a cake for Alex.
? It's the cutest cat I've ever seen.

When the antecedent of the pronoun *It* appears in a sentence-final matrix clause ('a cake' in (1)) coreference proceeds easily enough. However, when the antecedent is located in a sentence-early ARC, the resulting coreference seems less felicitous ('a Persian cat' in (2)). Clause type and clause position together reflect a key property of unfolding discourse, namely the inference of what content is "at-issue". This paper presents a preregistered study that employs ambiguous pronoun interpretation as a measure for at-issue status of matrix clauses and ARCs in Dutch.

We focus specifically on at-issueness from a coherence perspective, under which the view of discourse as structured by coherence relations (Asher & Lascarides, 2003; Hobbs, 1979; Kehler, 2002; Mann & Thompson, 1988; Sanders, Spooren, & Noordman, 1992) is central. A clause – or rather, its content – is considered at-issue if a newly uttered clause can attach to it by an appropriate coherence relation[1] (Koev, 2018). Such is the case in Example (1), in which a coherent connection is established with the matrix clause content, which is at-issue, whereas the content in the ARC, as shown in (2), is not-at-issue. Whether a clause has the potential to establish a coherent connection with a yet-to-be-uttered segment depends on its position within the discourse structure. When a clause is placed at the right edge of the discourse structure (the Right Frontier, RF) it is available for attachment by a subsequent discourse segment; conversely, when it is not at the RF, it is not available for such attachment (the Right Frontier Constraint: Asher & Lascarides, 2003; Polanyi, 1988; Webber, 1991). The RF of discourse is defined as consisting of the last added discourse segment as well as any discourse segments the last added segment is discourse-structurally subordinate to (Hunter & Asher, 2016). Following this definition, in Examples (1) and (2), only the matrix clause is at the RF. If the order of clauses is reversed, however, and the ARC is in sentence-final position, both the ARC and the matrix clause are at the RF and can establish a coherent connection with subsequent discourse:

[1] This notion of at-issueness is referred to by Koev (2018) as C-at-issueness, and should be considered distinct from other notions of at-issueness, Q-at-issueness (Beaver, Roberts, Simons, & Tonhauser, 2017; Simons, Tonhauser, Beaver, & Roberts, 2010) and P-at-issueness (AnderBois, Brasoveanu, & Henderson, 2015; Farkas & Bruce, 2010; Koev, 2013; Murray, 2014), for which predictions about the at-issue status of ARCs specifically diverge from the notion of at-issueness that we focus on in the current paper.

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(3) Kathy baked **a cake** for Alex, who owns a Persian cat. It's a birthday funfetti cake.

(4) Kathy baked a cake for Alex, who owns **a Persian cat**. It's the cutest cat I've ever seen.

Coherence-based accounts of at-issueness take the RF to be inextricably linked with at-issue status: discourse units on the RF are at-issue (Hunter & Asher, 2016; Jasinskaja, 2016). Until now, the RF and at-issueness in relation to the RF have not received much attention from empirical approaches, with a few notable exceptions. Syrett and Koev (2015, Experiment 3) tested whether the source of an elliptical question *Why?* was more likely to be found in a matrix clause or an ARC. Participants in their study more often chose the sentence-final clause as providing the the answer to *Why?* than the sentence-early clause, independent of what type of clause it was. This suggests that in cases where two clauses are at the RF – in matrix clause-ARC order – the most recently uttered clause is the more likely candidate for being interpreted as hosting the at-issue content. Frazier and Clifton (2005, Experiment 6) tested whether verb phrase ellipsis was more likely to resolve to an antecedent in a temporal adverbial clause or a matrix clause. They found that matrix clauses were more often chosen as the host for the antecedent-resolving verb phrase ellipsis than the temporal adverbial clause, independent of position. This suggests that in contrast to ARCs, temporal adverbial clauses are not likely hosts for at-issue content. In a study on German, Holler and Irmen (2007) tested whether ambiguous pronouns were more likely to refer to an antecedent hosted by a clause at the RF compared to a clause that was not at the RF. They manipulated the position of clauses with respect to the RF discourse-structurally rather than sentence-structurally: clauses at the RF in their design discourse-structurally subordinated the last-uttered segment. They found that participants chose antecedents in such clauses at the RF more often than clauses that were not at the RF, even if those clauses that were not at the RF were more recent than those that were. Lastly, Wilke (2023) investigated the at-issue status of clauses in English by measuring how long it took participants to process when an ambiguous pronoun was disambiguated to a referent in a matrix clause or an ARC in differing positions. Effects of clause position were observed, such that it took participants less time to process when a pronoun was disambiguated to a referent in a sentence-final clause than in a sentence-early clause. An effect of clause type was also observed, but only for clauses in sentence-early position. The absence of such an effect in sentence-final position suggests that the at-issue status of sentence-final clauses in English is not further influenced by their clause type.

