



Recursive treetops: RC islands in Danish and English


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MINDS – Mind the structure!

<https://tildeweb.au.dk/au572/minds.html>

07.04.2022



www.npr.org/2018/09/28/652474958/dont-hide-money-in-the

 [DONATE](#)


STRANGE NEWS


Don't Hide Money In The Fridge

September 28, 2018 · 4:58 AM ET
Heard on [Morning Edition](#)

 **27-Second Listen** 

A woman in Denver returned a refrigerator. But she forgot she had hidden \$35,000 inside. The money was gone when the store checked.

 **Transcript**

 **NPR 24 HOUR PROGRAM STREAM**
On Air Now [OPEN ^](#)

Display a menu

Wh-questions and *wh*-islands: Short + long movement → island effect

(1) She explained [that she hid the money in the fridge].

(2) She explained [what₁ she hid _____₁ in the fridge].

(Short)

(3) She explained [where₂ she hid the money _____₂].

(4) What₁ did she explain [_____₁ that she hid _____₁ in the fridge]?

(Long)

(5) Where₂ did she explain [_____₂ that she hid the money _____₂]?

(6) ??What₁ did she explain [where₂ she hid _____₁ _____₂]?

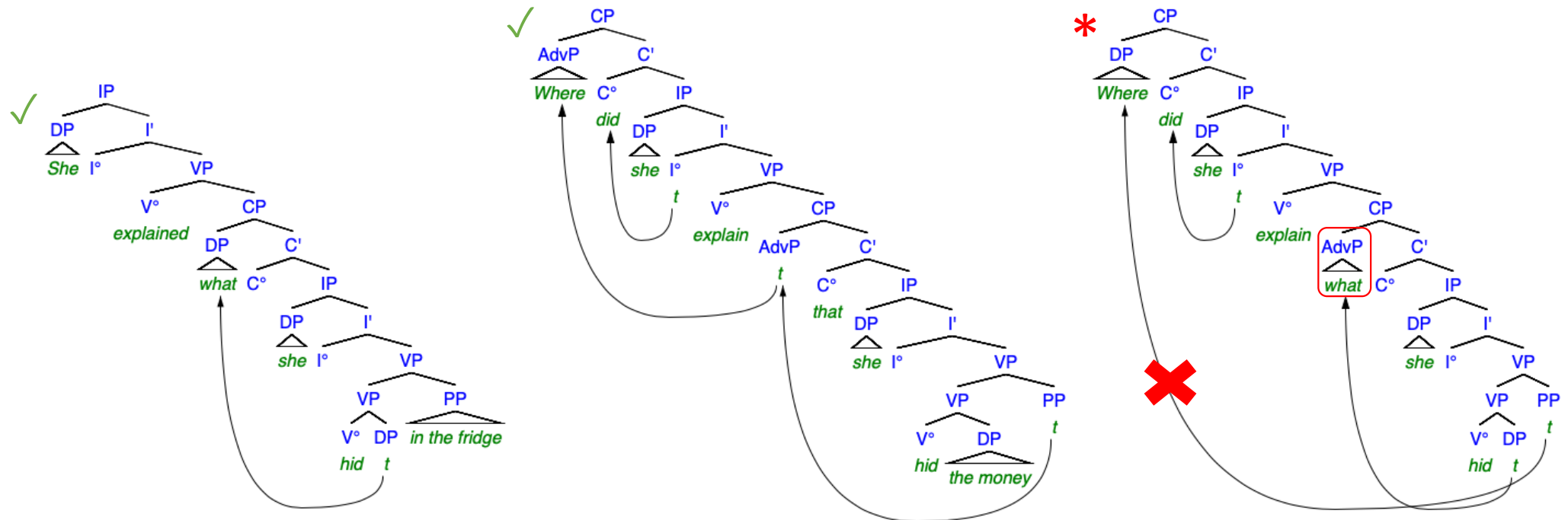
(Island effect)

(7) *Where₂ did she explain [what she hid _____₁ _____₂]?

- The *wh*-element in CP-spec blocks further extraction.
→ The embedded *wh*-question is an island.



