

A'-splitting and scattered deletion of complex noun phrases in Russian: experimental approach

Daria Belova

Lomonosov Moscow State University

dd.belova@yandex.ru

SICOL-2022

A'-splitting

- *Separation construction* or *discontinuous constructions* or *splits*: two or more parts of one phrase are realized separated by other elements of a sentence on the surface level

(1) *Koje je Ivan zanimjive kupio knige*
which is Ivan interesting bought book
'Which interesting books did Ivan buy?'

(Croatian, [Fanselow & Ćavar 2002])

A'-splitting: theoretical approaches

- Syntactic movement approaches
 - One part of a split-XP moves up the tree by purely syntactic mechanism

A'-splitting: Remnant Movement

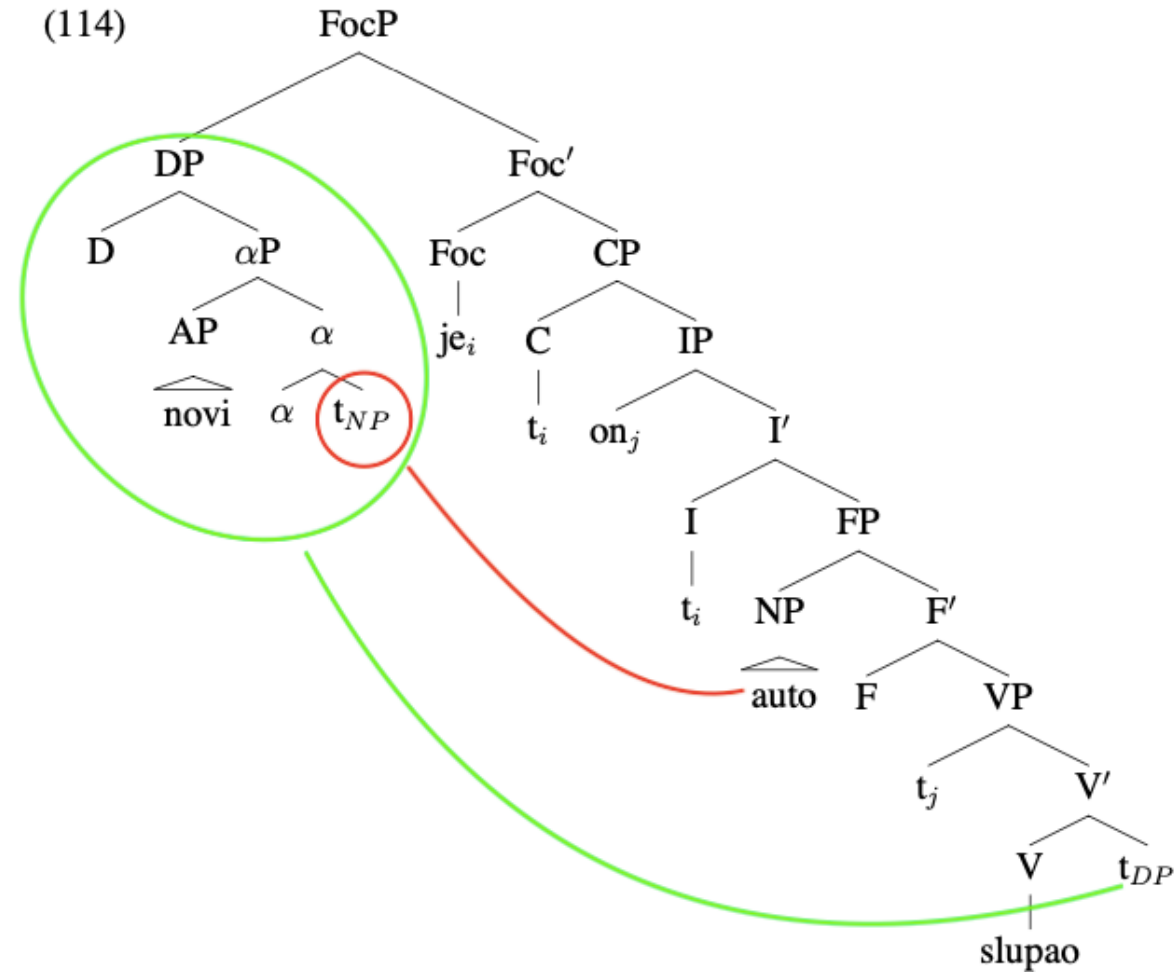
- Syntactic movement approaches
 - Remnant Movement analysis

(2) *Novi je on auto slupao*
 new AUX he car crashed
 PART A PART B

‘He crashed the new car’
 (Serbian, [Bašić 2004])

Step 1: the NP moves out of the DP

Step 2: the remnant DP moves to the left periphery



A'-splitting: theoretical approaches

- Syntactic movement approaches
 - One part of a split-XP moves up the tree by purely syntactic mechanism
- Scattered deletion approach
 - Copy and Deletion movement theory: a constituent moves by copying itself, then PF deletes all the lower copies
 - But in some cases copies can be deleted partially => a constituent is spelled out both in the higher and the lower copy(ies)
 - [Nunes 1995; Nunes 2004; Bošković & Nunes 2007]

A'-splitting: core properties

- [Fanselow & Ćavar 2002]: properties of split DPs and PPs in German and Croatian
 - XP-splits arise in the context of operator movement only
 - XP-splits can retain or invert the order of the elements found in the continuous counterpart. The latter type of split cannot show up with PPs
 - Pull splits do not show up for all types of operator movement in German

Russian data: [Sekerina 1997]

- Speech production and comprehension experiments with self-paced reading

(3) a. šumnuju kupili naši sosedī sobaku
loud bought our neighbours dog
‘Our neighbours bought the loud dog’

b. sobaku kupili naši sosedī deševo
dog bought our neighbours cheaply
‘Our neighbours bought the dog cheaply’

Russian data: [Sekerina 1997]

- Speech production and comprehension experiments with self-paced reading

(3) a. šumnuju kupili naši sosedi sobaku
loud bought our neighbours dog
'Our neighbours bought the loud dog'

b. sobaku kupili naši sosedi deševo
dog bought our neighbours cheaply
'Our neighbours bought the dog cheaply'