In the current study, we follow Holler and Irmen (2007) in employing pronoun resolution as the experimental diagnostic to measure a clause's position with respect to the RF and its subsequently expected at-issue status, but we follow Syrett and Koev (2015) and Wilke (2023) in their choice of considering sentences with an ARC. With the exception of Holler and Irmen (2007), who investigated German, studies on the RF (and at-issueness in relation to the RF) have predominantly investigated English. Here, we focus on Dutch, a language for which the RF and at-issueness have thus far not been empirically investigated. Like has been shown for English and German in previous studies, we posit that ambiguous pronouns are more likely to be resolved to an antecedent in a clause at the RF than a clause that is not at the RF, which is captured by the Right Frontier Constraint (Asher & Lascarides, 2003; Polanyi, 1988; Webber, 1991). We measure effects of at-issueness by isolating two individual factors that contribute to a clause's position with respect to the RF: its clause type (matrix or ARC) and its position within the sentence (sentence-early or sentence-final). We expect that matrix clauses are more likely hosts for at-issue content than ARCs, which we refer to as the *clause type* hypothesis, and we expect that sentence-final clauses are more likely hosts for at-issue content than sentence-early clauses which we refer to as the *clause position* hypothesis. In ARC-matrix order, we thus expect an (almost) categorical resolution rate to the matrix clause, since only the matrix clause is at-issue (by virtue of clause type and position). In matrix-ARC order, both the matrix and the ARC can be at-issue. In this condition, we expect the pronoun resolution rate to be more evenly distributed over the two clauses, though the relative proportion will likely be dependent on which factor is deemed more important to at-issueness: position or type.

In addition, we investigate whether the topicality of the subject of a clause impacts that clause's at-issueness status. This relation between topicality and at-issue status is something that has not been considered previously. Repeated referents are more likely to be the topic of a reference than newly introduced referents. Topical referents are considered the focus of the discourse (Givón, 1983). As such, any predicate associated with the topic of the discourse may be perceived as more central to the discourse, i.e. more likely to be perceived as at-issue, than predicates associated with new and/or non-topical referents. When the content of the matrix clause is made more topical by introducing the syntactic subject in a context preceding the sentence, we expect that this might lead to the matrix clause being perceived as the more likely host for at-issue content than the ARC. However, this is only expected to hold for sentences in matrix-ARC order (e.g., (3)), in which the syntactic subject (Kathy) is only associated with the matrix clause and not the ARC, and not for sentences in ARC-matrix order (e.g., (1)), in which the syntactic subject (Kathy) also plays a role in the ARC. We refer to this as the *topicality* hypothesis.

Experiment

We test our hypotheses in a preregistered forced choice experiment. We manipulate the order of clauses within items (matrix-ARC vs. ARC-matrix), and we manipulate the topicality of the subject of the matrix clause between items (sub-

ject mentioned in context vs. subject not mentioned in context).

All experimental materials and data, as well as the preregistered hypotheses and analysis plan are available on the Open Science Framework page: http://doi.org/10.17605/OSF.IO/TQ6WS

Methods

Participants We recruited 87 participants through the Radboud University SONA online recruiting platform. We removed those who did not meet the preregistered language inclusion criteria (speaking Dutch growing up as a majority household language and Dutch being the majority language in current daily life – 16 participants) and those whose accuracy on the catch fillers was not significantly above chance (12 participants), leaving 59 participants for analysis. These were self-reported native Dutch speakers between the ages of 17-25 (mean=19.2, SD=1.8) living in the Netherlands. Participants provided informed consent and were compensated with course credits. The experiment was approved by the Ethics Committee of Radboud University (2021-1680).