Wh-questions and *wh*-islands: Short + long movement → island effect

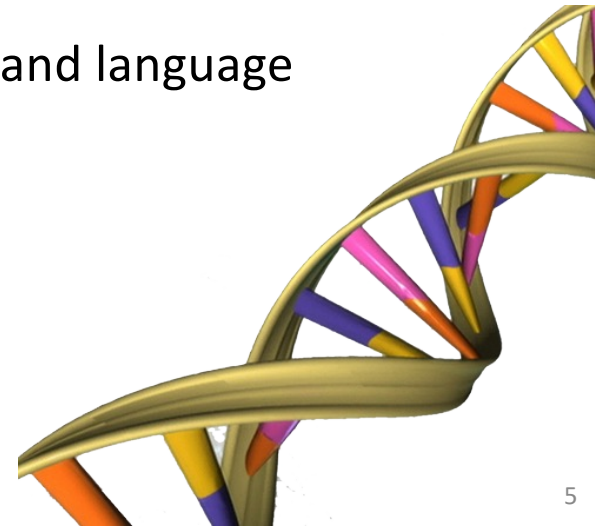


- This has also been confirmed experimentally (Christensen and Nyvad 2019)

Christensen, Ken Ramshøj, and Anne Mette Nyvad. 2019. "No Escape from the Island: On Extraction from Complement *Wh*-Clauses in English." In *The Sign of the V – Papers in Honour of Sten Vikner*, edited by Ken Ramshøj Christensen, Henrik Jørgensen, and Johanna L. Wood, 95–112. Aarhus: Dept. of English, School of Communication & Culture, Aarhus University. <https://doi.org/10.7146/aul.348.91>.

Islands

- Island constraints are standardly assumed to be universal:
Part of Universal Grammar
 - Rules that block extraction from syntactic islands
- Part of the human genetic makeup
 - Constraints on the phase space for language development and language variation.



Wh-islands in Danish

(Christensen, Kizach, and Nyvad 2013)

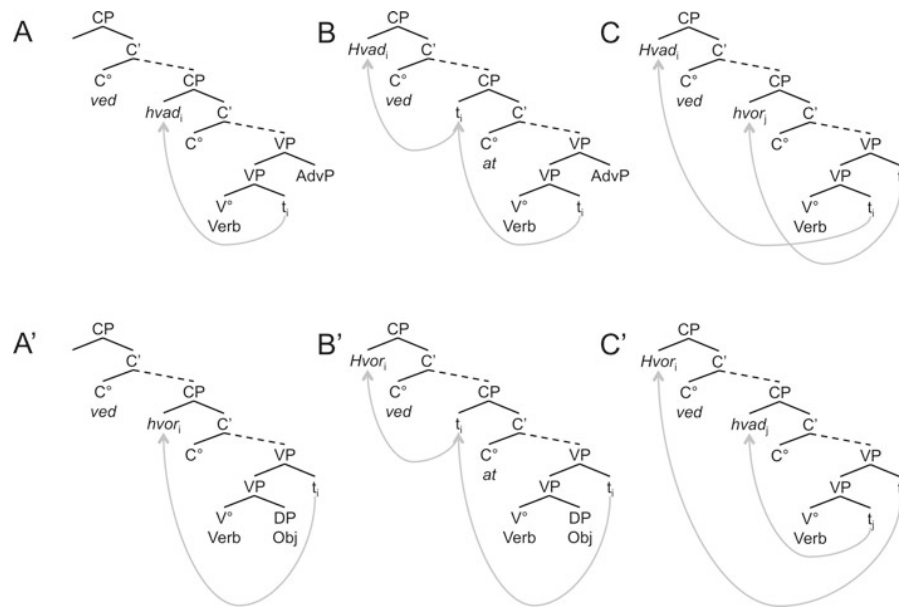


Fig. 1 Partial syntactic structures corresponding to movement-derived stimuli. Top row: argument (object) movement, bottom row: adjunct (sentence adverbial) movement. **A** SHORT (ARG), **B** LONG (ARG), **C** ACROSS (ARG). **A'** SHORT (ADJ), **B'** LONG (ADJ), **C'** ACROSS (ADJ)

Christensen, Ken Ramshøj, Johannes Kizach, og Anne Mette Nyvad. 2013. "Escape from the Island: Grammaticality and (Reduced) Acceptability of Wh-Island Violations in Danish". *Journal of Psycholinguistic Research* 42 (1): 51–70. <https://doi.org/10.1007/s10936-012-9210-x>.