- XP-scrambling takes significantly less time to process than split scrambling
- Garden path effect: the parser wants to complete a noun phrase when he sees a modifier, thus the reanalysis is needed if it can't

Russian data: [Sekerina 1997]

- Core properties:
 - *One modifier constraint*: splits can arise only if a phrase head is modified with one adjective or possessive etc.
 - Long-distance split scrambling is not allowed
 - *The periphery tendency*: one split part (a remnant XP) occurs on the left edge of the clause while the other part tends to take the rightmost position
 - *The one-split-per-clause constraint*
- Double-movement analysis:
 1. DP (or PP) scrambles to the highest Spec,FocusP,
 2. N' or NP moves out of the moved XP and adjuncts rightwards to FP

Russian data: [Sekerina 1997]

- Core properties:
 - *One modifier constraint*: splits can arise only if a phrase head is modified with one adjective or possessive etc.
 - Long-distance split scrambling is not allowed
 - *The periphery tendency*: one split part (a remnant XP) occurs on the left edge of the clause while the other part tends to take the rightmost position
 - *The one-split-per-clause constraint*
- Double-movement analysis:
 1. DP (or PP) scrambles to the highest Spec,FocusP,
 2. N' or NP moves out of the moved XP and adjuncts rightwards to FP (similar to the Remnant-movement approach, but has different movement order)

Russian data: [Pereltsvaig 2008]

- However, A. Pereltsvaig gives counterexamples to some of Sekerina's conclusions based on the Colloquial Russian corpus

Russian data: [Pereltsvaig 2008]

- However, A. Pereltsvaig gives counterexamples to some of Sekerina's conclusions based on the Colloquial Russian corpus
- The subextracted part of a split-XP does not obligatory form a constituent

Russian data: [Pereltsvaig 2008]

- However, A. Pereltsvaig gives counterexamples to some of Sekerina's conclusions based on the Colloquial Russian corpus
- The subextracted part of a split-XP does not obligatory form a constituent
- Splits to more than two parts are possible:
 - (4) očen' oni xoroshie byli l'udi
very they good were people
'They were very good people'

Russian data: [Pereltsvaig 2008]

- However, A. Pereltsvaig gives counterexamples to some of Sekerina's conclusions based on the Colloquial Russian corpus
- The subextracted part of a split-XP does not obligatory form a constituent
- Splits to three and not two parts are possible
- The neutral word order in split configurations does not correspond to the one predicted by Sekerina's analysis

(5) *Kuricu* *na bol'suju* *položi* *tarelku*
chicken onto big put plate
'Put this chicken on a big plate'

Russian data: [Pereltsvaig 2008]

- Moreover, Pereltsvaig's corpus data contains examples of long-distance splits:

(6) *Ja* *xoču, papa,* *znaeš* , *kakoj*
I want Daddy you.know what

[_{CP} *čtob* *ty* *mne* *toporik* *kupil*]?
 that you me.dat hatchet bought

‘Daddy, you know, what kind of hatchet I want you to buy for me?’

Russian data: scattered deletion analysis

- (7) *protiv* *sovetskoj* *on* *vystupal* *vlasti*
against Soviet he demonstrated regime
'It is against thr Soviet regime that he demonstrated'

Russian data: scattered deletion analysis

(7) protiv sovetskoj on vystupal vlasti
against Soviet he demonstrated regime
'It is against thr Soviet regime that he demonstrated'

a. [PP protiv [DP sovetskoj vlasti]] on vystupal [PP protiv [DP sovetskoj vlasti]]

b [PP protiv [DP sovetskoj vlasti]] on vystupal [PP ~~protiv~~ [DP ~~sovetskoj vlasti~~]]

Research premises

- DP discontinuity is limited by A'-movements
=> However, it is not clear whether different types of A'-movements behave the same

German: splits conserving the word order within the XP are only allowed during wh-movement ([Fanselow & Ćavar 2002])

Research premises

- DP discontinuity is limited by A'-movements
=> However, it is not clear whether different types of A'-movements behave the same
- Scattered deletion is in general a more resource-costly operation than Full deletion (cf. [Nunes 2004])
=> However, there is no research on whether it is sensitive to phonological weight or structure complexity of deleted parts in each copy

Research premises

- DP discontinuity is limited by A'-movements
=> However, it is not clear whether different types of A'-movements behave the same
- Scattered deletion is in general a more resource-costly operation than Full deletion (cf. [Nunes 2004])
=> However, there is no research on whether it is sensitive to phonological weight or structure complexity of deleted parts in each copy
- Different judgments about acceptability of discontinuous phrases in Russian

Methods of experimental syntax

- Limited number of factors with several levels
- For every combination of factor levels several lexicalizations are created
- Test stimuli alternate with obviously grammatical and ungrammatical fillers
 - to prevent the respondents from guessing the purpose of the study
 - to create minimal and maximal reference points
- Big samples of respondents
- Respondents rate the *acceptability* of the stimuli, which is related to the grammaticality but also to the parser resources (and other factors)
- cf. [Cowan 1997; Gibson & Fedorenko 2010; Fedorova 2013; Sprouse 2022; Schoenmakers 2002] for the methodology of the experimental syntax

Experimental design

- Construction which is ambiguous between the scattered deletion analysis and subextraction analysis
- DP complement: simple movement cannot explain a head torn apart from its complement if the latter stays in its base position.
- Wh-words
 - *čej* ‘whose’ – Spec,DP, phrase
 - *kakoj* ‘what kind of’ – D head

Experimental design

- Two identical experiments with different complements of an NP: infinitive or PP
- Three factors:
 - movement type (wh-movement, relativization)
 - wh-word (*čej* ‘whose’ / *kakoj* ‘what kind of’)
 - split position (before the phrase head *early*, / after the phrase head, *late*)= 6 experimental conditions
- 24 test stimuli + 24 fillers (half of them ungrammatical)
- Likert scale 1 (bad sentence) – 7 (good sentence)

a. *č'ji* Ol'a poter'ala *kl'uč'i ot kvart'iry,* svoi il'i Pašiny?
 whose Ol'a lost keys from apartment REFL.PL or Paša's

b. *č'ji* *kl'uči* Ol'a poter'ala *ot kvart'iry,* svoi il'i Pašiny?
 whose keys Ol'a lost from apartment REFL.PL or Paša's

