

ADJUNCT ISLANDS IN DANISH – WHAT, WHY, HOW?



SCHOOL OF COMMUNICATION AND CULTURE

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MINDS
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BACKGROUND

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In the literature a group of constructions have standardly been assumed to be so-called syntactic islands, meaning that movement out of them is banned

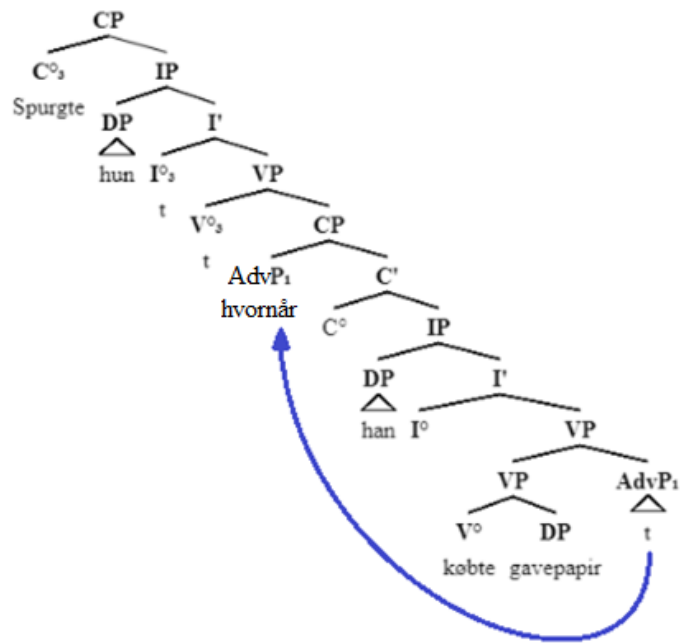
* [Who]_i did Mary cry [after John hit _i]?

(Huang 1982, 503)

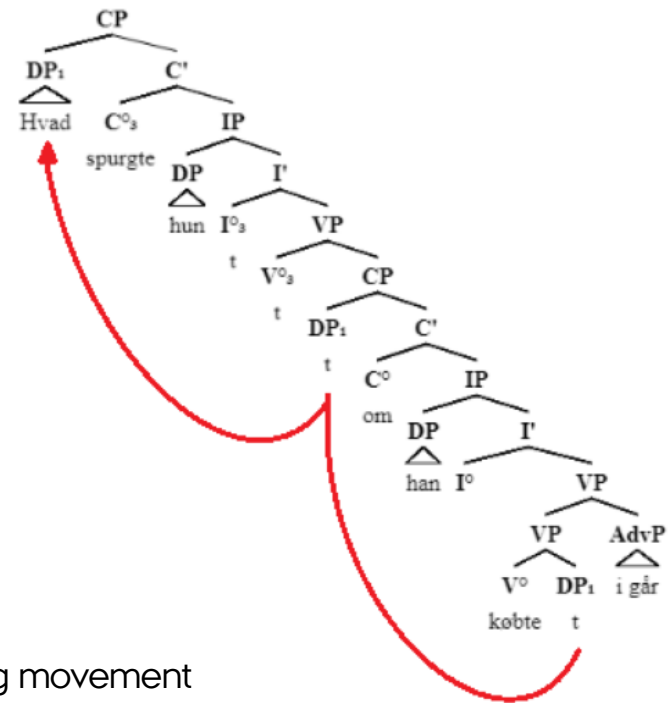
? [Hvem]_i græd Marie [efter at Jens slog_i]?



THE PHENOMENON



Short movement



Long movement



BACKGROUND

Types of islands include:

- Wh-islands

- *Who_i did you ask [where John saw ___i?]
- Hvad_i ved hun [hvor_{ii} man kan leje ___i ___{ii}]? (Danish)
What_i knows she [where_{ii} you can rent ___i ___{ii}]?

(Boeckx 2012, 10)

- Relative clause islands

- *Which waffles_i do you know the skiers [that like ___i]?
- Suppe_i kender jeg mange [der kan lide ___i].
soup_i know I many [who can like ___i]

(Nyvad, Christensen, and Vikner 2017, 458)

(Kush, Sant, and Strætkvern 2021, 2)

(Erteschik-Shir 1973, p. 67)



BACKGROUND

- Subject islands
 - *Who_i did [comments about ___i] annoy you?
- Adjunct islands
 - *Who_i did Mary cry [after John hit ___i]?
- Complex NP-islands
 - *Which book did John meet [a child who read __]?

(Boeckx 2012, 21)

(Huang 1982, 503)

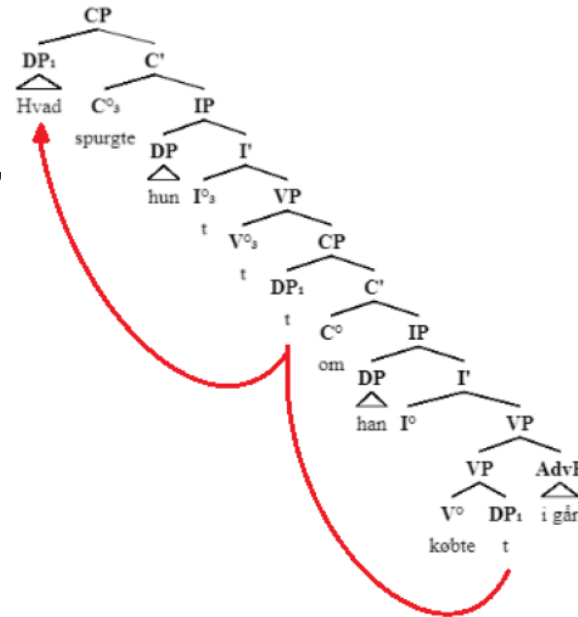
(Boeckx 2012, 5)