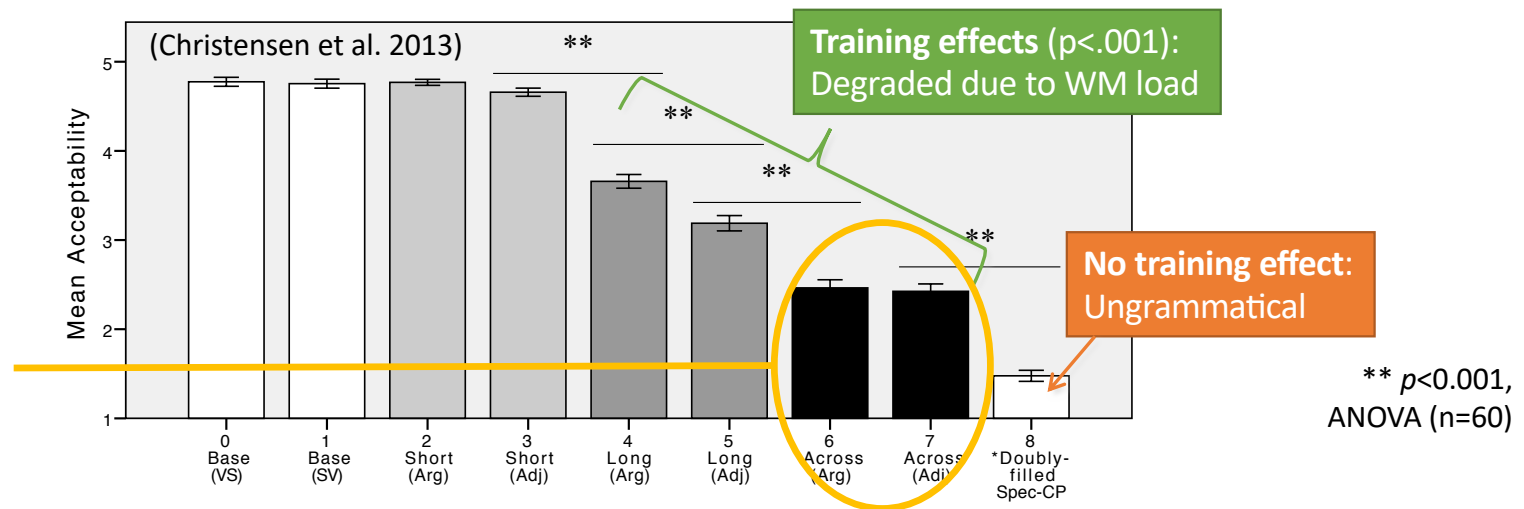
Condition	Example
BASE (VS)	Ved hun godt at man kan leje noget dér? <i>Knows she well that one can rent something there?</i> "Does she know that you can rent something there?"
BASE (SV)	Hun ved godt at man kan leje noget dér. <i>She knows well that one can rent something there.</i> "She knows that you can rent something there."
SHORT (ARG)	Ved hun godt hvad man kan leje dér? <i>Knows she well what one can rent there?</i> "Does she know what you can rent there?"
SHORT (ADJ)	Ved hun godt hvor man kan leje noget? <i>Knows she well where one can rent something?</i> "Does she know where you can rent something?"
LONG (ARG)	Hvad ved hun godt at man kan leje dér? <i>What knows she well that one can rent there?</i> "What does she know that you can rent there?"
LONG (ADJ)	Hvor ved hun godt at man kan leje noget? <i>Where knows she well that one can rent something?</i> "Where does she know that you can rent something?"
ACROSS (ARG)	Hvad ved hun godt hvor man kan leje? <i>What knows she well where one can rent?</i> "What does she know where you can rent?"
ACROSS (ADJ)	Hvor ved hun godt hvad man kan leje? <i>Where knows she well what one can rent?</i> "Where does she know what you can rent?"
*Doubly-filled Spec-CP	Ved hun godt hvor hvad man kan leje? <i>Knows she well where what one can rent?</i> "Does she know where what you can rent?"