Materials The experiment had 24 target items in two conditions and 72 fillers. The target items consist of 4-5 sentences in total. The first manipulation (within items) takes place in the in the second-to-last sentence (order of clauses, matrix-ARC vs. ARC-matrix). This sentence containing an ARC provides the two possible referents for the ambiguous pronoun *Het*, which appears in the final (unfinished) sentence. Following this, participants are asked to answer the forced-choice question of which referent in the manipulated sentence they believe *Het* refers to. The sentences preceding the manipulated sentences provide a context which is the same across conditions, but this context includes the second manipulation (between items): For half the items, this context introduces the referent which subsequently appears as the syntactic subject of the sentence containing the ARC. A full example item which includes this topicality manipulation is given in Table 1.

The first manipulation – in the second-to-last sentence – is the order of clauses. The ARC is either in sentence-early position where it modifies the syntactic subject, or in sentence-final position where it modifies the syntactic object. The possible referents for *Het* (NP1 and NP2) then are hosted by a matrix clause or an ARC in either sentence-early or sentence-final position (condition 1 [matrix-ARC] vs. conditions 2 & 3 [ARC-matrix]). In the ARC-matrix condition, we counterbalance which specific referent occurs in which sentence (conditions 2 & 3). This allows us to check whether the specific nature or inherent salience of a referent also affects coreference rates (to be explored as a potential methodological limitation in the General discussion).

The second manipulation is present in the context. These context sentences (the first 2–3 sentences) are the same across conditions, but are designed differently between items. For 50% of the items, a context was constructed that introduces the syntactic subject of the sentence containing the target NPs, making it more topical. For the other 50%, this mention does not occur.

The final (unfinished) sentence is headed by the pronoun *Het*, semantically uninformative (and thus unbiasing) followed by *is/was een..*, 'is/was a...'. Participants are then asked to answer the question of which referent (forced choice for NP1 or NP2) they believe to be the antecedent for the pronoun *Het*.

The items were distributed across three lists in a Latin Square design such that all participants saw 8 target items in each condition. The distribution of the target items and fillers and the order in which participants saw these was fully randomized.

The 72 fillers consisted of two different sets. The first set were 48 items from a different experiment that probes the accessibility of different possible referents for the pronouns *Ze*, 'She$_{reduced}$','*Zij*, 'She$_{full}$', or *Die*, 'That'. For this experiment, the forced-choice question that accompanied the items was *Wie is Ze/Zij/Die?*, 'Who is She$_{reduced}$/She$_{full}$/That?'. The second set contained 24 additional fillers, 8 of which were distractors and 16 of which were catch fillers that had only one possible correct answer to the question *Wie is Ze / Zij?*, Who is She$_{reduced}$ / She$_{full}$?' (x8), or to the question *Wat is Het?*, What is It?' (x8). Participants whose performance on these was not significantly above chance (at least 75% of questions answered correctly) were excluded from the analysis. After exclusion, average performance on these questions was 97% answered correctly.

Procedure The experiment was deployed on the PennController for Internet Based Experiments (PCIbex) platform (Zehr & Schwarz, 2018). Participants carried out the experiment remotely on their own computers via a link distributed through the Radboud University SONA online recruiting platform. The experiment used a forced-choice paradigm. The item, the forced-choice question and the two possible answers were all visible at the same time to the participants. An answer was selected by mouse-click. When an answer was selected, the next item would appear after a short delay. It was not possible to return to previous items. Participants were instructed not to overthink their answers. We specified that most items would not have a clear right or wrong answer, but that some items were included as attention checks that did have a correct answer, which would be easy to answer correctly when taking the task seriously. After completing all items, participants filled out a short demographic questionnaire. The experiment lasted approximately 30 minutes.