‘Whose keys to the apartment did Olya loose, hers or Pasha’s?’

c. *sos'edka,* *č'ji* Ol'a pot'er'ala *kl'uč'i ot kvart'iry,* bol'se n'e zvala ejo v gos't'i.
 neighbour whose Olya lost keys from apartment more not called her in guest

d. *sos'edka,* *č'ji* *kl'uč'i* Ol'a pot'er'ala *ot kvart'iry,* bol'se n'e zvala ejo v gos't'i.
 neighbour whose keys Olya lost from apartment more not called her in guest

‘The neighbour whose keys to the apartment Olya lost hasn't invited her over ever since’

e. *kakije* Ol'a pot'er'ala *kl'uč'i ot kvart'iry,* zapasnyje il'i n'et?
 what.kind.of Olya lost keys from apartment spare or not

f. *kakije* *kl'uč'i* ol'a pot'er'ala *ot kvart'iry,* zapasnyje il'i n'et?
 what.kind.of keys Olya lost from apartment spare or not

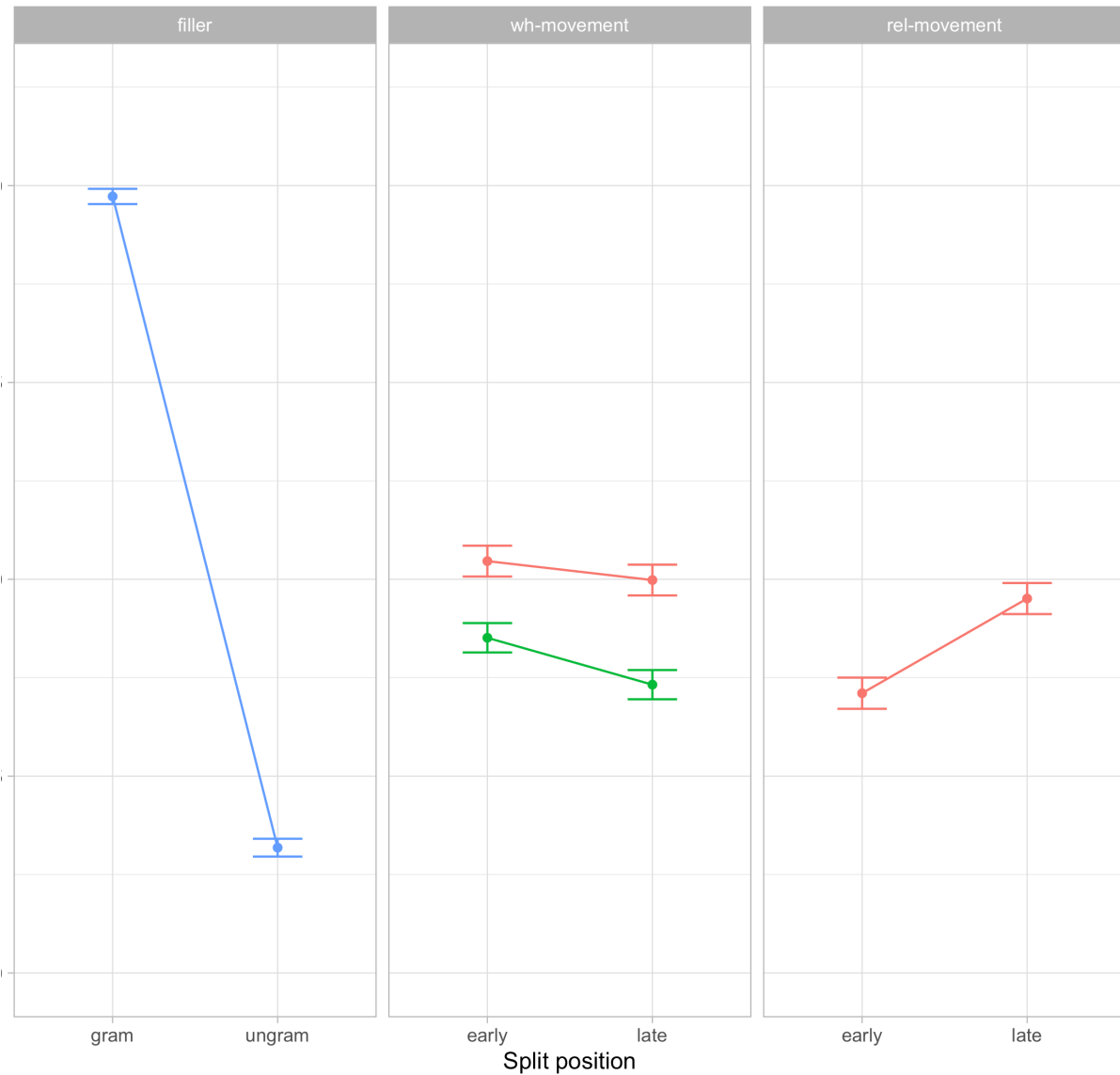
‘Which keys to the apartment did Olya loose, ’

Results

- Experiment 1a:
 - 105 respondents
 - 19–74 years old, *mean* = 36, *sd* = 11.59
- Experiment 1b:
 - 116 respondents
 - 18–61 years old, *mean* = 38, *sd* = 10.83
- The results were statistically treated with use of the linear mixed models and the a posteriori Tukey's HSD pair comparison