Wh-islands in Danish

(Christensen, Kizach, and Nyvad 2013)

- Hypothesis: Priming effects (on acceptability) can only be found with degraded but grammatical sentences (Sprouse 2007, 123-124). **Hence, structural priming/training is suggestive of grammaticality.**

No difference
btw. *what* and
where!



Christensen, Ken Ramshøj, Johannes Kizach, og Anne Mette Nyvad. 2013. "Escape from the Island: Grammaticality and (Reduced) Acceptability of Wh-Island Violations in Danish". *Journal of Psycholinguistic Research* 42 (1): 51–70. <https://doi.org/10.1007/s10936-012-9210-x>.

Sprouse, Jon. 2007. Continuous acceptability, categorical grammaticality, and experimental syntax. *Biolinguistics* 1. 123–134.

Because

(a) Movement is successive cyclic...

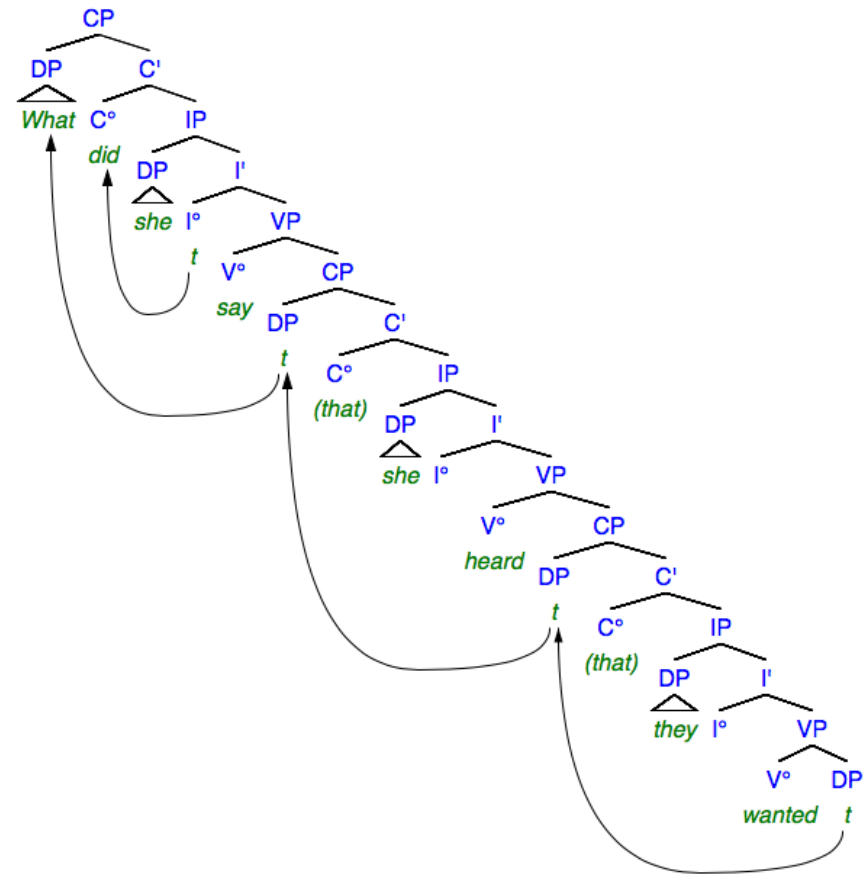
- Wh-movement proceeds stepwise via the local Spec-CP

Evidence for successive cyclic wh-movement

1. Languages with wh-agreement
Irish, Chamorro, Palauan, Hausa, Passamaquoddy, Coptic
2. Successive inversion phenomena
Belfast English, Spanish, French
3. Intermediate copy pronunciation
Child English, German dialects
4. Wh-scope marking ('partial wh-movement')
German, Romany, Hungarian, Hindi
5. Stranded *all* in West Ulster English
6. Intermediate reconstruction effects
7. Zaenen, Annie. 1983. On syntactic binding. *Linguistic Inquiry* 14:469-504.

