# Syntaktická lokalita

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# Adjacence

Adjacence = bezprostřední blízkost                          Veselovská 2017

(1) [NP Místopředseda [NP ODS]] [VP potvrdil [NP přijetí [NP nabídky [PP k řízení resortu]]]].

Ještě striktnější podmínka u neshodných přívlastků: adjacence zprava

(2) a.   [PP Pro účely vyučování] zdůrazňuje hodnotu popisu jazyka.
    b.   Zdůrazňuje [PP pro účely vyučování] hodnotu popisu jazyka.
    c.   Zdůrazňuje hodnotu popisu jazyka [PP pro účely vyučování].
    d.   Zdůrazňuje hodnotu popisu jazyka na začátku semestru [PP pro účely vyučování].

# Adjacence

Nicméně adjacence **syntaktická**, nikoliv čistě lineární:
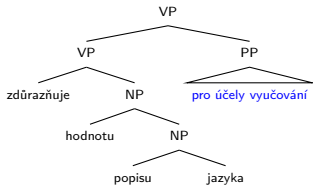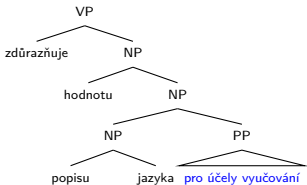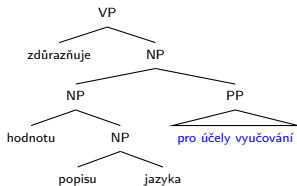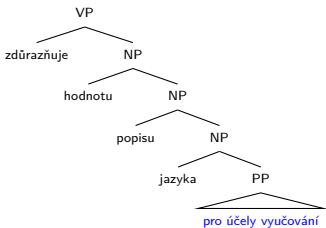
# Podmínka stejné klauze (clausemate condition)

Adjacence není vždy nutná, existuje však nutnost být ve stejné (finitní) klauzi

Panevová & Karlík 2017

(3) a.    Nebo mi (snad) řekneš, že mu (ještě) nevolali?

b.    *Nebo mi (snad) řekneš, že mu (ještě) nevolali?

U infinitivních klauzí není vždy podmínka stejné klauze nutná, u příklonek někdy ani není možná.

(4) a.    Tos mu hned musela [$_{VP}$ vypíchnout oko]?

b.    ?Tos hned musela [$_{VP}$ {mu} vypíchnout {mu} oko]?

Příklonka v nadřazené klauzi může být asociována s verbem klauze podřazené, nikoliv však naopak.

(5) a.    Vždycky jim doporučovala [$_{VP}$ předem připravit nářadí].

b.    Vždycky jim doporučovala [$_{VP}$ předem připravit nářadí].

c.    *Vždycky doporučovala [$_{VP}$ předem jim připravit nářadí].

d.    Vždycky doporučovala [$_{VP}$ předem jim připravit nářadí].

# Vzdálené vztahy (long-distance dependencies)

Vztah příklonky a řídícího slovesa nemůže překročit hranici finitní klauze (jak už bylo naznačeno).

(6)   a.   Vždycky jim doporučovala [$_{VP}$ předem připravit nářadí].

   b.   Vždycky jim doporučovala [$_{VP}$ předem připravit nářadí].

   c.   Vždycky jim doporučovala, [$_{CP}$ aby předem připravili nářadí].

   d.   *Vždycky jim doporučovala, [$_{CP}$ aby předem připravili nářadí].

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d.   *Vždycky jim doporučovala, [CP aby předem připravili nářadí].

To však neplatí obecně. Např. tázací zájmena tuto hranici překročit mohou:

(7) a.   Komu vždycky doporučovala [VP předem připravit nářadí].

b.   Komu vždycky doporučovala [VP předem připravit nářadí].

c.   Komu vždycky doporučovala, [CP aby předem připravili nářadí].

d.   Komu vždycky doporučovala, [CP aby předem připravili nářadí].

# Vzdálené vztahy

Nejen tázací zájmena…

(8) a. Komu/Jemu vždycky doporučovala [$_{VP}$ předem připravit nářadí].

     b. Komu/Jemu vždycky doporučovala [$_{VP}$ předem připravit nářadí].

     c. Komu/Jemu vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

     d. Komu/Jemu vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

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Nejen tázací zájmena…

(8)  a.    Komu/Jemu vždycky doporučovala [$_{VP}$ předem připravit nářadí].

      b.    Komu/Jemu vždycky doporučovala [$_{VP}$ předem připravit nářadí].

      c.    Komu/Jemu vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

      d.    Komu/Jemu vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

…nýbrž i vztažná zájmena…

(9)  učeň, kterému vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

# Vzdálené vztahy

Nejen tázací zájmena…

(8)  a.   Komu/Jemu vždycky doporučovala [$_{VP}$ předem připravit nářadí].

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     d.   Komu/Jemu vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

…nýbrž i vztažná zájmena…

(9)  učeň, kterému vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

…a různé nominální fráze

(10)  Tomu učni/Liborovi vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

# Kontrast

Příklonky nemůžou opustit finitní klauzi, neboť nemůžou být interpretovány
kontrastivně.                                                                    Dotlačil 2007

(11)  Viděli jsme jeho/\*ho, ne ji.

A vskutku: Fráze, které „opustily" svou finitní klauzi jsou zpravidla interpretovány
kontrastivně – buď jako kontrastivní ohnisko, nebo jako kontrastivní základ.
                                                        Hajičová et al. 2003; Veselá 2007

(12)  Komu/Jemu/Tomu učni/Liborovi vždycky doporučovala, [CP aby předem
       připravili nářadí]./?

Totéž platí o frázích umístěných před spojkou finitní klauze.              Kaspar 2017b,a

(13)  že ho právě ona, psychoanalytička, sexuálně přitahuje, ale ji/[\*ho] že nikdo s
       jeho matkou na Granholmenu spojovat nemůže

(14)  že sice docela spěchá, ale čaj že ještě stihne

(15)  Chtěl, aby Gross zůstal premiérem, ale stranu aby vedl Zdeněk Škromach

# Nejen kontrast: Vztažná zájmena

Vztažná zájmena nejsou kontrastivní, ale přesto je lze extrahovat z finitních klauzí:

(16)   učeň, kterému vždycky doporučovala, [$_{CP}$ aby předem připravili nářadí].

Dokonce se zdají být „extrahovatelnější" než interogativní zájmena (viz experimentální výsledky), srov. extrakci z tzv. slabých ostrovů.                                          Dočekal 2017b

(17)   a.   Ptali jsme se na tu zásilku, kterou nevěděl, [$_{CP}$ jestli pošta přijme].
       b.   ?Už jsem zjistil, kterou zásilku nevěděl, [$_{CP}$ jestli pošta přijme].