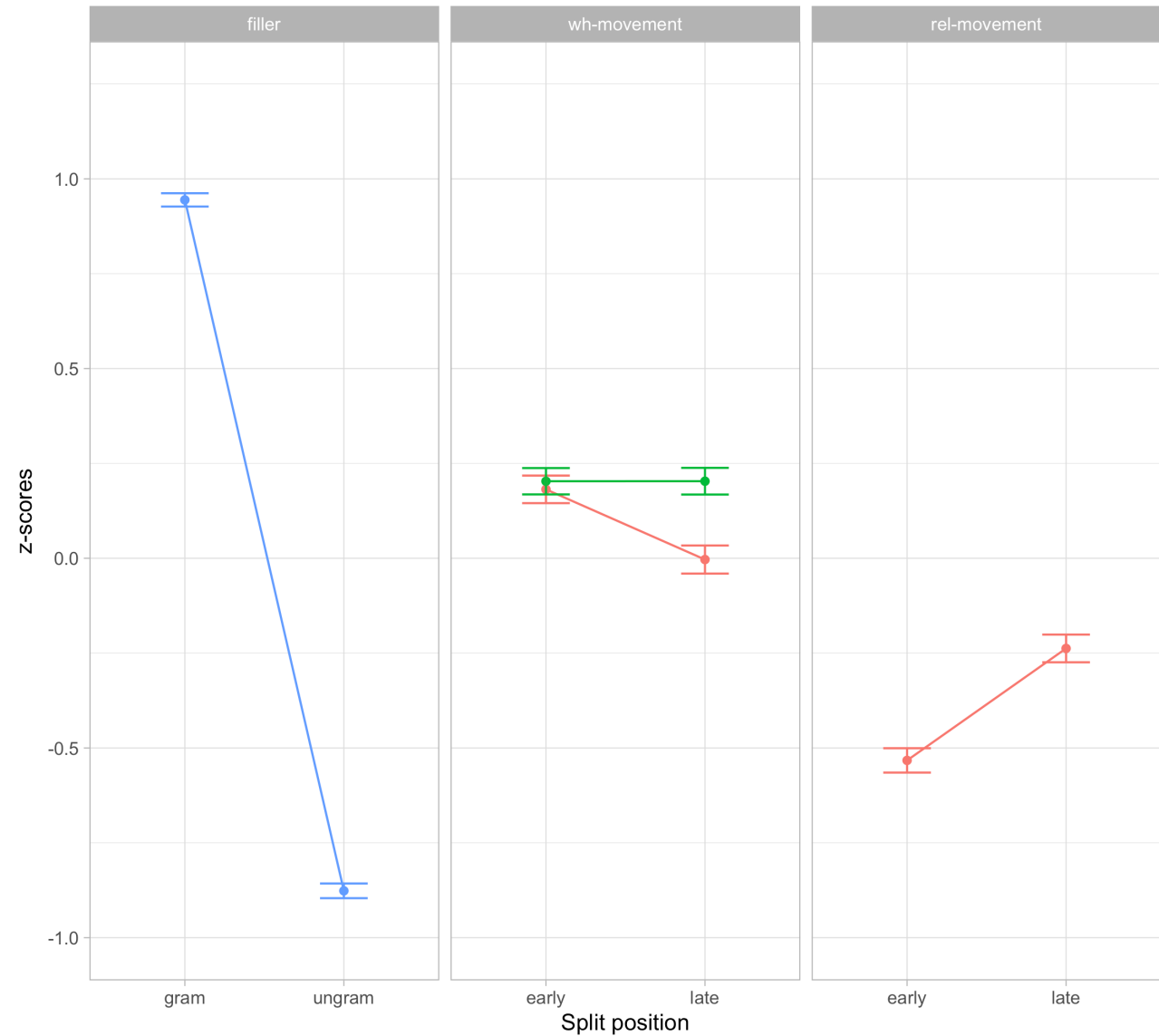
Results

1a : dependent infinitive



Left element — chej — kakoj — filler

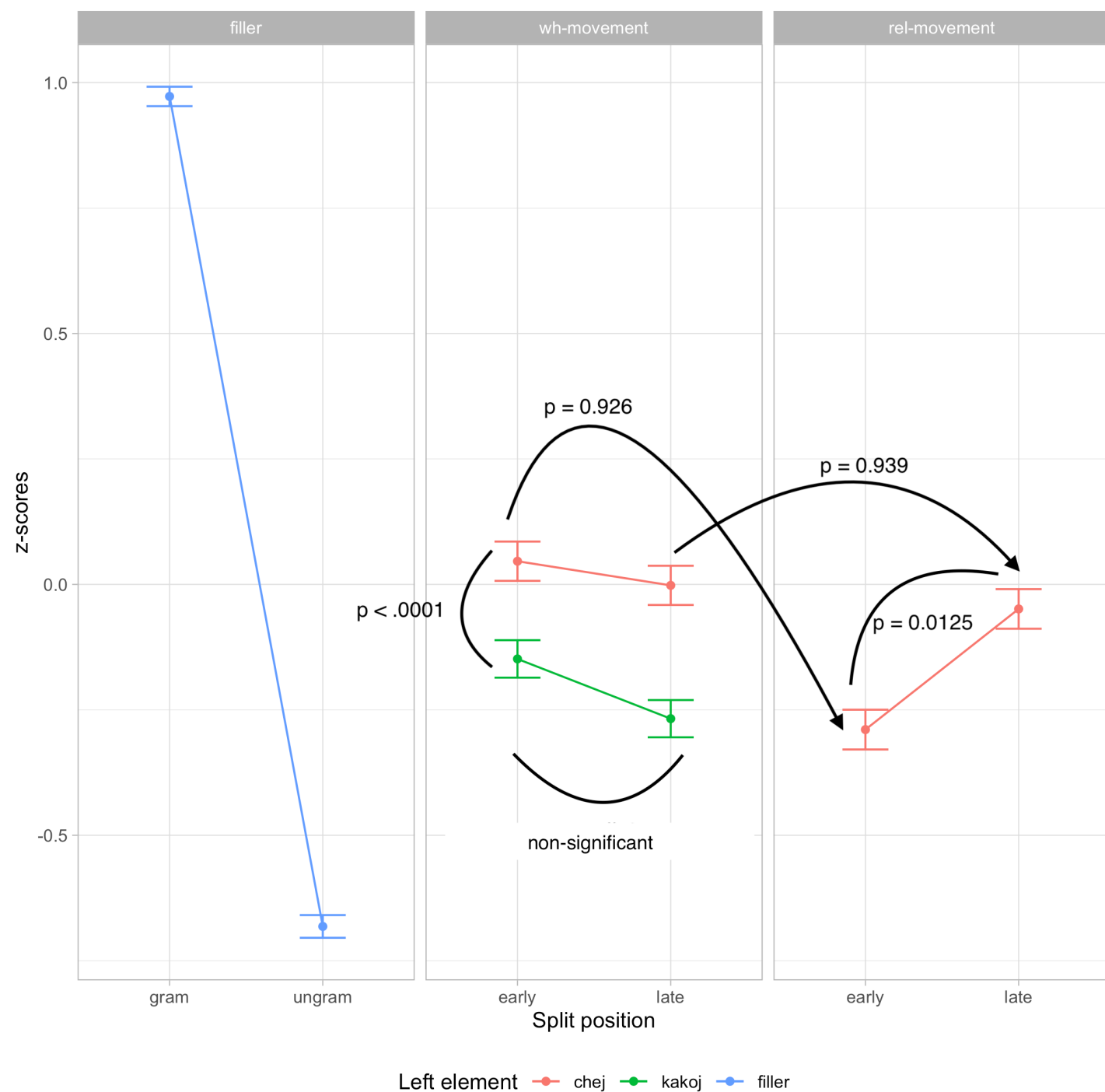
1b : dependent PP



Left element — chej — kakoj — filler