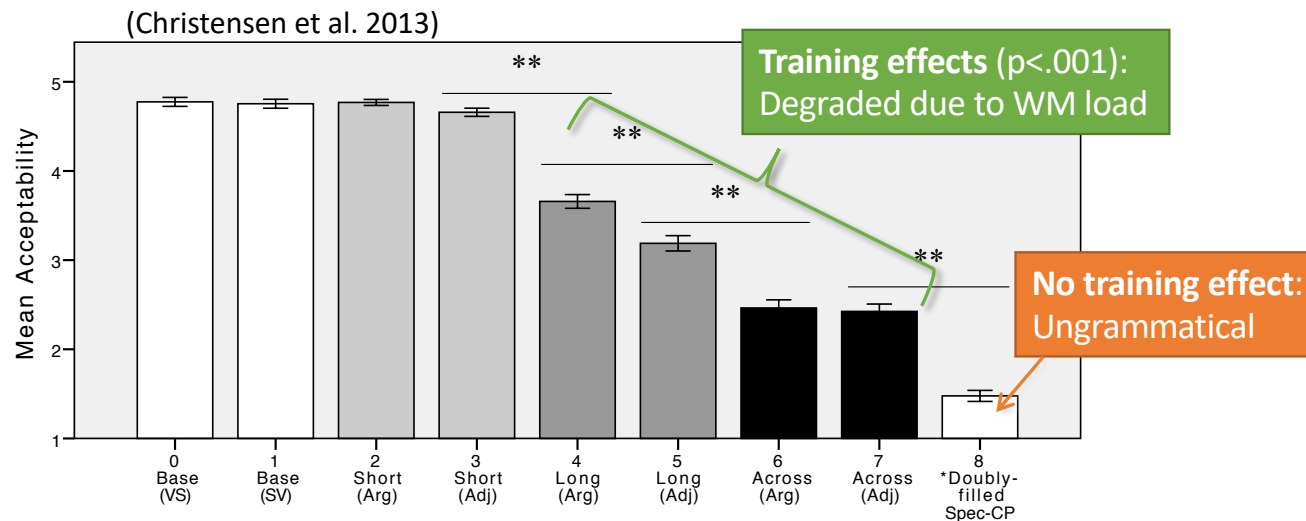
(From handout by prof. Jason Merchant:

<http://home.uchicago.edu/~merchant/classes/syntax2.2005/successive.cyclic.handout.pdf>)



...and

(b) ACROSS is grammatical in Danish...



Priming effects (on acceptability) can only be found with degraded but grammatical sentences (Sprouse 2007, 123-124).

Christensen, Ken Ramshøj, Johannes Kizach, og Anne Mette Nyvad. 2013. "Escape from the Island: Grammaticality and (Reduced) Acceptability of Wh-Island Violations in Danish". *Journal of Psycholinguistic Research* 42 (1): 51–70. <https://doi.org/10.1007/s10936-012-9210-x>.

Sprouse, Jon. 2007. Continuous acceptability, categorical grammaticality, and experimental syntax. *Biolinguistics* 1. 123–134.

...then

(c) WH-clauses are not islands in Danish

- Cf. also grammatical extraction from embedded y/n-questions (Christensen, Kizach & Nyvad 2013, 248):

(8) a. Ved. hun ikke [_{CP} om Lars har fundet kablet]?
Knows she not if Lars has found cable-the

b. *Ved hun ikke [_{CP} hvad om Lars har fundet ___]?
Knows she not what if Lars has found

c. Hvad ved hun ikke [_{CP} ___ om Lars har fundet ___]?
What knows she not if Lars has found

- Priming / “satiation” effects have also been reported for *whether*-islands in English (Snyder 2000)

Christensen, Ken Ramshøj, Johannes Kizach, and Anne Mette Nyvad. 2013. “The Processing of Syntactic Islands – An fMRI Study.” *Journal of Neurolinguistics* 26 (2): 239–51. <https://doi.org/10.1016/j.jneuroling.2012.08.002>.