BACKGROUND

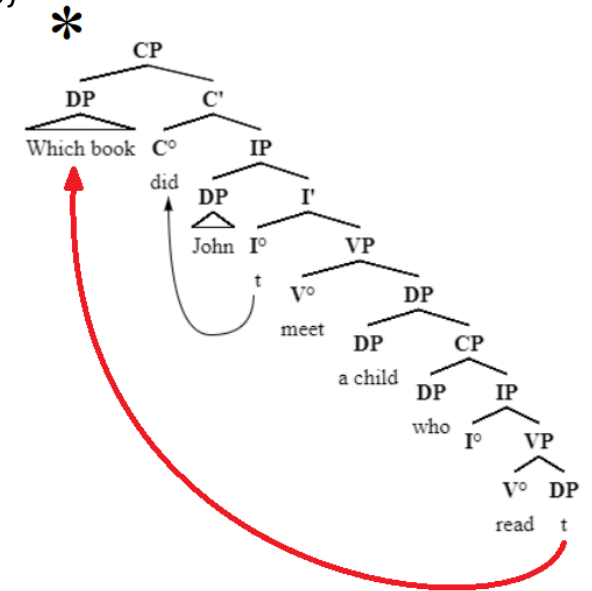
- Cyclic movement (Chomsky and Halle 1968),(2).
- Subjacency condition (Chomsky 1973), no movement across more than one bounding node. (3)
- A problem for extraction from island domains.

(2)



(2) Hvad_i spurgte hun [_i om han købte _i i går]
 What_i asked she [_i if he bought _i yesterday]

(3)



(3) *Which book_i did John meet [_{NP} a child [_{CP} who read t_i]]

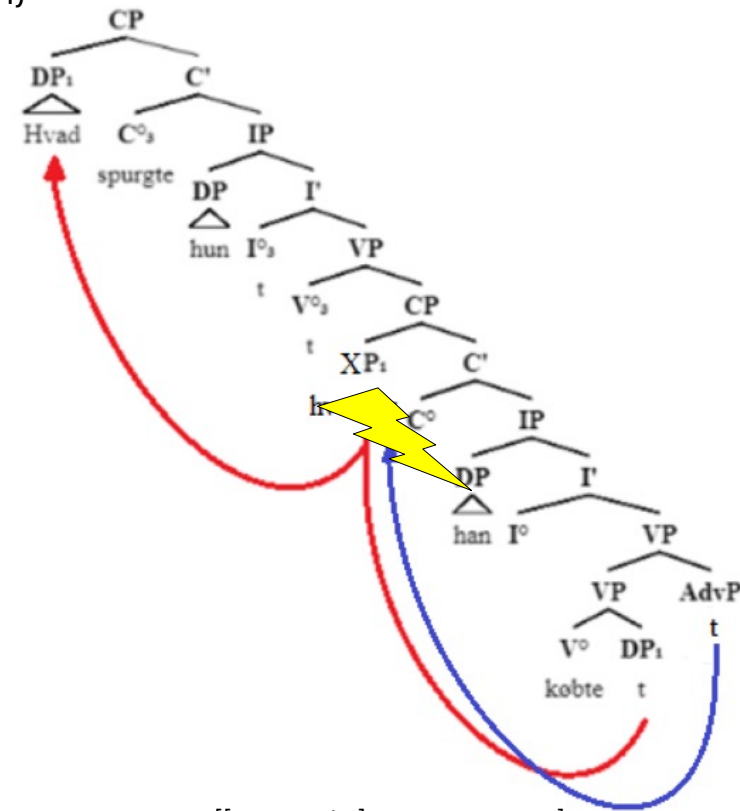
BACKGROUND

Phrases trying to escape the 'island' find themselves 'stuck' – embedded CP-spec is already occupied by another element (4).



CED - movement cannot occur out of non-complements (adjuncts among others) (Huang 1982).

(4)



Hvad_i spurgte hun [[_i hvornår_{ij}]] han købte _i _{ij}
 What_i asked she [[_i when_{ij}]] he bought _i _{ij}

RECENT STUDIES ON MSC LANGUAGES

Data from the MSc languages suggest that extraction from some island environments is, in fact, acceptable.

- Wh-extraction from subject- and adjunct islands in Norwegian (Kush, Lohndal, and Sprouse 2019)
- Topicalisation out of adjuncts in Norwegian (Bondevik, Kush, and Lohndal 2020)
- Extraction from adjuncts and relative clauses in English and in Danish (Müller and Eggers 2022)
- Topicalisation out of adjuncts in Swedish and English (Müller 2019)