Analyses We modeled the binary outcome of whether the ambiguous pronoun 'Het', *It*, was resolved to an antecedent in the matrix clause or in the ARC (Analysis 1) in a generalized mixed effects model (GLMM: Jaeger (2008)) in R (R Core Team, 2013), using the lme4 package (Bates, Mächler, Bolker, & Walker, 2015). To test whether the ambiguous pronoun was resolved to an antecedent in a sentence-final clause

Table 1: Example item

context$_{(+topical)}$	*Er is veel te doen in het koninkrijk. De koningin onderneemt van alles en nog wat met haar vriendinnen.* 'There is a lot to do in the kingdom. The queen does all sorts of things with her friends.'
matrix$_{(NP1)}$**–ARC**$_{(NP2)}$	*De koningin was gisteren op een evenement met de jageres, die een grote tas had meegenomen.* 'The queen was at an event yesterday with the huntress, who had brought a large bag.'
ARC$_{(NP1)}$**–matrix**$_{(NP2)}$	*De koningin, die gisteren op een evenement was met de jageres, had een grote tas meegenomen.* 'The queen, who was at an event with the huntress yesterday, had brought a large bag.'
ARC$_{(NP2)}$**–matrix**$_{(NP1)}$	*De koningin, die een grote tas meegenomen had, was gisteren op een evenement met de jageres.* 'The queen, who had brought a large bag, was at an event with the huntress yesterday.'
pronoun	*Het was een...* 'It was a...'
question	*Wat is 'Het'?* 'What is 'it'?'
forced choice	*Een evenement*$_{(NP1)}$ / *Een grote tas*$_{(NP2)}$ 'An event$_{(NP1)}$ / A large bag$_{(NP2)}$'

or a sentence-early clause we carried out an additional analysis (Analysis 2) – crucially, this allows us to compare resolution rates between ARCs and matrix clauses in sentence-final position. The variables *clause order* and *topicality* and their interaction were fixed effects in both Analysis 1 & 2. All fixed effects were deviation coded. We included by-item and by-participant random effects in the maximum random effects structure permitted by the model (Barr, Levy, Scheepers, & Tily, 2013) in all models. To assess the significance of each fixed effect, we conducted likelihood ratio tests (`anova`, Girden (1992)) between the full model as described above, and a model without one of the fixed effects. The Bonferroni adjusted alpha level for the analyses is .025 (.05/2).

Results

Analysis 1 Table 2 presents the mean proportions of 'Het', *It*, being resolved to the NP hosted by the matrix clause by clause order (ARC-matrix or matrix-ARC) and by whether the subject of the sentence containing the possible referents was introduced in the context. This data is visualised in Figure 1. The likelihood ratio test shows a significant effect of *clause order* ($\chi^2(1) = 31.37$, $p =< .001$), see Table 4. This effect captures the fact that the NP hosted by the matrix clause was more often chosen as the antecedent for 'Het' when the order of clauses was ARC-matrix (sentence-final matrix clause), than when the order of clauses was matrix-ARC (sentence-early matrix clause). Inversely, this means that the NP hosted by the ARC was chosen less as the antecedent for 'Het' when it was sentence-early position than when it was in sentence-final position. No other main effects were observed, but we did find a marginal effect of *topicality* ($\chi^2(1) = 3.39$, $p = .07$), which we will return to in the discussion.

Analysis 2 Table 3 presents the mean proportions of 'Het', *It*, being resolved to the NP hosted by the sentence-final clause by clause order (ARC-matrix or matrix-ARC) and by whether the subject of the of sentence containing the possible referents was introduced in the context. The likelihood ratio test shows a significant effect of *clause order*($\chi^2(1) = 24.36$, $p =< .001$), see Table 5. This effect of captures the fact that the NP hosted by the sentence-final clause was more often chosen as the antecedent for 'Het' when the order of clauses was ARC-matrix (sentence-final matrix clause), than when the order of clauses was matrix-ARC (sentence-final matrix ARC). Inversely, this means that the NP hosted by the sentence-early clause was chosen less as the antecedent for 'Het' when it was an ARC than when it was a matrix clause. No other significant effects were observed.

Table 2: Mean proportion of 'Het' resolved to the NP in the matrix clause depending on clause order and topicality.

	subject in context	*subject not in context*
ARC-matrix	0.89	0.87
matrix-ARC	0.52	0.39

Table 3: Mean proportion of 'Het' resolved to the NP in the sentence-final clause depending on clause order and topicality.

	subject in context	*subject not in context*
ARC-matrix	0.89	0.87
matrix-ARC	0.48	0.61