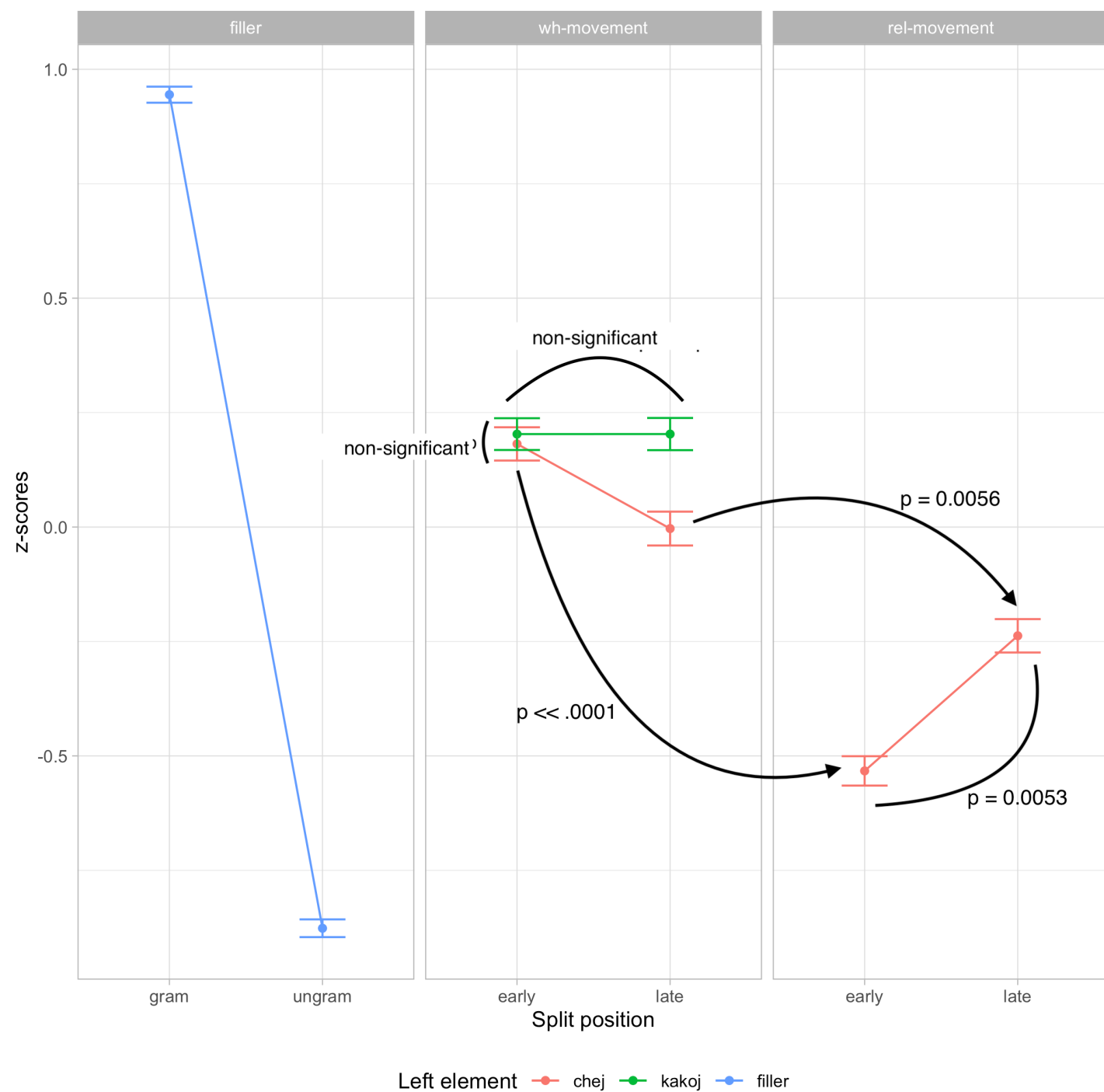
Results: 1a

- The factor of split position is only significant to relativization, but not wh-movement
The early split is rated lower than the late split
- The factor of left element is significant to wh-movement