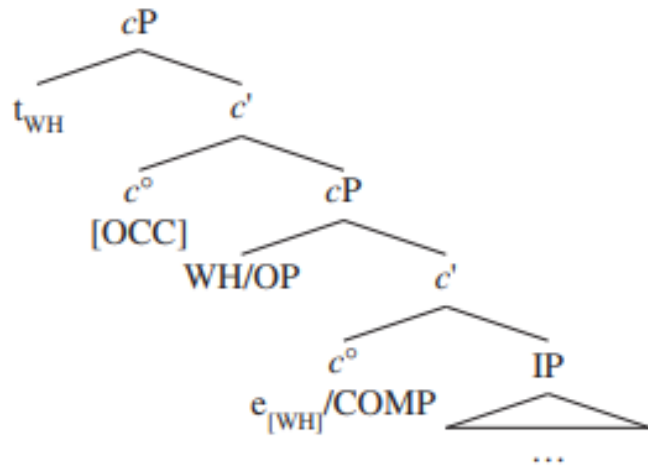


THE NEED FOR A TREE STRUCTURE

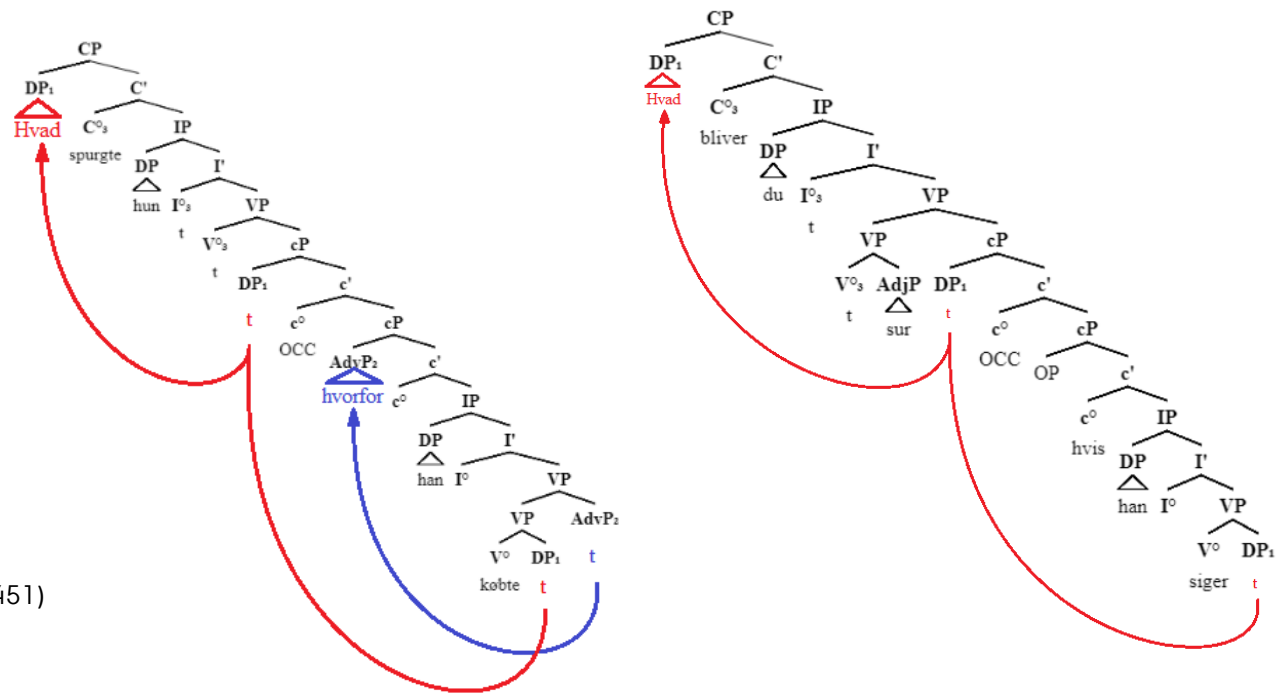
- Extraction from adjunct clauses *should* be banned under UG due to impossibility of moving out of Adj clause.
- But, however, we see this kind of extraction in the MSc languages still.
- ‘The psychological claim underlying theories of categoral grammaticality is that ungrammatical sentences have no licit representation, or in other words, cannot be constructed from the available mental computations. Grammatical sentences, on the other hand, have licit representations that can be constructed from the available mental computations’ (Sprouse 2007, 123 f)
- (*Stormvejr hader jeg sne og)



CP-RECURSION



(Nyvad, Christensen, and Vikner 2017, 451)

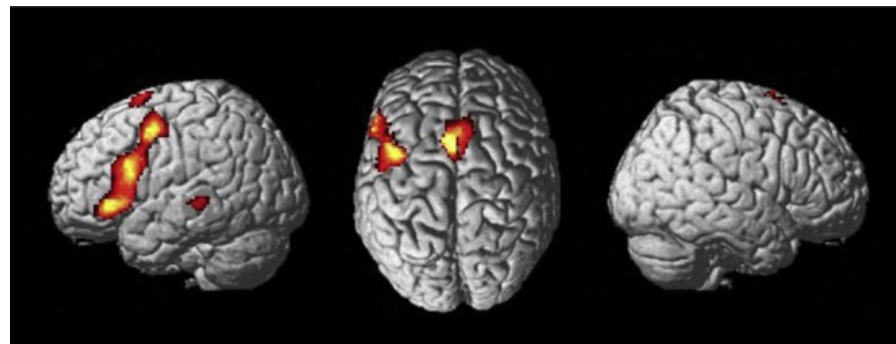


Based on Nyvad, Christensen, and Vikner (2017, 451)



THE PROCESSING OF ISLANDS

- Assuming they are grammatical, how do we explain their reduced acceptability?
- It may (at least in part) be explained in terms of processing cost.
 - WM demands increased with crossing of clause boundary (Christensen, Kizach, and Nyvad 2013b, 248).
 - Rarity of a structure correlates with the amount of processing involved with it (Newmeyer 2005, 125).
 - Response time related to processing cost (Christensen, Kizach, and Nyvad 2013b, 59).



ACCEPTABILITY JUDGMENT STUDY

- Extraction from adjunct clauses in English (Nyvad, Müller, and Christensen 2022).
- Relativisation from three types of adjunct clauses in English (*if*-, *when*-, and *because*-clauses) with supporting context
- Google Forms questionnaire.
- Seven-point Likert scale: 1 = 'completely unacceptable' and 7 = 'completely acceptable'.

Table 1. Experimental design.

	Complementizer	[-Extraction]	[+Extraction]
Non-island	<i>That</i>	Type 1	Type 5
Islands	<i>If</i>	Type 2	Type 6
	<i>When</i>	Type 3	Type 7
	<i>Because</i>	Type 4	Type 8

- 'The three clause types showed non-uniform acceptability patterns' (Nyvad, Müller, and Christensen 2022, 1).



ACCEPTABILITY JUDGMENT STUDY

Context: In the latest workout routine I designed for Emma, I really wanted to make it impossible for her and included another set of particularly brutal pull-ups.