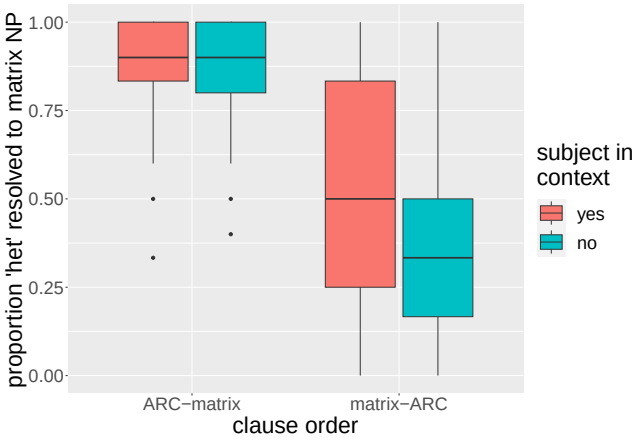

Figure 1: Proportion of 'Het' resolved to the matrix NP, per order of clauses and mention of subject in the context.

Table 4: Analysis 1 model results: Coefficient estimates, standard errors of those estimates, chi-squared value from the likelihood ratio test comparing the model to a simpler model that excluded the relevant predictor, and the p-value for that test statistic.

	β	SE	$\chi^2(1)$	p
clause order	−2.41	0.31	31.37	<**.001**
topicality	−0.45	0.23	3.39	.07
cl. order × *topicality*	−0.39	0.62	0.43	.51

Table 5: Analysis 2 model results: Coefficient estimates, standard errors of those estimates, chi-squared value from the likelihood ratio test comparing the model to a simpler model that excluded the relevant predictor, and the p-value for that test statistic.

	β	SE	$\chi^2(1)$	p
clause order	−1.95	0.3	24.36	<**.001**
topicality	0.2	0.33	0.37	.55
cl. order × *topicality*	0.86	0.52	2.59	.11

General discussion

In this paper we empirically tested at-issueness and the Right Frontier Constraint in Dutch with two hypotheses: the *clause position* hypothesis, which posits that sentence-final clauses are more likely hosts for at-issue content than sentence-early clauses, and the *clause type* hypothesis, which posits that matrix clauses are more likely hosts for at-issue content than ARCs. In addition, we tested the *topicality* hypothesis, which posits that matrix clauses in any position are more likely hosts for at-issue content if the syntactic subject for the sentence they are part of has been introduced prior to the sentence.

At-issueness and the Right Frontier Results of Analyses 1 & 2 are fully in line with predictions made by the RFC: clauses at the RF were perceived as more likely hosts for antecedents, i.e., at-issue, and clauses that were not at the RF (sentence-early ARC) were not interpreted as likely hosts for antecedents, i.e., not-at-issue. As predicted by the *clause position* hypothesis, the NP hosted by the sentence-final clause was chosen more often chosen as the antecedent for the ambiguous pronoun 'Het', *It*, than the NP hosted by a clause of the same clause type in sentence-early position (Analysis 1). Following predictions made by the *clause type* hypothesis, matrix clauses were more often chosen as the hosting the antecedent for the ambiguous pronoun 'Het' than ARCs in the same position. These findings are in line with results from Syrett and Koev (2015), who found similar results for English sentences containing an ARC. Taken together, our findings show that a clause's position at the RF influences its likelihood for hosting at-issue content, but our data also suggest that clause type and clause position stand in a hierarchical relation: When these are in competition – in matrix-ARC order – clause position is more important (sentence final ARC chosen as hosting the antecedent for 'Het' 55% of the time, sentence-early matrix 45% of the time). This is in line with findings from Wilke (2023). However, we also find that sentence-final matrix clauses were interpreted as more likely hosts for at-issue content than sentence-final ARCs, which seems to go against results from Wilke (2023), where no difference in reading time was found between ambiguous pronouns that resolved to sentence-final matrix clauses vs. sentence-final ARCs. Whether this is to be attributed to a difference between English and Dutch or to the different methodologies should be further investigated.

Topicality We find no evidence for the *topicality* hypothesis, but the marginal effect we observed in Analysis 1 does suggest that it is worth looking into this hypothesis more in future research. The pattern suggested by Figure 1 is in line with our prediction that *topicality* would have an impact in the matrix-ARC items (and boost the proportion of pronouns resolved to the matrix clause), but in the ARC-matrix condition. The predicted interaction does not, however, show up significant in our statistical analysis. We do find a marginally significant main effect of topicality, which could be due to the almost categorical pronoun resolution rate in the ARC-matrix condition. In a future study, we plan to investigate the *topicality* hypothesis in matrix-ARC configurations only.