# Syntaktické ostrovy

Z některých struktur nelze extrahovat vůbec: tzv. (silné) ostrovy.

Ross 1967; Dočekal 2017a

(18)   Kolegyně nás upozornila na opatření, které říkali, [$_{CP}$ že vláda uvolní].

(19) *Kolegyně nás upozornila na opatření, které říkali [$_{NP}$ to, [$_{CP}$ že vláda uvolní]].

# Shrnutí

- Některé syntaktické vztahy jsou nutně lokální/adjacentní, (neshodné přívlastky modifikující NP).
- Některé vztahy jsou omezeny na klauzi, resp. finitní klauzi (příklonky).
- Některé vztahy mohou překročit hranici finitní klauze, ale jsou citlivé na tzv. slabé ostrovy (tázací výrazy).
- Některé vztahy mohou překročit hranici finitní klauze, nejsou citlivé na tzv. slabé ostrovy, ale jsou citlivé na tzv. silné ostrovy (vztažná zájmena).

# Lokalita a strukturní komplexita

- Čím komplexnější je struktura, z níž je extrahováno, tím náročnější je extrakce.
- Čím komplexnější je extrahovaný výraz, tím jednodušší je jeho extrakce.

# Komplexita klauzí

- Infinitivní klauze může být strukturně malá: VP (verb phrase) či TP (tense phrase). Wurmbrand 2001

  (20) $[_{TP}$ $[_{VP}$ $[_V$ připravit] $[_{NP}$ nářadí]]]

- Finitní vedlejší klauze odpovídá CP (complementizer phrase).

  (21) $[_{CP}$ $[_C$ že/aby] $[_{TP}$ $[_{VP}$ $[_V$ připravili] $[_{NP}$ nářadí]]]]

- Nominalizovaná vedlejší klauze je ještě větší:

  (22) $[_{NP}$ $[_N$ to] $[_{CP}$ $[_C$ že/aby] $[_{TP}$ $[_{VP}$ $[_V$ připravili] $[_{NP}$ nářadí]]]]]

# Komplexita extrahovaných frází

|  | čeština | | | bulh. | němč. |
|---|---|---|---|---|---|
|  | on | ona | který | koj | (d)er |
| příklonka | ho | ji | n/a | n/a | (er) |
| kontr./inter. zájmeno | jeho | ji | který | koj | der |
| vztažné/anafor. zájmeno | jehož | již | který | kojto | der |

- Strukturní komplexita zájmen roste od příklonek, přes kontrastivní/interogativní zájmena, po relativní/anaforická zájmena.

- Tato komplexita není vždy viditelná, předpokládáme však, že existuje (relativní *který* je strukturně komplexnější než interogativní *který*) a že ji lze detekovat „nepřímo", např. pomocí lokality.

- Jmenné fráze, vlastní jména, apod. mohou mít kontrastivní příznak, mohou tedy být z funkčního hlediska analogické ke kontrastivním či interogativním zájmenům.

# Lokalita a strukturní komplexita: Shrnutí

|  | extrahovatelné z | | | |
|---|---|---|---|---|
|  | infinitiv | finitní klauze | slabý ostrov | silný ostrov |
| příklonky | ✓ | ✗ | ✗ | ✗ |
| kontr./inter. zájmeno | ✓ | ✓ | ✗ | ✗ |
| vztažné/anafor. zájm. | ✓ | ✓ | ✓ | ✗ |

# Experiment on extraction from clausal adjuncts

Extraction from clausal adjuncts in Czech: A rating study

Co-authors: Petr Biskup, Kateřina Bartasová, Markéta Dančová, Eliška Dostálková, Kateřina Hrdinková, Gabriela Kosková, Jaromír Kozák, Klára Lupoměská, Albert Maršík, Edita Schejbalová, Illia Yekimov

# Adjunct islands

Clausal tensed adjuncts are traditionally considered islands for extraction:

(23) *Who did Mary cry [after John hit t]?                              Huang 1982

Exceptions noted frequently:       Grosu 1981; Deane 1991; Kluender 1998; a.o.

(24)   This is the watch OP that I got upset [when I lost t].

(25)   The person who I would kill myself [if I couldn't marry t] is Jane.

Growing experimental evidence
                    Dal Farra 2019; Kush et al. 2019; Bondevik et al. first view

(26)   […] men [CT takkekortene]        blir        hun skuffet        [om de   glemmer
           but          thank.you.cards.DEF becomes she disappointed   if   they forget
       å  sende ut    t med en   gang].
       to send   out   with one time
       '[…] but the thank you cards she will be disappointed if they forget to send our
       right away.'                                                    (Norwegian)

# Extraction from clausal adjuncts in Czech

Extraction from **conditional** adjuncts:      Lešnerová & Oliva 2003

(27) Na každé hračce je nálepka, kterou [když dítě odevzdá t], obdrží dárek.
on every toy   is sticker   which   when child hands.in   receives gift
'On every toy there's a sticker such that when a child hands the sticker in, they receive a gift.'

Extraction from other clausal adjunct types:      Biskup & Šimík 2019

(28) **Correlative clause**
To je ten chlap, kterému [co dáš t], to ztratí.
that is the man   which.DAT what give.2SG   that loses
'That's the man such that he will lose whatever you give him.'

(29) **Purpose clause**
To je řečník, kterého [aby nalákali t], museli by mít peníze.
that is speaker which.ACC in.order attract   must SBJV have money
'That's a speaker such that they'd have to have money in order to attract him.'

(based on corpusd data/intuitions)

# Left vs. right adjunct

Extraction from left adjuncts is acceptable; not so from right adjuncts:

Biskup & Šimík 2019

(30) **Correlative (left) vs. free relative (right) clause**

    a.   To  je ten chlap, kterému  [co    dáš     t], to   ztratí.
        that is the man   which.DAT  what give.2SG     that loses

    b.  *To  je ten chlap, kterému  ztratí [co   dáš     t].
        that is the man   which.DAT loses   what give.2SG
        (Intended:) 'That's the man such that he will lose whatever you give him.'

(31) **Purpose clause (left vs. right)**

    a.   To  je řečník, kterého  [aby     nalákali t], museli by  mít peníze.
        that is speaker which.ACC in.order attract     must  SBJV have money

    b.  *To  je řečník, kterého  by   museli mít peníze [aby     nalákali t].
        that is speaker which.ACC SBJV must   have money  in.order attract
        (Intended:) 'That's a speaker such that they'd have to have money in order
        to attract him.'