Non-island structure, [-Extraction]:

a. It's obvious that I was surprised that she actually completed this exercise.

Island structure, [-Extraction]:

b. It's obvious that I would be surprised if she actually completed this exercise.

c. It's obvious that I was surprised when she actually completed this exercise.

d. It's obvious that I was surprised because she actually completed this exercise.

Non-island structure, [+Extraction]:

e. This is the exercise that I was surprised that she actually completed __.

Island structure, [+Extraction]:

f. This is the exercise that I would be surprised if she actually completed __.

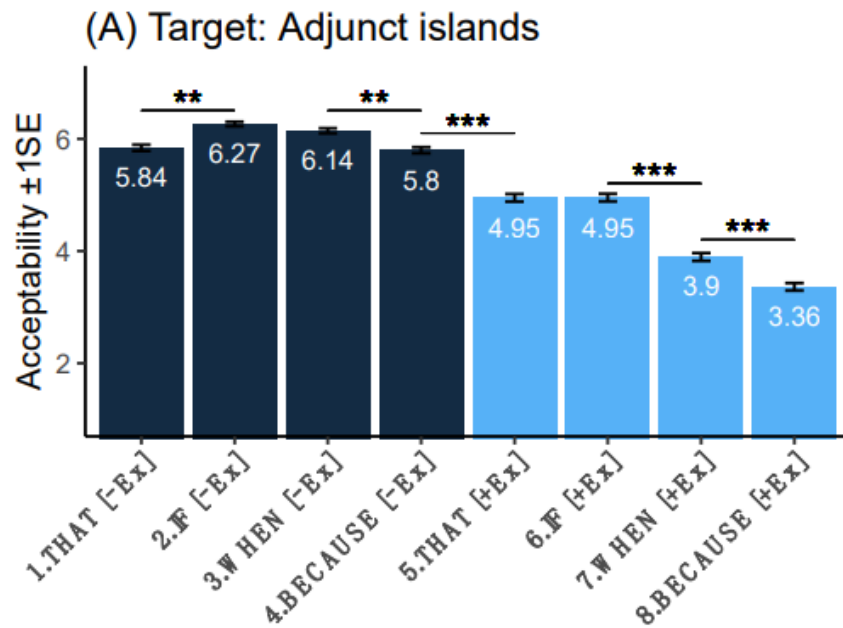
g. This is the exercise that I was surprised when she actually completed __.

h. This is the exercise that I was surprised because she actually completed __.

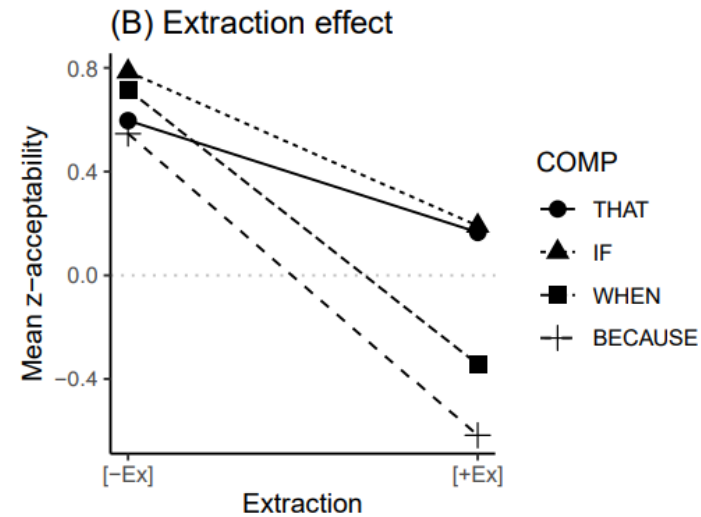


ACCEPTABILITY JUDGEMENT STUDY

N=235 native speakers of English



(Nyvad, Müller, and Christensen 2022, 9)



(Nyvad, Müller, and Christensen 2022, 13)

CURRENT STUDY: REPLICATION

- Speeded acceptability test on a binary scale
- 88 sentences with *at*, *hvis*, and *fordi* ('that', 'if', 'because') with and without extraction plus FILLERS.
- Target sentences of the previous experiment but translated into Danish (*da* 'when'-sentences being omitted).
- Plus FILLERS with extraction from coordinate structures.
- Experiment set up in PsychoPy (Peirce et al. 2019).
- Reaction times were recorded.
- Data analysed in R Studio (R Core Team 2021).



CURRENT STUDY: REPLICATION

Condition	Example
[-Extraction] at	Jeg blev overrasket over, at hun faktisk gennemførte det program. <i>I was surprised by [the fact] that she actually completed that programme.</i>
[-Extraction] hvis	Jeg ville blive overrasket, hvis hun faktisk gennemførte det program. <i>I would be surprised if she actually completed that programme.</i>
[-Extraction] fordi	Jeg blev overrasket, fordi hun faktisk gennemførte det program. <i>I was surprised because she actually completed that programme.</i>
[+Extraction] at	Det program blev jeg overrasket over, at hun faktisk gennemførte. <i>I had programme I was surprised by [the fact] that she actually completed.</i>
[+Extraction] hvis	Det program ville jeg blive overrasket, hvis hun faktisk gennemførte. <i>I had programme I would be surprised if she actually completed.</i>
[+Extraction] fordi	Det program blev jeg overrasket, fordi hun faktisk gennemførte. <i>I had programme I was surprised because she actually completed.</i>
[-Extraction] FILLER	Jeg blev flov over, at jeg faktisk mistede både katten og hunden samme dag. <i>I was embarrassed by [the fact] that I lost both the cat and the dog on the same day.</i>
[+Extraction] FILLER	Hunden blev jeg flov over, at jeg faktisk mistede både katten og samme dag. <i>The dog I was embarrassed by [the fact] that I lost both the cat and on the same day.</i>

(Rohde 2022, 16)