Methods One possible issue with our methodology is that the possible referents for 'Het' in our items might differ in their inherent salience within items, subsequently impacting how accessible they are. To be able to check for a possible effect of this, we varied the order of the two referents within the ARC-matrix items (conditions 2 & 3 in Table 1). We calculated the mean proportion of 'Het' being resolved to the NP in a sentence-final matrix clause – the only clause at the RF in this setting – depending on whether this was NP1 or

Table 6: Mean proportion of 'Het' resolved to the NP in the matrix clause referent in matrix clause chosen in ARC-matrix ordered conditions, depending on which NP (*NP1* or *NP2*) was hosted by the matrix clause: 6 items with greatest variation

item#	referent in matrix clause		prop. matrix ref. chosen		difference
	NP1	*NP2*	*NP1*	*NP2*	
2	*een etentje* 'a dinner'	*een vakantie* 'a vacation'	0.93	0.68	0.25
4	*een kruidenelixer* 'a herbal elixir'	*een poes* 'a cat'	0.74	1	0.26
12	*een toneelvoorstelling* 'a play'	*een grote kom soep* 'a big bowl of soup'	0.92	0.74	0.18
16	*een verrassing* 'a surprise'	*een gedichtenbundel* 'a collection of poems'	0.89	0.67	0.23
17	*een kantoor* 'an office'	*een stichting* 'a foundation'	0.67	0.92	0.25
19	*een hike* 'a hike'	*een geheim manuscript* 'a secret manuscript'	0.63	1	0.37
overall mean			0.88	0.88	0

NP2. Table 6 includes the 6 items with the greatest difference in proportion between NPs as well as the total overall mean for all items[2]. While the total mean suggests a perfect balance was struck with respect to the choices of NPs in our items, within-item differences show there is much variation. This variation suggests that a clause's position with respect to the RF alone is not enough to predict the accessibility of its content, and suggests that sometimes language users are willing to disregard the RF in favor of the discourse continuing on a particularly interesting topic. When it comes to the apparent salience between the NPs in Table 6, some of the observed differences seem to be in line with observations from the literature, which has found animate referents to be more salient than inanimate referents ('a cat' vs. a herbal elixir'; see e.g., Fukumura & Van Gompel, 2011), weak definites being less accessible than indefinites ('a vacation' vs. 'a dinner'; see Brocher, Weeber, Hoek, & von Heusinger, 2020). In addition, some NPs were probably more interesting than others ('a secret manuscript' vs. 'a hike').

Conclusion Overall, our results show that clause position and clause type have an impact on the at-issue status of clauses within sentences with an ARC in Dutch. This is in line with predictions made by the Right Frontier Constraint (Asher & Lascarides, 2003; Polanyi, 1988; Webber, 1991), its relation to at-issue status (Hunter & Asher, 2016; Jasinskaja, 2016) and prior findings in Syrett and Koev (2015) and Wilke (2023). However, our data additionally suggest that when multiple clauses are at the RF, clauses in sentence-final position are more likely hosts for at-issue content, and that this is then further influenced by their clause type such that matrix clauses in final position are interpreted as more likely hosts for at-issue content than ARCs in this same position. Additionally, we posited that topicality would influence at-issue status of clauses in matrix-ARC ordered sentences, but in the absence of an interaction effect between topicality and clause type *or* clause position, we found no evidence for this. The observed variation in the salience of NPs within items reveals a methodological issue that could be improved upon in future experiments testing the RF, although the finding in itself suggests that the RF can be violated in favor of very salient or interesting referents.

Future research should continue to empirically investigate the RF and the effect of at-issueness on pronoun resolution, and systematically explore how these factors interact with other factors that can impact the salience of referents. In addition, while overall, our experiment revealed clause position to be more important than clause type when the two were in competition, our data also revealed quite some variation in which clause was deemed to be most likely to be at-issue in the matrix-ARC condition (see Figure 1). Future studies should investigate whether for instance systematic differences between language users could be at the source of this variation.

[2]A table with all items can be found on the Open Science Framework page: `http://doi.org/10.17605/OSF.IO/TQ6WS`

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