(based on intuitions)

# Relative vs. interrogative

Relative extraction more acceptable than interrogative extraction:

(32) **Relative vs. interrogative (out of correlative)**

    a.    To  je ten chlap, kterému  [co    dáš    t], to  ztratí.
           that is the man  which.DAT what give.2SG    that loses
           'That's the man such that he will lose whatever you give him.'

    b. ?Nevím,   kterému chlapovi [co    dáš    t], to  ztratí.
           NEG.know which    man.DAT what give.2SG    that loses
           Intended: 'I don't know which man is such that he will lose whatever you
           give him.'

(33) **Relative vs. interrogative (out of purpose)**

    a.    To  je řečník, kterého  [aby    nalákali t], museli by  mít  peníze.
           that is speaker which.ACC in.order attract    must  SBJV have money
           'That's a speaker such that they'd have to have money in order to attract
           him.'

    b. ?Nevím,   kterého řečníka   [aby    nalákali t], museli by  mít
           NEG.know which    speaker.ACC in.order attract    must  SBJV have
           peníze.
           money
           Intended: 'I don't know which speaker is such that they'd have to have
           money in order to attract him.'

(based on intuitions)

# Summary of preliminary data

Extraction from left adjuncts   ✓
Extraction from right adjuncts  ✗

Extraction of relative pronouns      ✓
Extraction of interrogative phrases  ✗

# Summary of preliminary data

Extraction from left adjuncts    ✓
Extraction from right adjuncts ✗

Left adjuncts are believed to be

- more complex than right adjuncts                                    Haegeman 2003

- in derived positions/specifiers                        Huang 1982; Müller 2010

- backgrounded/presupposed/topicalized      Mathesius 1947; Declerck & Reed 2001; a.o.

→ **wrongly** expected to be opaque for extraction (by most locality theories)


Extraction of relative pronouns      ✓
Extraction of interrogative phrases ✗

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Extraction from left adjuncts   ✓
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→ **wrongly** expected to be opaque for extraction (by most locality theories)

Extraction of relative pronouns     ✓
Extraction of interrogative phrases ✗

Relative pronouns/operators are believed to be

- more complex than interrogative ones       Rudin 2009; Daskalaki 2020
- backgrounded (not focused)            Abeillé et al. 2020

→ **correctly** expected to be more mobile (by most locality theories)

# Conceivable approaches

Syntax/Semantics-based approach [SynSem]

**Left vs. right**

- Left clausal adjuncts are clausal (propositional),
  restricting modal/conditional operators

                                                Kratzer 2012

  (34)   $\forall w[\text{ACC}(w, w_0) \wedge [\![\text{CP}_{\text{adjunct}}]\!](w) \rightarrow [\![\text{consequent}]\!](w)]$

- Right clausal adjuncts are nominal, i.e. free relatives (entity-denoting),
  arguments in the event structure                          Parsons 1990

  (35)   $\exists e[[\![\text{verb}]\!](e) \wedge \theta(e, [\![\text{NP}_{\text{adjunct}}]\!])]$

- Clauses are transparent for extraction; complex nominals are not.

- Adjunct island reduced to complex NP island.

                                      Biskup & Šimík 2019

**Relative vs. interrogative**

- Relative phrases/operators are structurally more complex than interrogative
  ones; e.g. Bulgarian *kojto* vs. *koj*.              Rudin 2009; Daskalaki 2020

- More complex/featurally specific phrases are more syntactically mobile.
                                   Starke 2001; Abels 2012

# Conceivable approaches

Information structure-based approach [InfoStr]

**Left vs. right**

- Left clausal adjuncts are informationally backgrounded and hence expected to be less transparent.

- Right clausal adjuncts are informationally focused and hence expected to be more transparent.

- This goes counter to the reported Czech data.

Erteschik-Shir 1973; Goldberg 2006; Abeillé et al. 2020

**Relative vs. interrogative**

- Relative pronouns are backgrounded. Extraction from backgrounded clauses is therefore expected to be acceptable.

- Interrogative phrases are focused. Extraction from backgrounded clauses is therefore expected to unacceptable.

- No difference expected for extraction from right clauses.

(36) **Focus–background conflict (FBC) constraint**
A focused element should not be part of a backgrounded constituent.

Abeillé et al. 2020

# Research questions and hypotheses

Q1 Does ADJUNCT POSITION play a role for extraction?

Q2 Does the TYPE of the extracted WH-PHRASE play a role?

Q3 Does an overt NOMINAL LAYER in the adjunct play a role?

# Research questions and hypotheses

Q1 Does ADJUNCT POSITION play a role for extraction?

- SynSem: left > right
- InfoStr: right > left

Q2 Does the TYPE of the extracted WH-PHRASE play a role?

Q3 Does an overt NOMINAL LAYER in the adjunct play a role?

# Research questions and hypotheses

Q1 Does ADJUNCT POSITION play a role for extraction?

- SynSem: left > right
- InfoStr: right > left

Q2 Does the TYPE of the extracted WH-PHRASE play a role?

- SynSem: relative > interrogative (within left)
            (relative & interrogative equally bad within right)
- InfoStr: relative > interrogative (within left)
            (relative & interrogative equally good within right)

Q3 Does an overt NOMINAL LAYER in the adjunct play a role?

## Research questions and hypotheses

Q1 Does ADJUNCT POSITION play a role for extraction?
- SynSem: left > right
- InfoStr: right > left

Q2 Does the TYPE of the extracted WH-PHRASE play a role?
- SynSem: relative > interrogative (within left)
  (relative & interrogative equally bad within right)
- InfoStr: relative > interrogative (within left)
  (relative & interrogative equally good within right)

Q3 Does an overt NOMINAL LAYER in the adjunct play a role?
- SynSem: absent > present (within left)
  (absent & present equally bad within right)
- InfoStr: absent > present (by assumption)
  (within right & for rel within left)

## Design, materials, participants, task

| stimulus (schematic) | ADJUNCT POSITION | WH-PHRASE TYPE | NOMINAL LAYER |
|---|---|---|---|
| song which [when hear t] relax | left | rel | abs |
| song which [at time when hear t] relax | left | rel | pres |
| wonder which song [when hear t] relax | left | inter | abs |
| wonder which song [at time when hear t] relax | left | inter | pres |
| song which relax [when hear t] | right | rel | abs |
| song which relax [at time when hear t] | right | rel | pres |
| wonder which song relax [when hear t] | right | inter | abs |
| wonder which song relax [at time when hear t] | right | inter | pres |

- $2 \times 2 \times 2$ crossed design; 8 unique conditions
- within-items & within-subjects manipulation
- Latin Square distribution of stimuli
- 48 experimental items & 64 fillers (subexperiments; see section on fillers)
- 96 participants (non-experts)
- 576 observations per condition
- naturalness rating (1 completely unnatural – 7 completely natural)
- administration and pseudo-randomization via L-Rex     Starschenko & Wierzba 2021

# Materials: Example and properties

(37) left+rel+abs/pres
Znám    písničku,   kterou    [{když / ve chvíli, kdy} posloucháš t], lépe   se
know.1SG song    which.ACC   when   at time  when listen.2SG    better REFL
soustředíš.
concentrate.2SG
'I know a song such that you can concentrate better when you listen to it.'