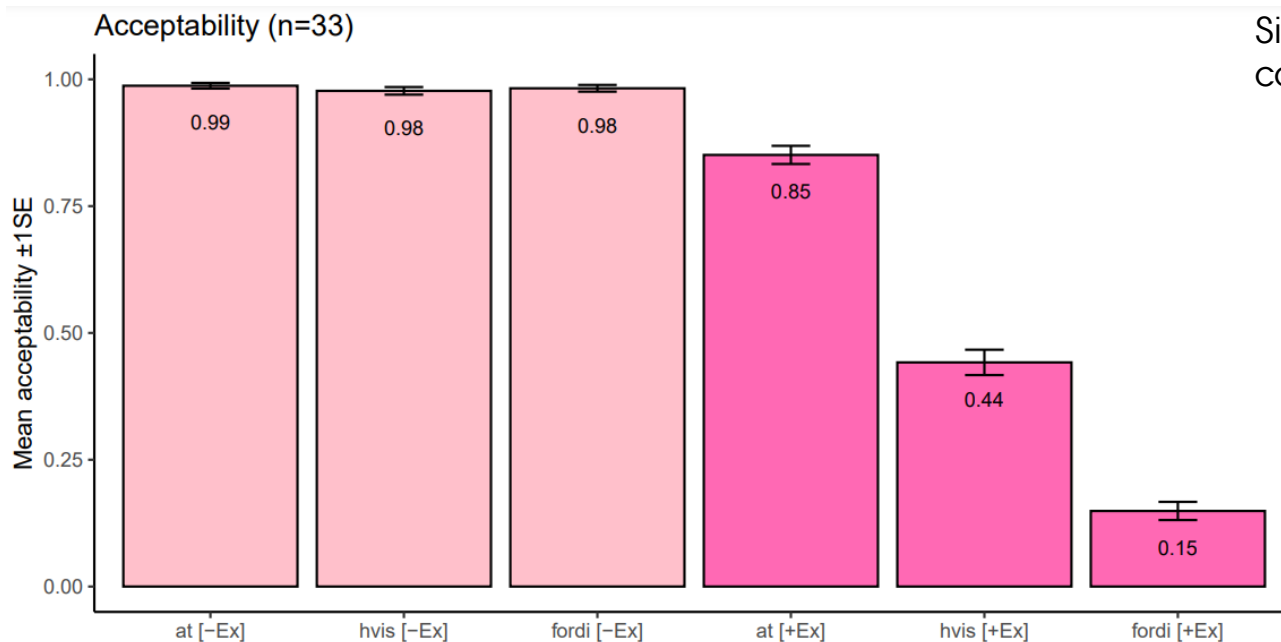
PREDICTIONS

- Variation in acceptability of extraction across different complementisers 'that' > 'if' > 'because'.
- Effects on extraction across the board but with significant island effects.
- Higher reaction times for the most contentious constructions due to increased processing cost (Christensen, Kizach, and Nyvad 2013). (Most likely participants immediately reject unambiguously unacceptable constructions and 'hence, respond very fast, while being slower to respond to sentences less clearly unacceptable' (Christensen, Kizach, and Nyvad 2013, 59).



CURRENT STUDY: REPLICATION

33 participants, 63.6% women 36.4% men, age range 20-31 mean 23,8.



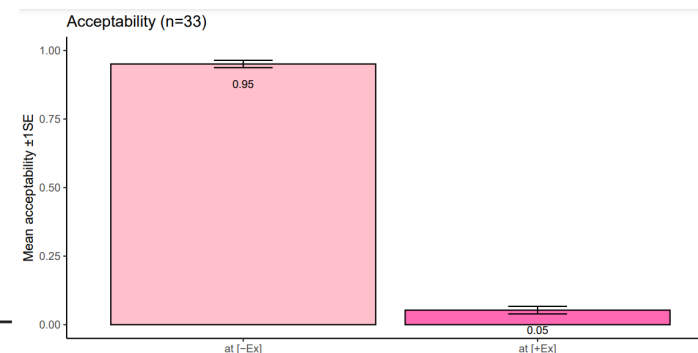
Mean acceptability out of 1 ±1 standard error categorised by construction type. Light pink shows those constructions without extraction, hot pink shows those with.

Significance of [\pm Ex] across all complementisers.

- *at* ($p = 0.2767$) (not significant ($=0.05$))
- *hvis* ($p = 0.0032$)
- *fordi* ($p = 0.0001$)

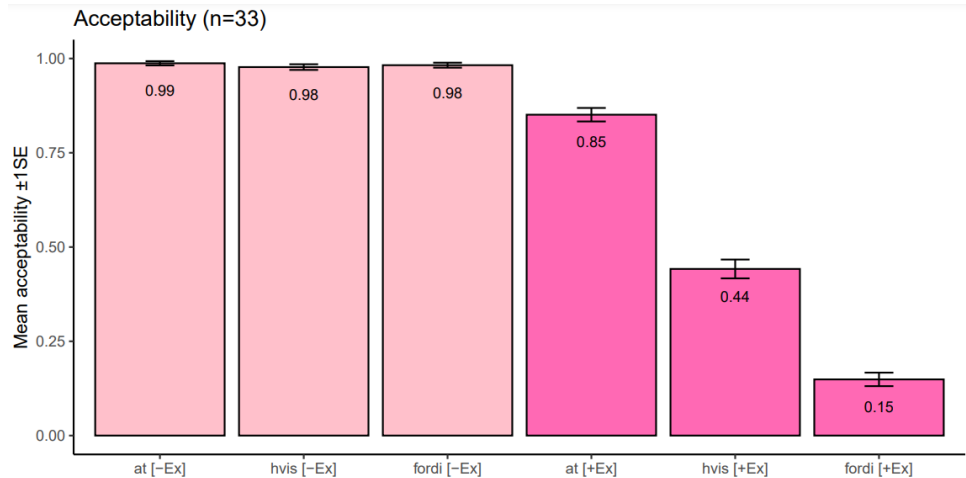
Significant differences between all complementisers with [+Ex]