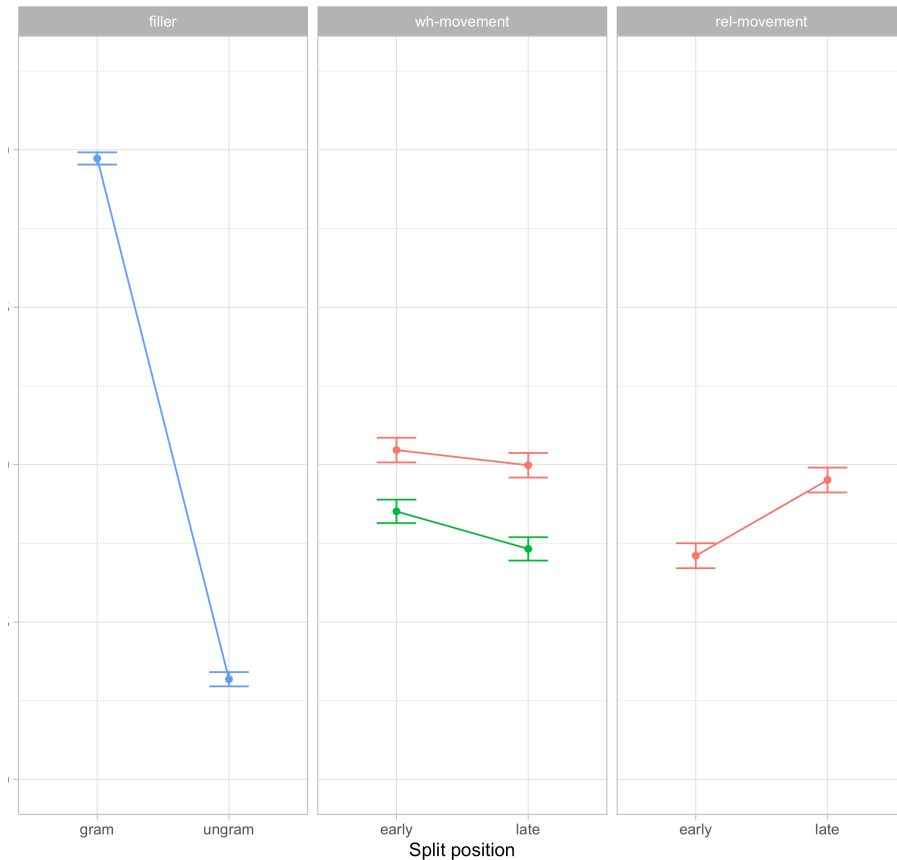
Results: 1b

- The factor of the split position is significant only to relativization as well
- The factor of the left element type is not significant