(38) left+inter+abs/pres
Nevím,    kterou písničku [{když / ve chvíli, kdy} posloucháš t], lépe   se
NEG.know.1SG which song.ACC  when   at time  when listen.2SG    better REFL
soustředíš.
concentrate.2SG
'I don't know which song is such that you can concentrate better when you listen to it.'

**Constant properties of items:**

- relative pronoun *který* 'which' (most common and neutral)
- embedded interrogatives with *který NP* 'which NP' (syntactically and semantically closest to the corresponding relative)

**Varying properties of items:**

- syntactic function of extracted element (mostly objects, 10 adverbial, 5 subjects)
- grammatical number of extracted element (41 sg, 7 pl)
- adjunct type (mostly conditional/temporal of different types, 9 purpose)
- overt NP (mostly nominal, sometimes modified by a demonstrative, sometimes only demonstrative)
- pronominal/pro in main clause bound by extracted operator (43 absent, 5 present)

# Results
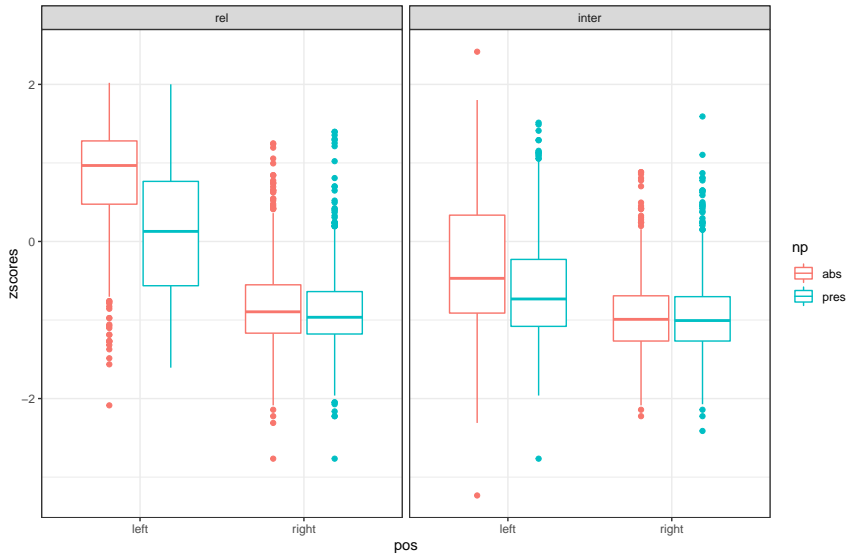
# Results (i)

Main effect of ADJUNCT POSITION                              $[t = 9.214, p < 0.0001]$

- Extraction from left adjuncts more natural than from right adjuncts.
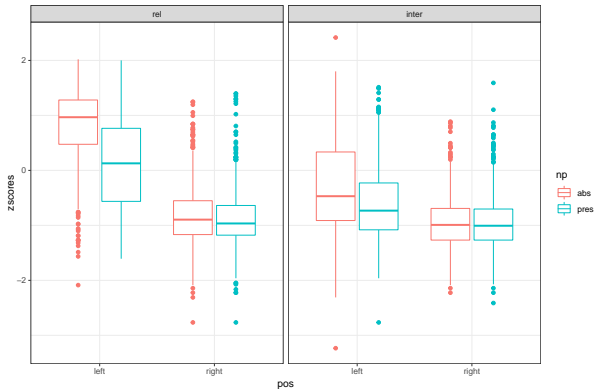
# Results (i)

Main effect of ADJUNCT POSITION $\qquad\qquad$ $[t = 9.214, p < 0.0001]$

- Extraction from left adjuncts more natural than from right adjuncts.

- | SynSem ✓   InfoStr ✗ |
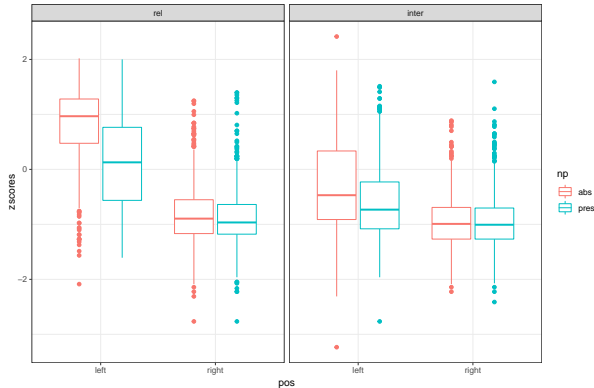
# Results (ii)

Interaction between ADJUNCT POSITION and NOMINAL LAYER     $[t = 5.703, p < 0.0001]$

- The presence of a nominal layer on top of the adjunct makes extraction less natural, but only in the left condition.
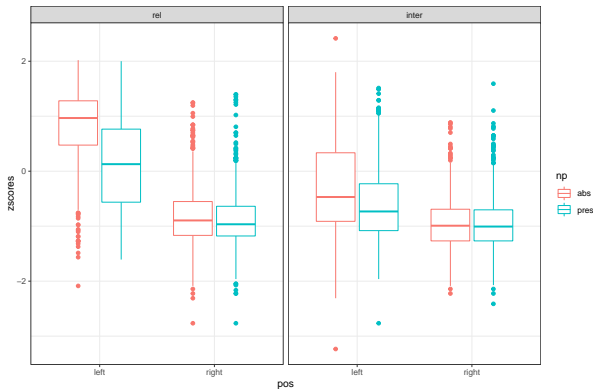
# Results (ii)

Interaction between ADJUNCT POSITION and NOMINAL LAYER    $[t = 5.703, p < 0.0001]$

- The presence of a nominal layer on top of the adjunct makes extraction less natural, but only in the left condition.