- *at* vs *hvis* ($p < .0001$)
- *hvis* vs *fordi* ($p < .0001$)
- *at* vs *fordi* ($p < .0001$)

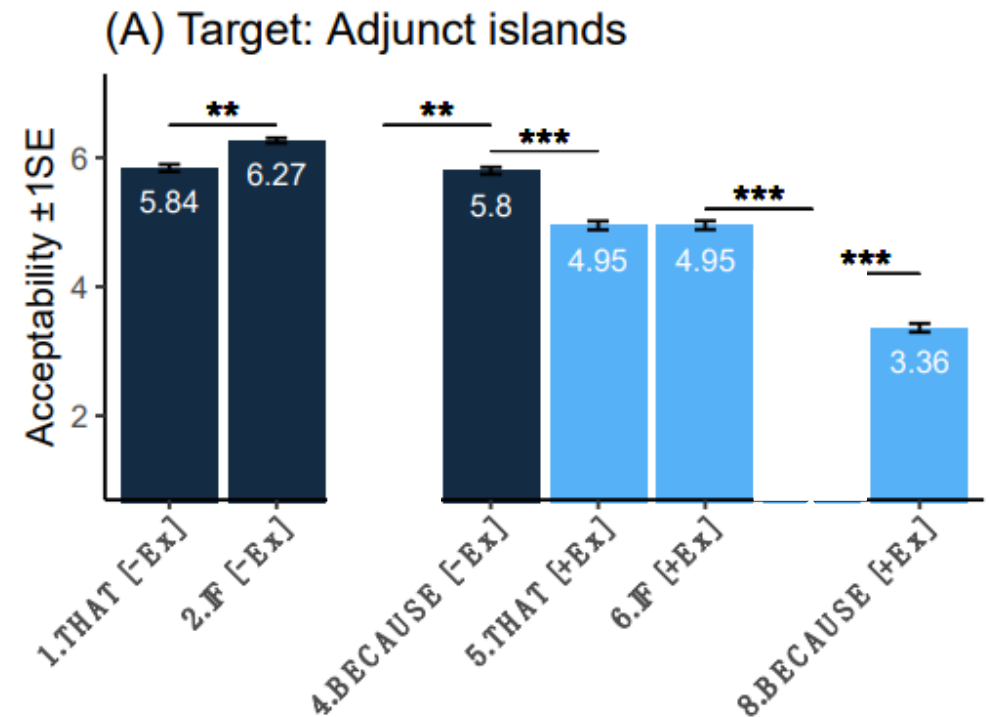


Mean acceptability of FILLERS out of 1 ±1 standard error categorised by construction type.

CURRENT STUDY: REPLICATION



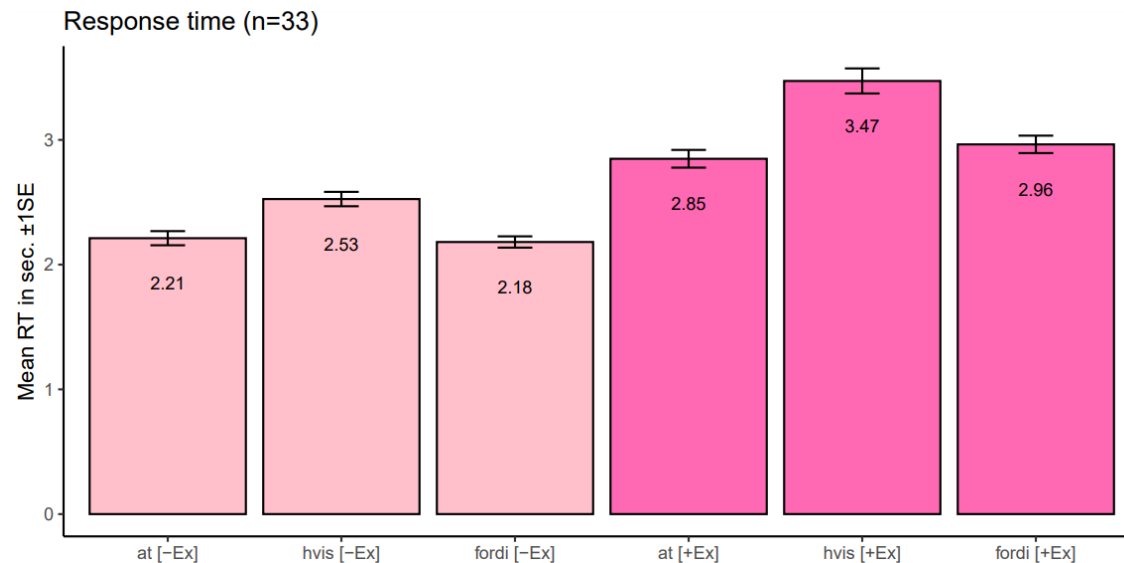
Mean acceptability out of 1 ±1 standard error categorised by construction type. Light pink shows those constructions without extraction, hot pink shows those with.