Snyder, William. 2000. “An experimental investigation of syntactic satiation effects”. *Linguistic Inquiry* 31 (3): 575–582. <https://doi.org/10.1162/002438900554479>.

Some islands have bridges...



What about relative clauses?

Relative clauses (RCs):

(9) They looked for the money [which₁ the woman hid ___₁ in the fridge].

(10) *What₂ did they look for the money [which₁ the woman hid ___₁ in _____₂]?

(11) They looked for the money [ec₁ that the woman hid ___₁ in the fridge].

(12) *What₂ did they look for the money [ec₂ that the woman hid ___₁ in _____₂]?

(13) They talked to the woman [who₁ ___₁ hid the money in the fridge].

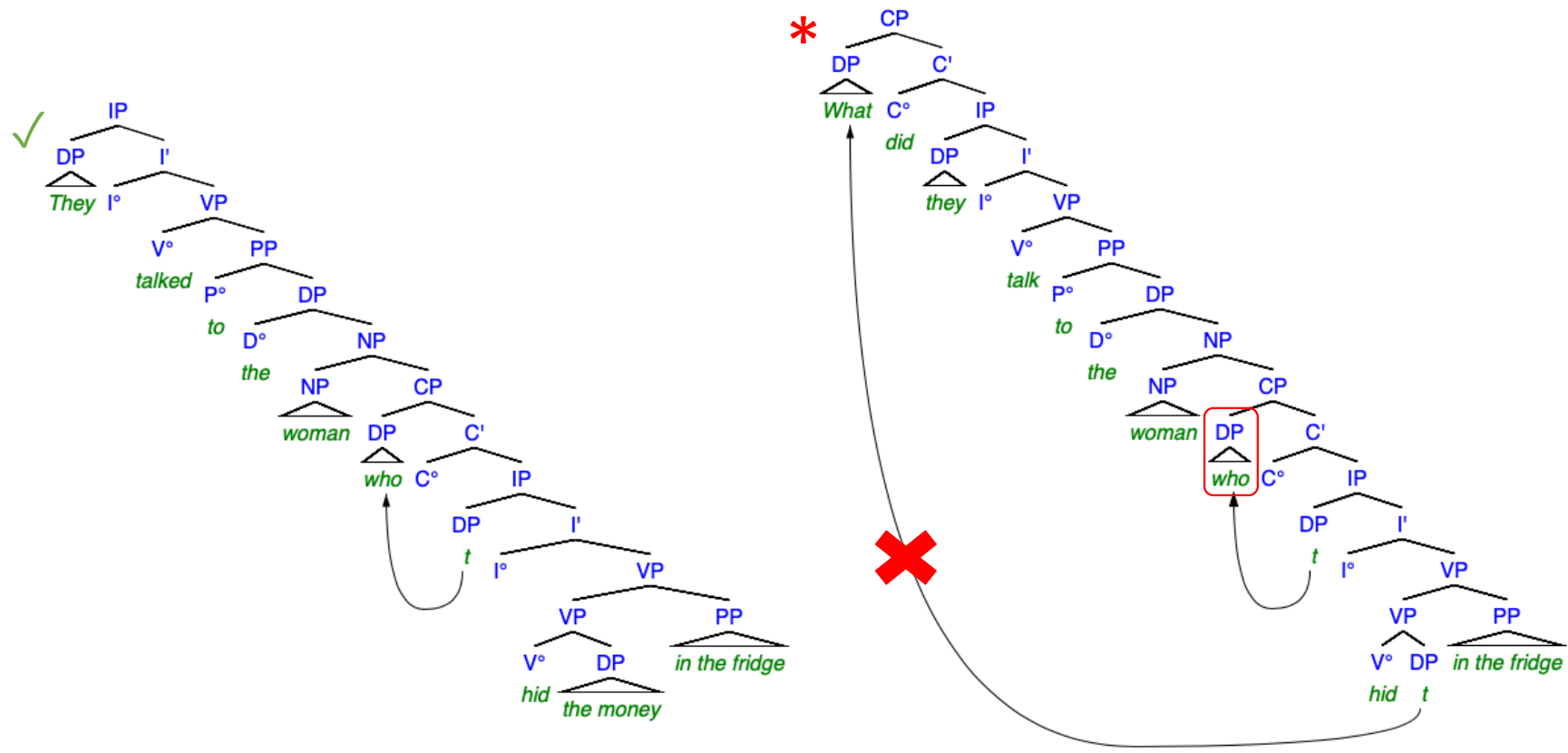
(14) *What₂ did they talk to the woman [who₁ ___₁ hid _____₂ in the fridge]?