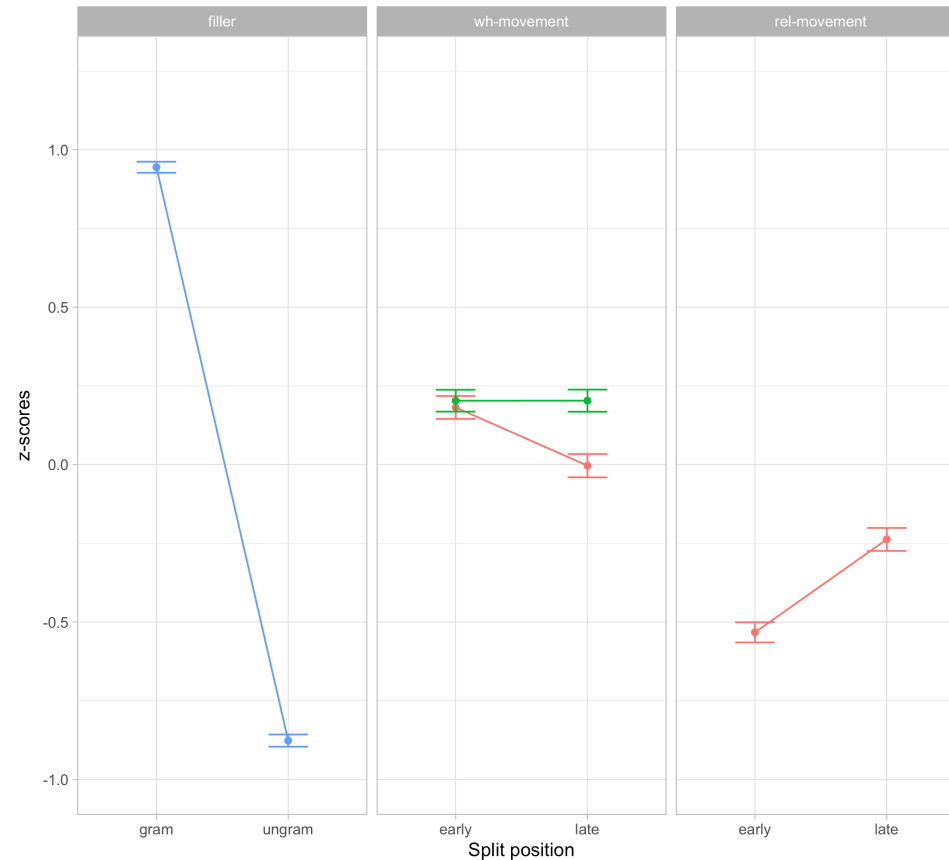
Discussion

1a : dependent infinitive



Left element — chej — kakoj — filler

1b : dependent PP

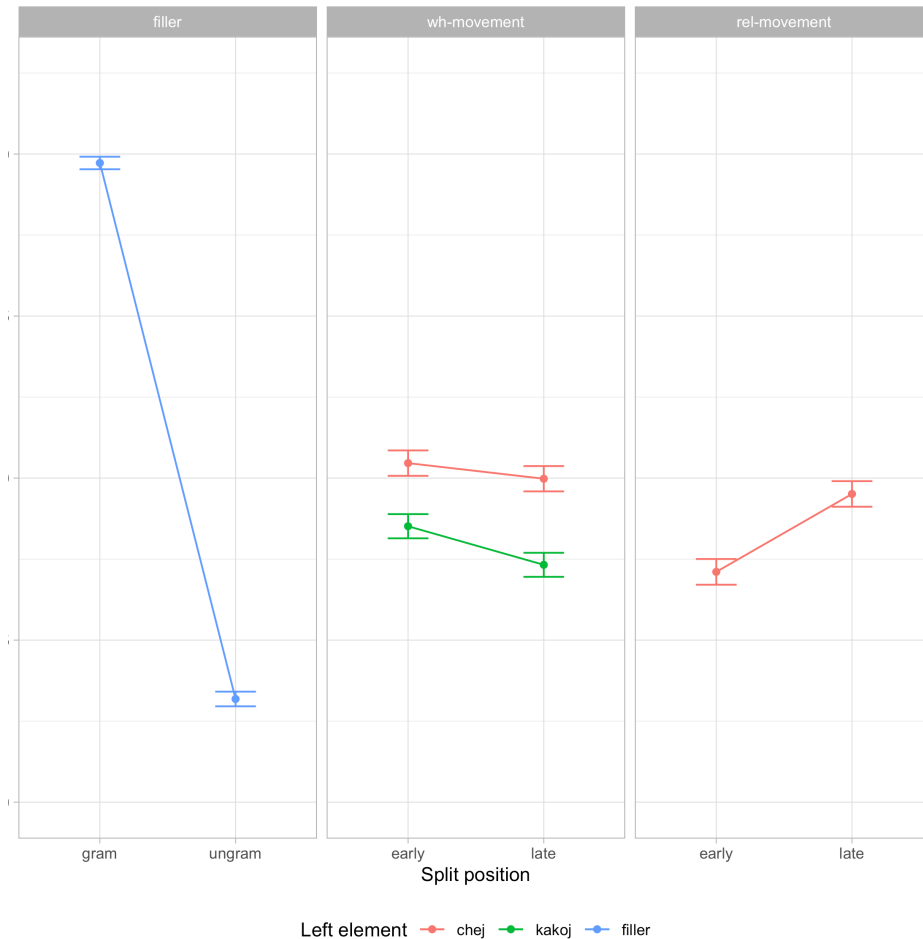


Left element — chej — kakoj — filler

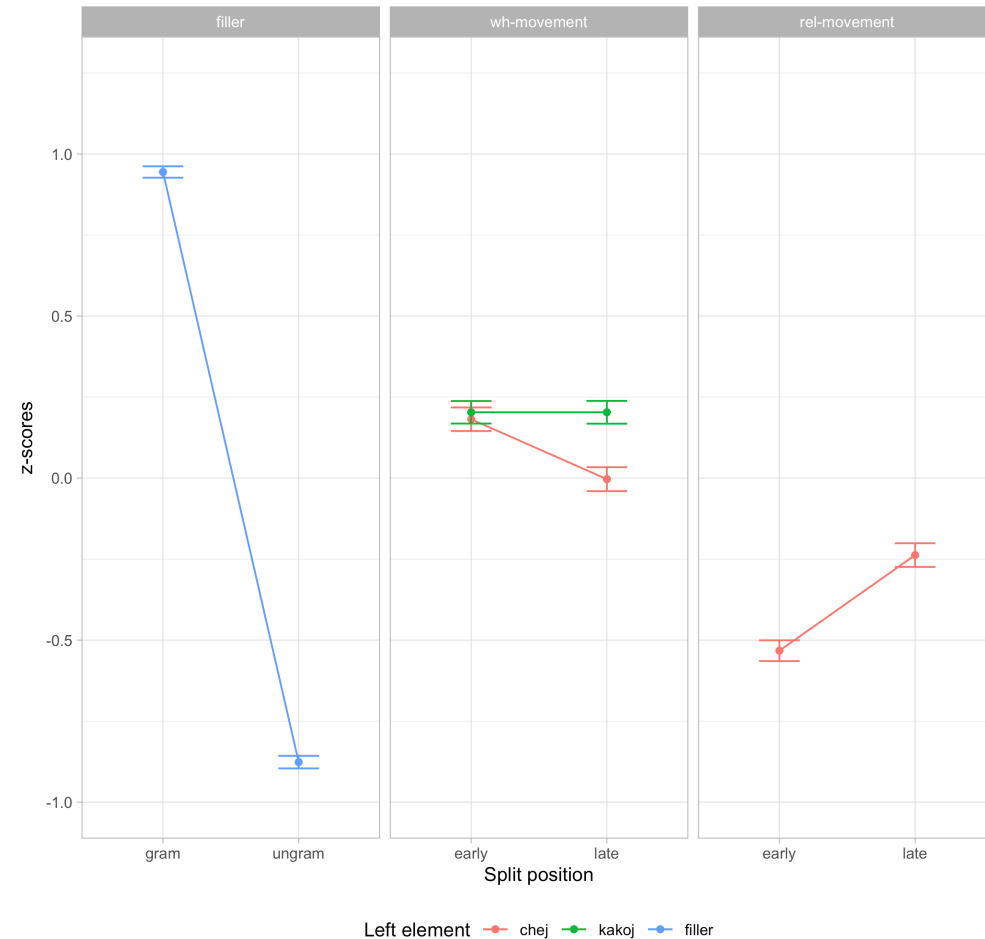
- All the ratings are relatively low but still significantly higher than the ungrammatical fillers in both experiments
- This is expected: the split configurations require a specific information structure
[Pereltsvaig 2008] observes that splits appear in contrastive contexts
[Fanselow & Cavar 2002]: the right part of a split-XP must be focal while the lefthand part may be a (link-) topic or a second focus
- Thus in conditions of no context such sentences may be pragmatically harder to process