(Nyvad, Müller, and Christensen 2022, 9)

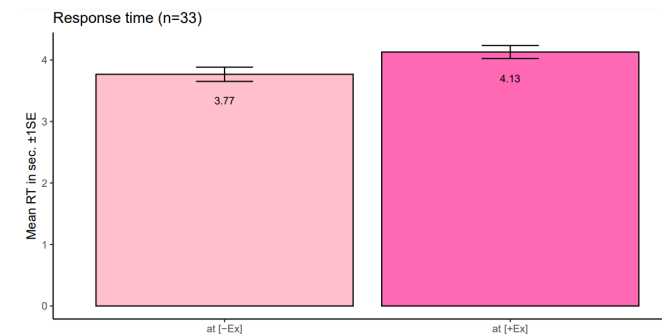


CURRENT STUDY: REPLICATION



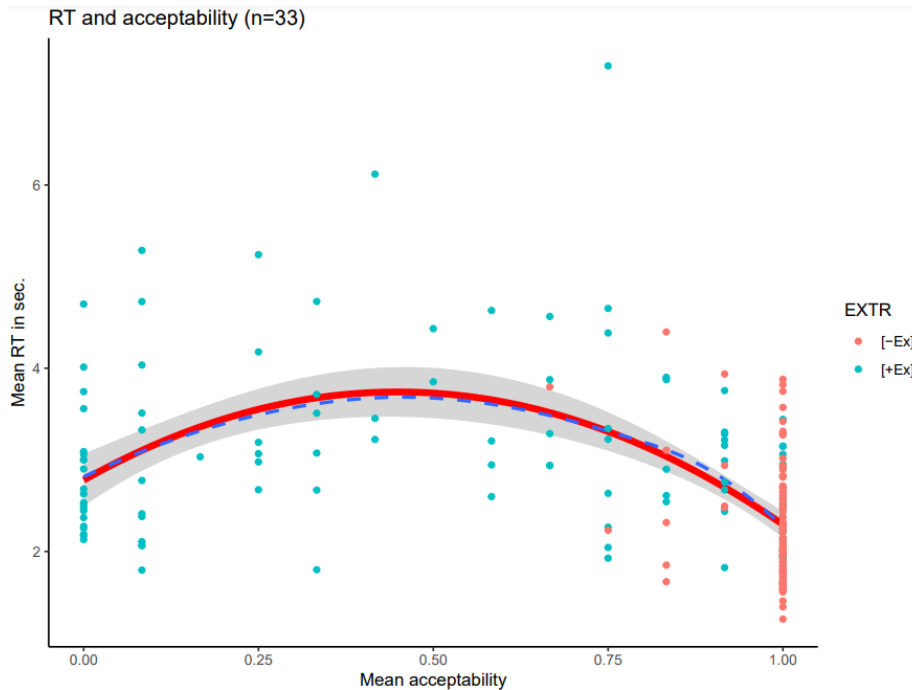
Mean reaction time in seconds ± 1 standard error organised by construction type. Light pink shows those constructions without extraction, hot pink shows those with.

- Significantly increased reaction time for $[\pm Ex]$ *at* 'that' ($p < 0.0001$)
- And for $[\pm Ex]$ *hvis* 'if' ($p = 0.0003$)
- But not for $[\pm Ex]$ *fordi* 'because' ($p = 0.1669$).
- The reaction time for extraction from *hvis* adjunct clauses was significantly ($p = 0.05$) higher on average than nearly all other types (safe for extraction from *at* clauses).

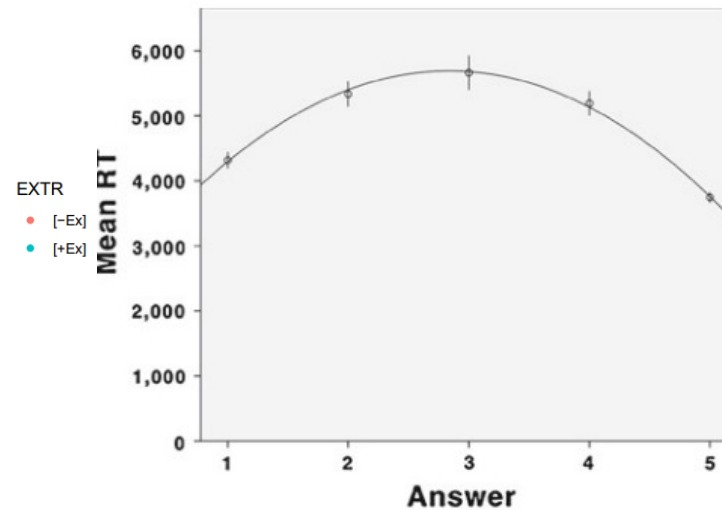


Mean reaction time for FILLERS in seconds ± 1 standard error organised by construction type

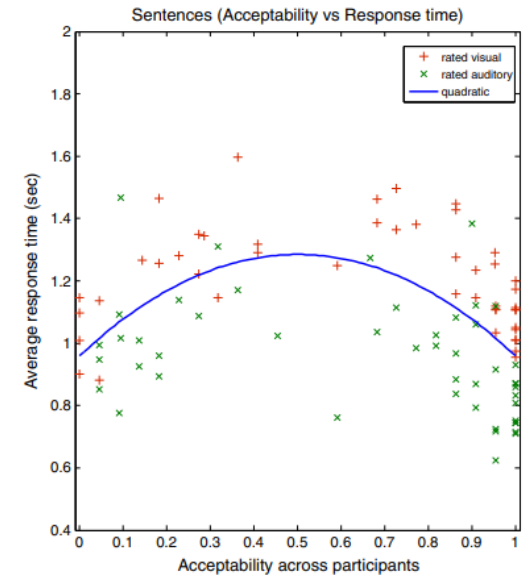
CURRENT STUDY: REPLICATION



Relationship between reaction time and acceptability for the current study.