(15) *What₂ did they talk to the woman [who₁ ___₁ hid the money in _____₂]?

- The wh-element in CP-spec blocks further extraction.
→ The RC is an island.



RCs are also islands:
 Short + long movement → island effect



Extraction from RCs in Danish

Danish *som/der*

- *Som*: Ambiguous btw. SUBJ/OBJ-RC
- *Der*: Unambiguous SUBJ-RC

- Acceptability survey (Christensen & Nyvad 2014)
 - (64 items + fillers. 7-point Likert scale. Constant: Structure, Length, Tns, Asp, Animacy, Cohesion, MVC)

(16) Pia har engang **set** en pensionist [**som/der** havde sådan en hund]. [+SC, –EXTR]

*Pia has once **seen** a pensioner **COMP** had such a dog*

(17) Sådan en hund har Pia engang **set** en pensionist [**som/der** havde ____]. [+SC, +EXTR]

*Such a dog has Pia once **seen** a pensioner **COMP** had*

(18) Pia har engang **mødt** en pensionist [**som/der** havde sådan en hund]. [–SC, –EXTR]

*Pia has once **met** a pensioner **COMP** had such a dog*

(19) Sådan en hund har Pia engang **mødt** en pensionist [**som/der** havde ____]. [–SC, +EXTR]

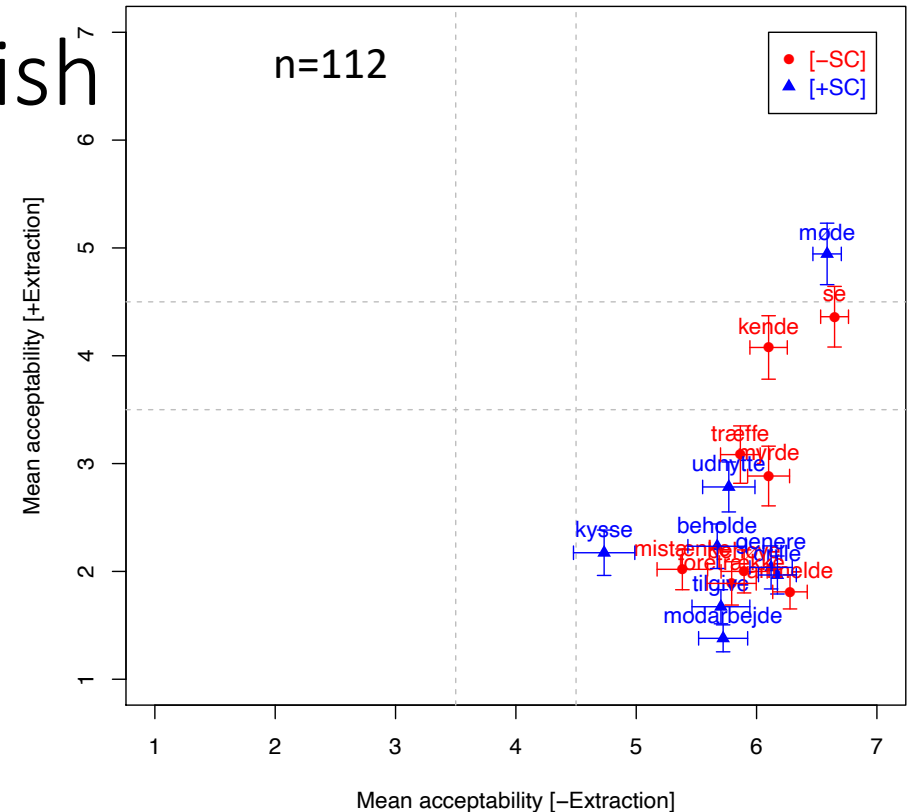
*Such a dog has Pia once **met** a pensioner **COMP** had*