- | SynSem ✓   InfoStr ✗ |
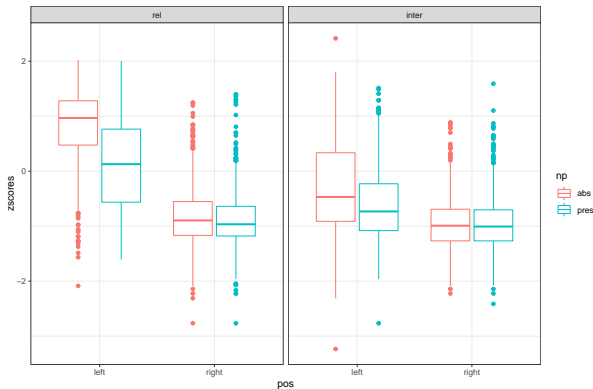
# Results (iii)

Interaction between ADJUNCT POSITION and WH-PHRASE TYPE    $[t = 12.129, p < 0.0001]$

- Extraction of relative pronouns is more natural than that of interrogative phrases, but only in the left condition; they are equally bad in the right condition.
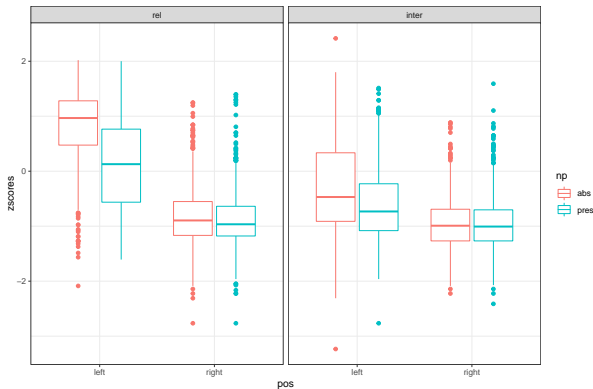
# Results (iii)

Interaction between SMALL-CAPS ADJUNCT POSITION and WH-PHRASE TYPE    $[t = 12.129, p < 0.0001]$

- Extraction of relative pronouns is more natural than that of interrogative phrases, but only in the left condition; they are equally bad in the right condition.

- | SynSem ✓    InfoStr ✗ |
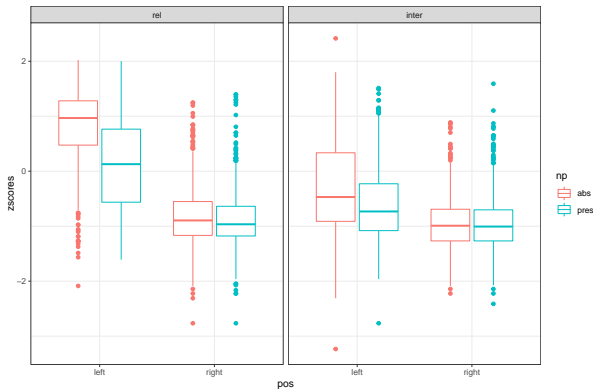
# Results (iv)

Three-way interaction POSITION × WH-TYPE × NP LAYER        $[t = 4.623, p < 0.0001]$

- Extraction from right adjuncts is unnatural across all sub-conditions.
- The naturalness of extraction from left adjuncts gradually decreases from the most natural rel+abs condition, through rel+pres, inter+abs, to the least natural inter+pres condition.
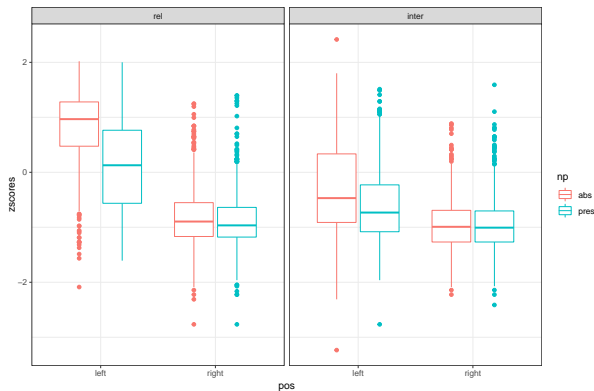
# Results (iv)

Three-way interaction POSITION × WH-TYPE × NP LAYER $\qquad$ [$t = 4.623, p < 0.0001$]

- Extraction from right adjuncts is unnatural across all sub-conditions.

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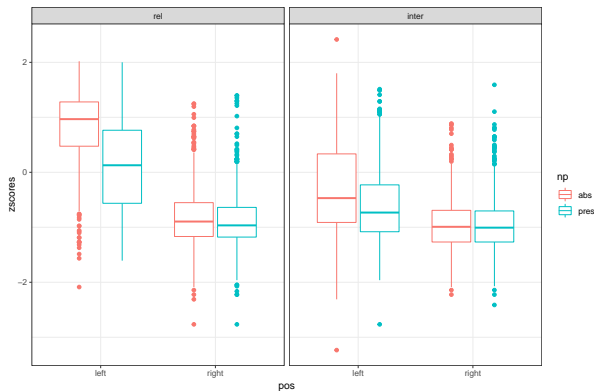
- SynSem ✗    InfoStr ✗

# Results: Summary

Main effect of ADJUNCT POSITION                    $[t = 9.214, p < 0.0001]$

- Extraction from left adjuncts more natural than from right adjuncts.

- | SynSem ✓   InfoStr ✗ |

Interaction between ADJUNCT POSITION and NOMINAL LAYER      $[t = 5.703, p < 0.0001]$

- The presence of a nominal layer on top of the adjunct makes extraction less natural, but only in the left condition.

- | SynSem ✓   InfoStr ✗ |

Interaction between ADJUNCT POSITION and WH-PHRASE TYPE     $[t = 12.129, p < 0.0001]$

- Extraction of relative pronouns is more natural than that of interrogative phrases, but only in the left condition; they are equally bad in the right condition.