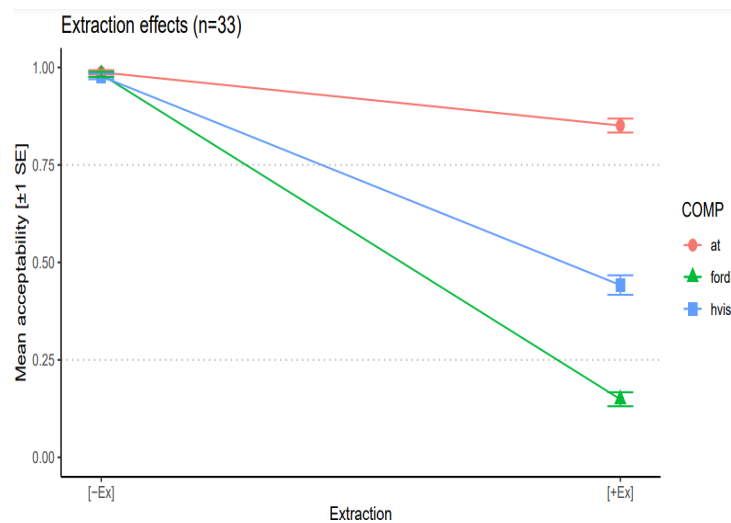


(Christensen, Kizach, and Nyvad 2013a, 60)

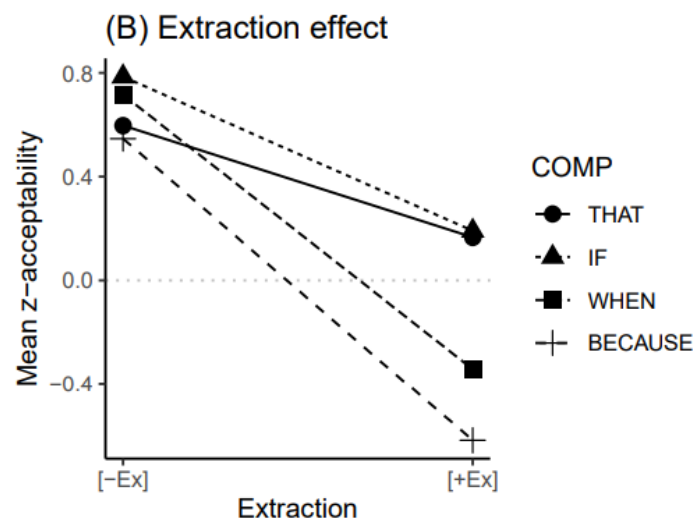


(Christensen and Wallentin 2011, 1626)

CURRENT STUDY: REPLICATION



(Effect of extraction across the three complementiser types)

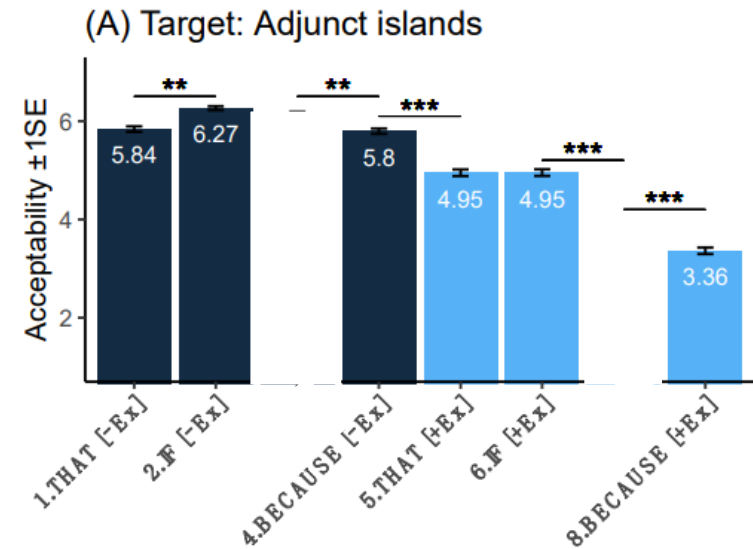


(Nyvad, Müller, and Christensen 2022, 13)

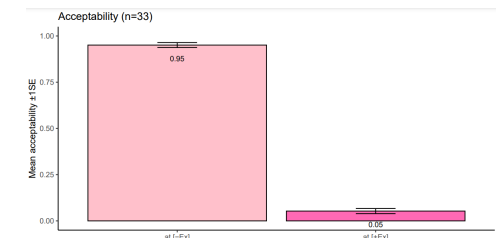
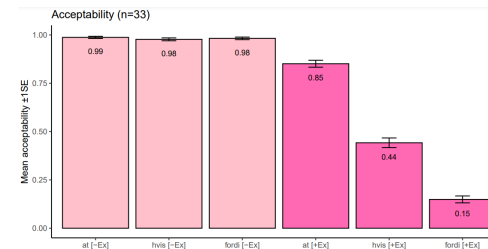


DISCUSSION

- Each complementiser induced individual responses.
- The data for type [-Ex], [+Ex] *at*, and FILLER A ([-Ex] *at* with coordinate embedded clause complement) all clearly indicate overall high acceptability of these construction types and the data for type [+Ex] *fordi* and FILLER B ([+Ex] *at* with coordinate structure violation in the embedded clause) clearly indicate very low acceptability.
- The two fillers had the longest response times recorded at 3.77 and 4.13 seconds for FILLER A and B, respectively.



(Nyvad, Müller, and Christensen 2022, 9)



(Mean acceptability by construction type TARGET (left) and FILLER (right))

CONCLUSION

- Findings support the observation that acceptability of adjunct island violations varies significantly by complementiser (Nyvad, Müller, and Christensen 2022; Müller and Eggers 2022; Kush, Lohndal, and Sprouse 2019; Bondevik, Kush, and Lohndal 2021).
- Mean acceptability of *hvis* adjunct clause extraction varied significantly from mean acceptability of *fordi* adjunct clause extractions ($p < .0001$).
- Many factors other than syntax play into the acceptability of adjunct island violations (Christensen and Nyvad 2022a; 2014; 2022b; Kush, Sant, and Strætkvern 2021; Abeillé et al. 2020; Müller and Eggers 2022).
- The significant increase in reaction time for both [\pm Ex] *at*, *hvis* and *fordi* suggests that the reduction in acceptability seen for these in [\pm Ex] might be due to increased processing cost.



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