Discussion

1a : dependent infinitive



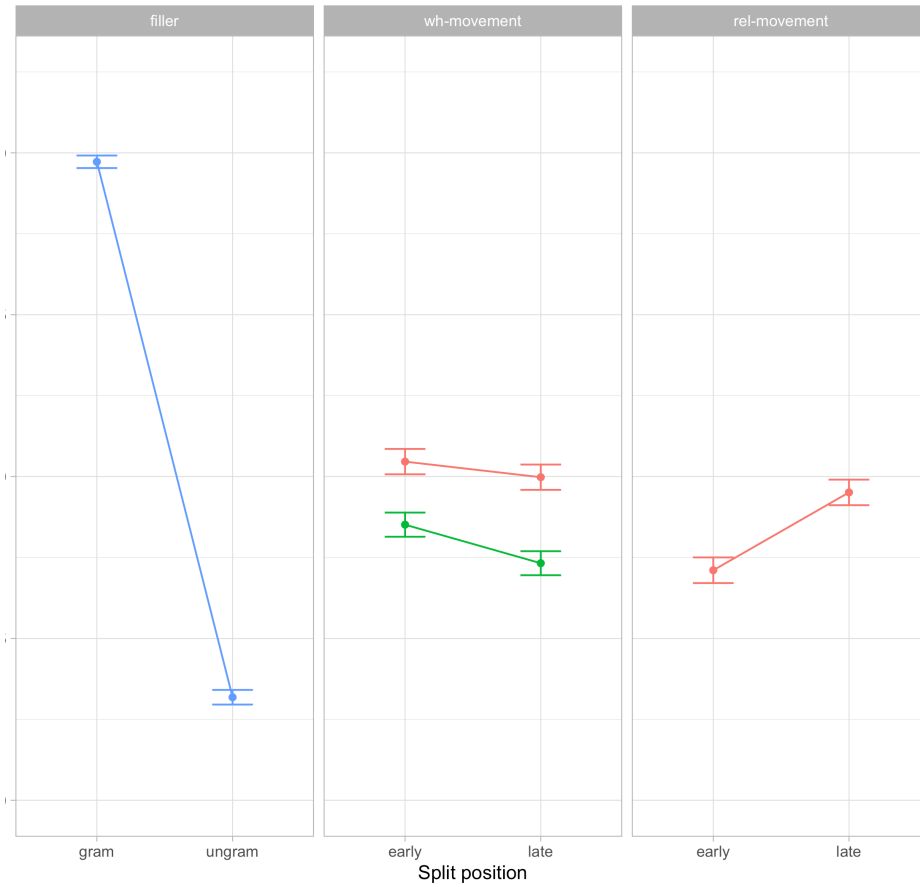
1b : dependent PP



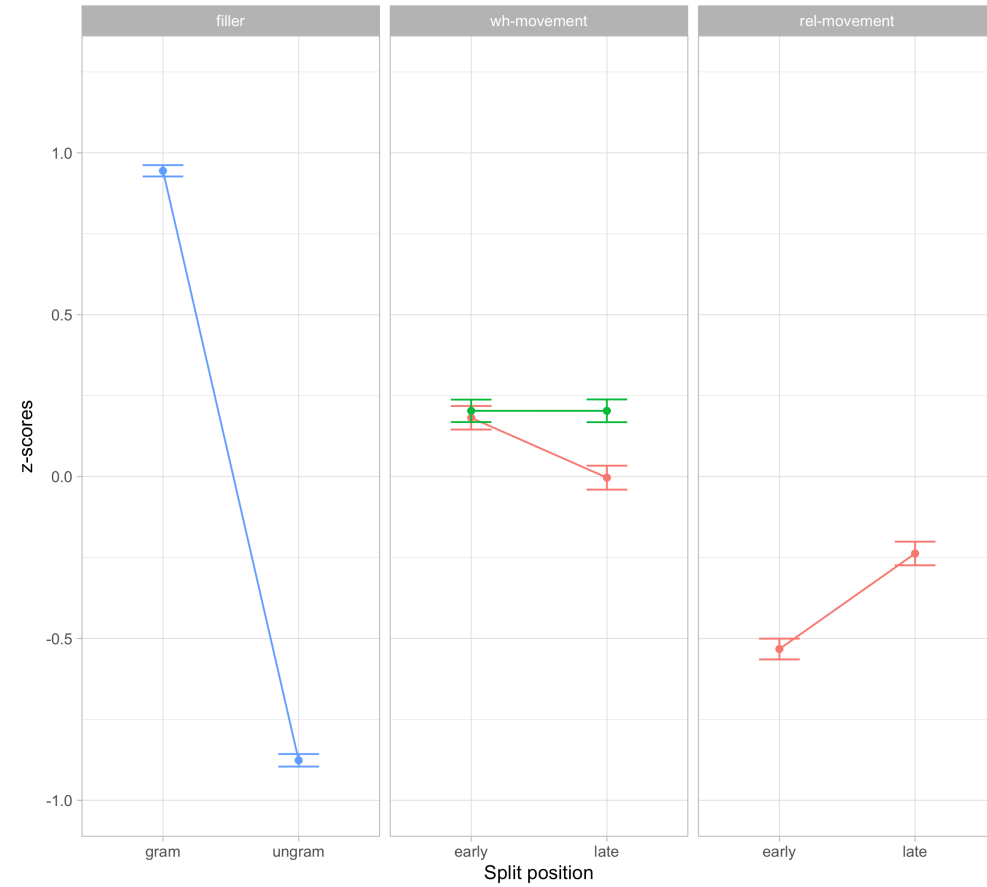
- The difference between the left element types is most probably related to some extra-experimental factors: we would not expect the type of a DP complement to influence the acceptability of the left part split
- Maybe the difficulty of stimuli is relevant: the sentences in the 1a were longer thus the longer wh-word is processed worse than the shorter one, but this claim needs to be investigated individually

Discussion

1a : dependent infinitive



1b : dependent PP



Left element — chej — kakoj — filler

Left element — chej — kakoj — filler

- The early splits are rated lower or at the same level as the late splits
- This is unexpected

Discussion

- The early splits are supposed to process easier as the left part does not form a meaningful combination
- On the contrary, the late splits can be analysed as full-moved phrases, thus when a reader sees the second part of that phrase later in the sentence they are forced to restructure the syntactic tree

sos'edka, č'ji Ol'a pot'er'ala kl'uč'i ot kvart'iry
sos'edka, č'ji kl'uč'i Ol'a pot'er'ala ot kvart'iry
'the neighbour whose keys to the apartment Olya lost'

Discussion

- The early splits are supposed to process easier as the left part does not form a meaningful combination
- On the contrary, the late splits can be analysed as full-moved phrases, thus when a reader sees the second part of that phrase later in the sentence they are forced to restructure the syntactic tree

sos'edka, č'ji Ol'a pot'er'ala kl'uč'i ot kvart'iry
sos'edka, č'ji kl'uč'i Ol'a pot'er'ala ot kvart'iry
'the neighbour whose keys to the apartment Olya lost'

- If we consider the early splits to be examples of the left branch extraction and not the scattered deletion, it does not explain the same rating levels

Conclusions

- The separation of different wh-words from the nominal head is rated differently in two experiments, however, we struggle to explain it by some factors controlled in the design
- The split of the left edge of a DP is rated the same or lower than the split of the head from its complement depending on the movement type. This may contradict the garden path effect, but to confirm the presence or absence of the garden path effect we need to conduct an experiment with the self-paced reading task
- Wh-movement and relativization show clearly different patterns with respect to DP-splitting. This fact is non-trivial and should be investigated in other languages too