- | SynSem ✓   InfoStr ✗ |

Three-way interaction POSITION × WH-TYPE × NP LAYER        $[t = 4.623, p < 0.0001]$

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- | SynSem ✗   InfoStr ✗ |

# Model

Linear mixed model fit by REML. t-tests use Satterthwaite's method ['lmerModLmerTest']

Formula: zscores $\sim$ pron * pos * np + (1 | subject) + (1 | item)

REML criterion at convergence: 8963.7

Scaled residuals:

| Min | 1Q | Median | 3Q | Max |
|---|---|---|---|---|
| -4.2418 | -0.6339 | -0.0773 | 0.5786 | 3.7626 |

Random effects:

| Groups | Name | Variance | Std.Dev. |
|---|---|---|---|
| subject | (Intercept) | 0.009982 | 0.09991 |
| item | (Intercept) | 0.042599 | 0.20640 |
| Residual | | 0.389931 | 0.62444 |

Number of obs: 4608, groups: subject, 96; item, 48

Fixed effects:

| | Estimate | Std. Error | df | t value | Pr(>|t|) | |
|---|---|---|---|---|---|---|
| (Intercept) | -9.354e-01 | 4.085e-02 | 1.356e+02 | -22.896 | <2e-16 | *** |
| pron | 6.996e-02 | 3.681e-02 | 4.459e+03 | 1.901 | 0.0574 | . |
| pos | 3.393e-01 | 3.682e-02 | 4.459e+03 | 9.214 | <2e-16 | *** |
| np | 5.639e-03 | 3.681e-02 | 4.459e+03 | 0.153 | 0.8783 | |
| pron×pos | 6.314e-01 | 5.205e-02 | 4.459e+03 | 12.129 | <2e-16 | *** |
| pron×np | 4.655e-02 | 5.206e-02 | 4.459e+03 | 0.894 | 0.3713 | |
| pos×np | 2.970e-01 | 5.208e-02 | 4.459e+03 | 5.703 | 1.25e-08 | *** |
| pron×pos×np | 3.404e-01 | 7.363e-02 | 4.459e+03 | 4.623 | 3.89e-06 | *** |

Coding: all factors treatment-coded; reference levels: left, rel, abs (following the baseline observation).

# Summary

- Extraction from clausal adjuncts natural in Czech.
- Fully natural only extraction of relative pronouns from left adjuncts.
- Clear naturalness penalty on extracting interrogative wh-phrases.
- Floor unnaturalness of extraction from right adjuncts (whether of relative or interrogative phrases).

# Discussion: left vs. right

- The **left–right asymmetry** expected by Biskup & Šimík's (2019) syntactic-semantic analysis of Czech adjuncts:
  - Left adjuncts are CPs/propositions and hence in principle transparent for extraction.
  - Right adjuncts are complex NPs (free relatives)/referential entities and hence opaque for extraction.
  - Unexpected: Extraction from overtly NP-headed adjuncts is much more natural than extraction from right adjuncts (NP-headed or not). This difference is not predicted by Biskup & Šimík (2019).
- The **left–right asymmetry** unexpected by Erteschik-Shir's (1973) or Abeillé et al.'s (2020) information structural theory of locality.
  - Left adjuncts are backgrounded and thus should be islands.

# Discussion: rel vs. inter

- The **relative–interrogative asymmetry**, where relative pronouns are more mobile than interrogative phrases, is expected by a syn-sem theory:
  - Relative pronouns are structurally more complex and hence more mobile.
  - The contrast is only attested in extraction from left adjuncts; right adjuncts are strong islands.
- The **relative–interrogative asymmetry** is also expected by the information structural theory.
  - Extraction of backgrounded from backgrounded.
  - Unexpected: Any extraction is unnatural from right adjuncts (expected to be natural by the information structural theory).

# Conclusion

- The naturalness of long-dinstance extraction depends on various factors and their interactions (see also filler experiments).

- Theory of locality must be multi-factorial and the factors stem from various language domains.

- Syntactic and semantic factors have to be part of the mix.

- Not all kinds of A-bar extraction are alike.

- Our evidence goes against a strong version of the information structural theory of locality, which proves to be insufficient or even wrong for the case of extraction from adjuncts in Czech.

- What exactly is "backgrounded" in the InfoStr theory? Here: encoding by linear order (commonly assumed to encode information structure in Czech); cf. Abeillé et al. (2020), for whom background = grammatical subject (focus = grammatical object).

# Conclusion

- The naturalness of long-distance extraction depends on various factors and their interactions (see also filler experiments).

- Theory of locality must be multi-factorial and the factors stem from various language domains.

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<p style="text-align: center; color: red;">Thank you</p>

# Conclusion

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### Thank you

# Filler experiments

1. **Extraction types** ($4 \times 2$; 8 item sets; 96 obs/cond)
    - no extraction, short extraction, long extraction from complement clause, long extraction from complex NP
    - Extraction of relative vs. interrogative
2. **Linear distance** ($2 \times 2$; 4 item sets; 96 obs/cond)
    - short vs. long
    - relative vs. interrogative
3. **Extraction of relative pronouns from adjuncts + long distance** ($2 \times 2$ cond; 4 item sets; 96 obs/cond)
    - extraction from adjunct + from complement clause vs. from adjunct + across modal
    - left adjunct vs. right adjunct
4. **Nominal layer in adjuncts** ($2 \times 2$; 4 item sets; 96 obs/cond)
    - NP absent vs. present
    - left adjunct vs. right adjunct
5. **Extraction from weak islands** ($3 \times 2$; 6 item sets; 96 obs/cond)
    - declarative complement, polar interrogative complement, wh-interrogative complement
    - relative vs. interrogative

# Extraction types: Materials

| stimulus (schematic) | WH-PHRASE TYPE | EXTRACTION TYPE |
|---|---|---|
| asked which soup think [that ate t] | inter | long |
| asked which soup think [it that ate t] | inter | island |
| asked which soup ate t | inter | short |
| asked whether ate soup | inter | no |
| soup which think [that ate t] | rel | long |
| soup which think [it that ate t] | rel | island |
| soup which ate t | rel | short |
| soup that ate it | rel | no/res. |

## Extraction types: Results
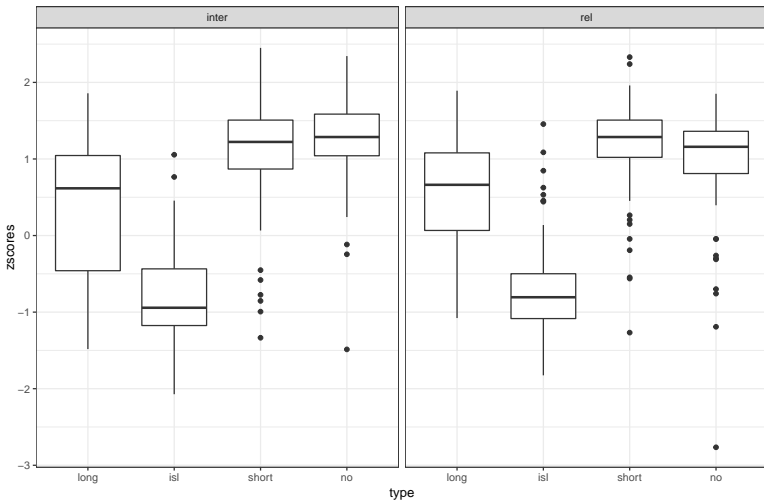
# Extraction types: Discussion

Discussion:

- penalty for long extraction compared to short/no extraction (difference $\sim 0.5\sigma$)
- robust penalty for extraction out of islands compared to short/no extr. (difference $\sim 2\sigma$)
- no difference between extraction of relative and interrogative

Relevance for main experiment:

- extraction of relative pron. from left adjuncts in **main** comparable to long extraction out of complements (difference $\sim 0.2\sigma$ in favor of extr. from adjuncts)
- extraction from right adjuncts in **main** comparable to extraction from islands (both $\sim 1\sigma$ below average)
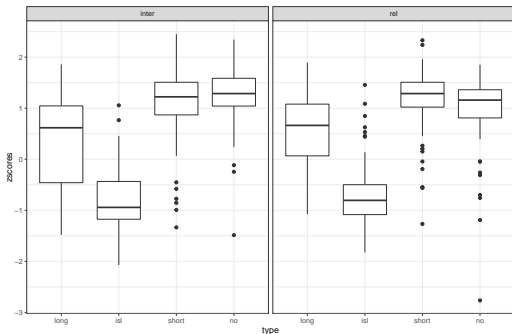
# Linear distance: Materials

| stimulus (schematic) | WH-PHRASE TYPE | DISTANCE |
|---|---|---|
| asked which soup ate t doctor [who…] | inter | short |
| asked which soup doctor [who…] ate t | inter | long |
| soup which ate t doctor [who…] | rel | short |
| soup which doctor [who…] ate t | rel | long |

## Linear distance: Results
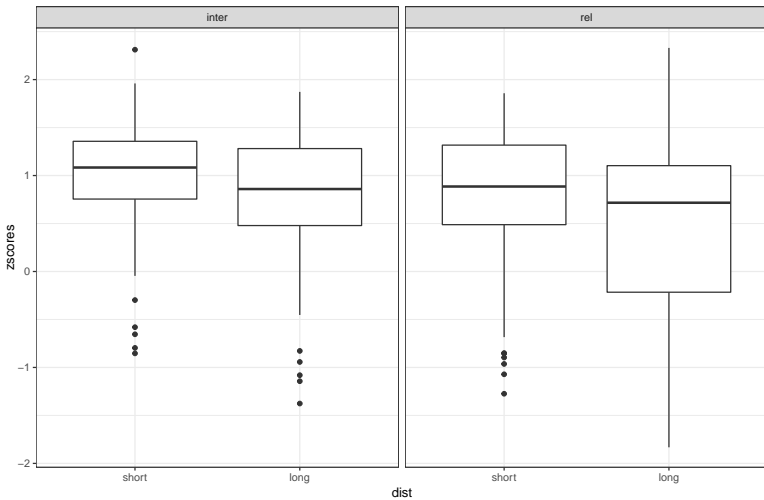
# Linear distance: Discussion

Discussion:

- linearly short distance extraction slightly better than linearly long distance extraction (difference: $\sim 0.2\sigma$)
- extraction of interrogative slightly better than extraction of relative (difference: $\sim 0.2\sigma$); attributable to two instances of relativization in the relative condition
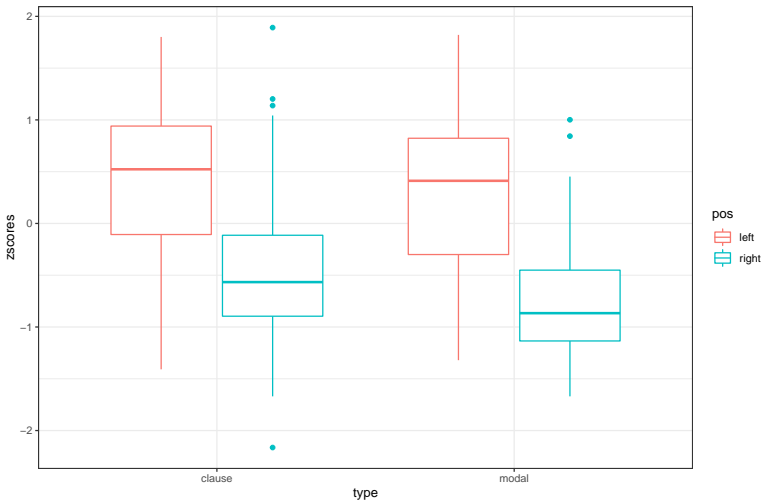
Relevance for main experiment:

- the robust effect of POSITION in **main** cannot be attributed to linear distance
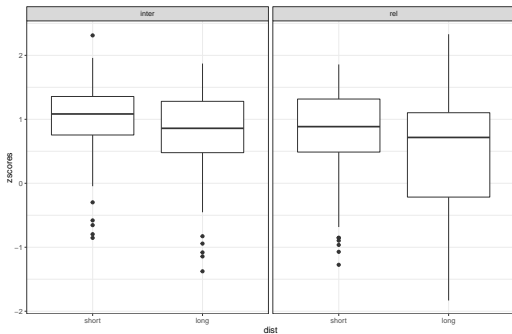
## Adjuncts + long(er) distance: Materials

| stimulus (schematic) | ADDED COMPLEXITY | ADJUNCT POSITION |
|---|---|---|
| soup which [think that [when ate t] slept] | compl. clause | left |
| soup which [think that slept [when ate t]] | compl. clause | right |
| soup which [probably [when ate t] slept] | epist. modal | left |
| soup which [probably slept [when ate t]] | epist. modal | right |

# Adjuncts + long(er) distance: Results

# Adjuncts + long(er) distance: Discussion

Discussion:

- extraction from left adjuncts more natural than from right adjuncts
- extraction from a complement clause slightly better than extraction across a modal
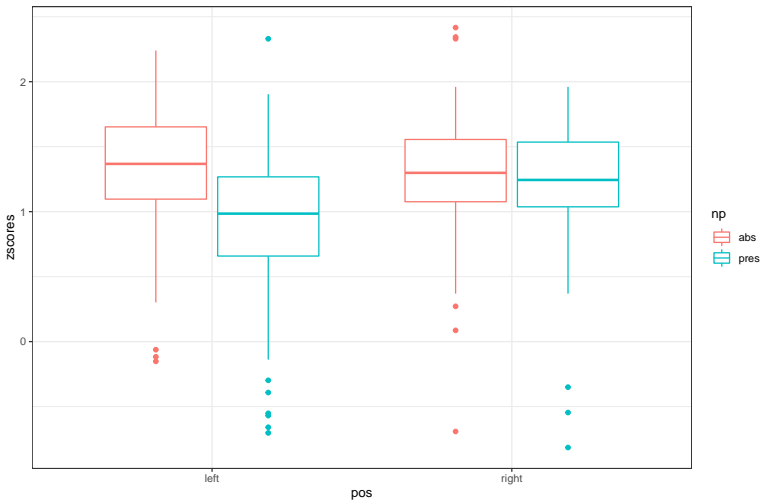
Relevance for main experiment:

- the effect of POSITION from **main** replicated, despite the added syntactic complexity
- the effect size is somewhat compressed, possibly due to the added complexity in parsing (difference in **main** $\sim 1.7\sigma$ vs. difference here $\sim 1.1\sigma$)
- evidence that the extraction from adjuncts under discussion is really extraction **out of** the adjunct, not just **to the edge of** the adjunct; cf. Heck 2008; Grewendorf 2015
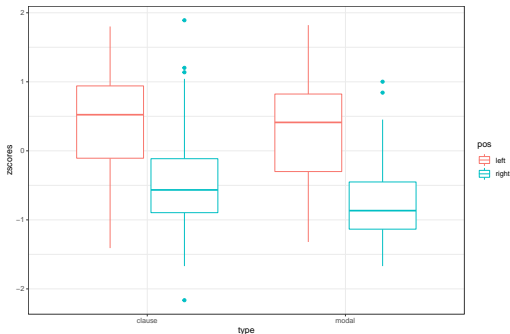
# Nominal layer in adjuncts: Materials

| stimulus (schematic) | ADJUNCT POSITION | NOMINAL LAYER |
|---|---|---|
| [when cook dinner] watch TV | left | absent |
| [at time when cook dinner] watch TV | left | present |
| watch TV [when cook dinner] | right | absent |
| watch TV [at time when cook dinner] | right | present |

# Nominal layer in adjuncts: Results

# Nominal layer in adjuncts: Discussion

Discussion:

- no penalty on right adjuncts (compared to left)
- penalty for left adjuncts with a nominal layer present (difference $\sim 0.3\sigma$)

Relevance for main experiment:

- the POSITION effect in **main** cannot be attributed to general adjunct position
- the NOMINAL LAYER effect size in **main** (in the left+rel condition) is larger than the one observed here (**main** $\sim 0.7\sigma$ vs. here $\sim 0.3\sigma$)
- the extraction-independent penalty of NOMINAL LAYER ($\sim 0.3\sigma$) should presumably be subtracted from the extraction-specific penalty ($\sim 0.7\sigma$)
- the extraction-specific penalty of NOMINAL LAYER is quite small (counter to SynSem expectations); also, it gets "evened out" across the WH-PHRASE TYPE levels
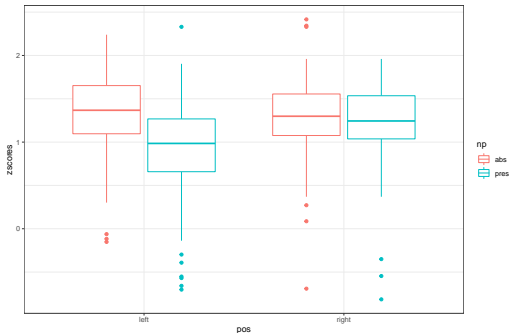
## Extraction from weak islands: Materials

| stimulus (schematic) | WH-PHRASE TYPE | COMPLEMENT TYPE |
|---|---|---|
| asked which soup not know [that cooked t] | inter | decl |
| asked which soup not know [whether cooked t] | inter | polar |
| asked which soup not know [when cooked t] | inter | wh |
| soup which not know [that cooked t] | rel | decl |
| soup which not know [whether cooked t] | rel | polar |
| soup which not know [when cooked t] | rel | wh |

## Extraction from complement clauses: Results
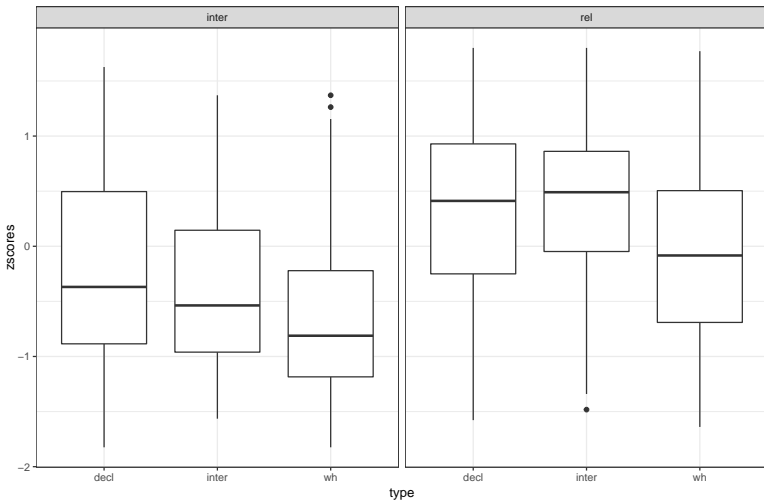
## Extraction from complement clauses: Discussion

Discussion:

- extraction of relative more natural than extraction of interrogative (difference $\sim 0.7\sigma$)
- attributable to the weak island status of complements to the negative matrix verb; interrogative more sensitive to this than relative

Relevance for main experiment:

- overall less natural than extraction from complement clauses (filler exp. 1; difference for rel $\sim 0.3\sigma$, for inter $\sim 0.9\sigma$)
- no clear relation to extraction from left adjuncts; while the extraction of inter across negation is comparable to to the extraction of inter from left adjuncts in the **main** experiment, extraction of rel is more natural from left adjuncts than across negation (difference $\sim 0.5\sigma$)
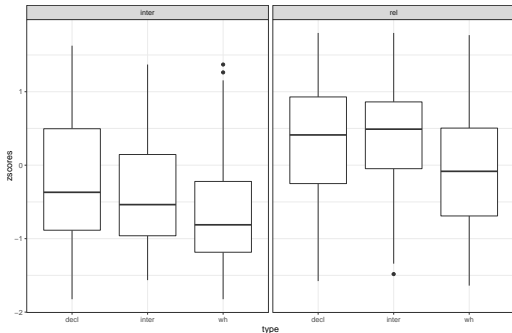
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