Extraction from RCs in Danish

- **No effect of ±SC or COMP...**
- Movement effect ($p < .0001$)
 - Extraction reduces acceptability
- Frequency effect ($p < .0001$)
 - Positive correlation btw. frequency and acceptability
- And learning/priming effect (“Trial”) ($p < .0001$)
 - Suggesting that RC-extraction is indeed grammatical...
- (For replication for Swedish, see Müller 2015)

	Estimate	Std. Error	p-value	
(Intercept)	5.0989	0.2655	0.0000	***
Trial	0.0366	0.0075	0.0000	***
Frequency	0.0001	0.0000	0.0000	***
Extraction	-3.3056	0.3135	0.0000	***
SC	-0.0480	0.2941	0.8703	
COMP	0.1515	0.2908	0.6024	
Extraction x SC	-0.3340	0.4181	0.4244	
Extraction x COMP	-0.1050	0.4105	0.7982	
SC x COMP	-0.1934	0.4089	0.6363	
Extraction x SC x COMP	0.5633	0.5842	0.3349	

Table 2. Summary of fixed effects. ***Significant effect, $p < 0.001$.



Processing effects

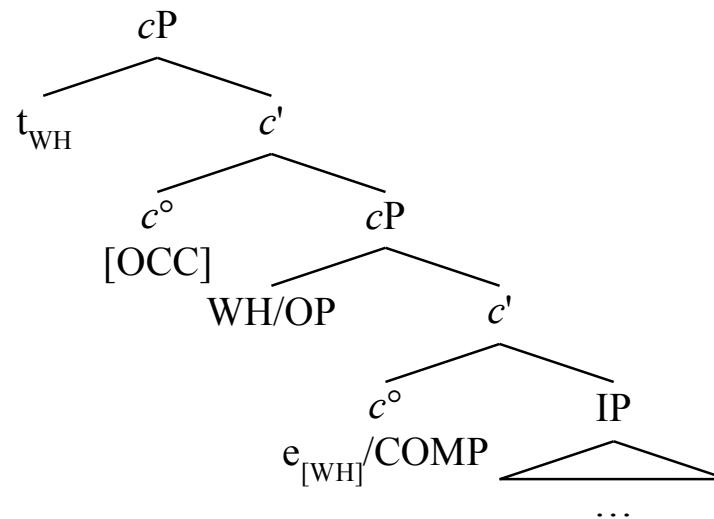
Christensen, Ken Ramshøj, and Anne Mette Nyvad. 2014. “On the Nature of Escapable Relative Islands”. *Nordic Journal of Linguistics* 37 (01): 29–45. <https://doi.org/10.1017/S0332586514000055>.
 Müller, Christiane. 2015. “Against the Small Clause Hypothesis: Evidence from Swedish Relative Clause Extractions”. *Nordic Journal of Linguistics* 38 (01): 67–92. <https://doi.org/10.1017/S0332586515000062>.

Consequence: Recursive CP

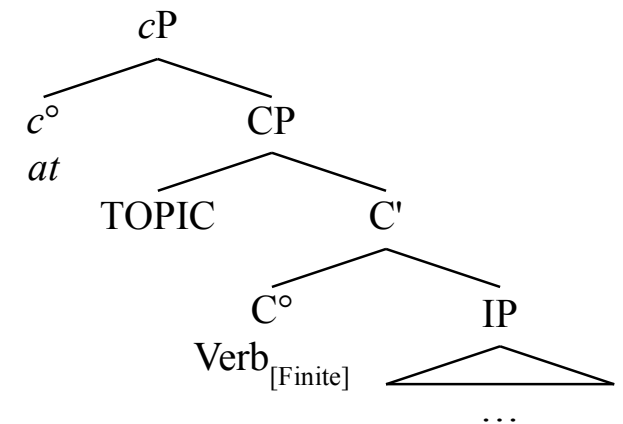
- The embedded CP_[+WH] can be RECURSIVE in Danish (and English?)
 - Outer SPEC licensed as Last Resort



a.

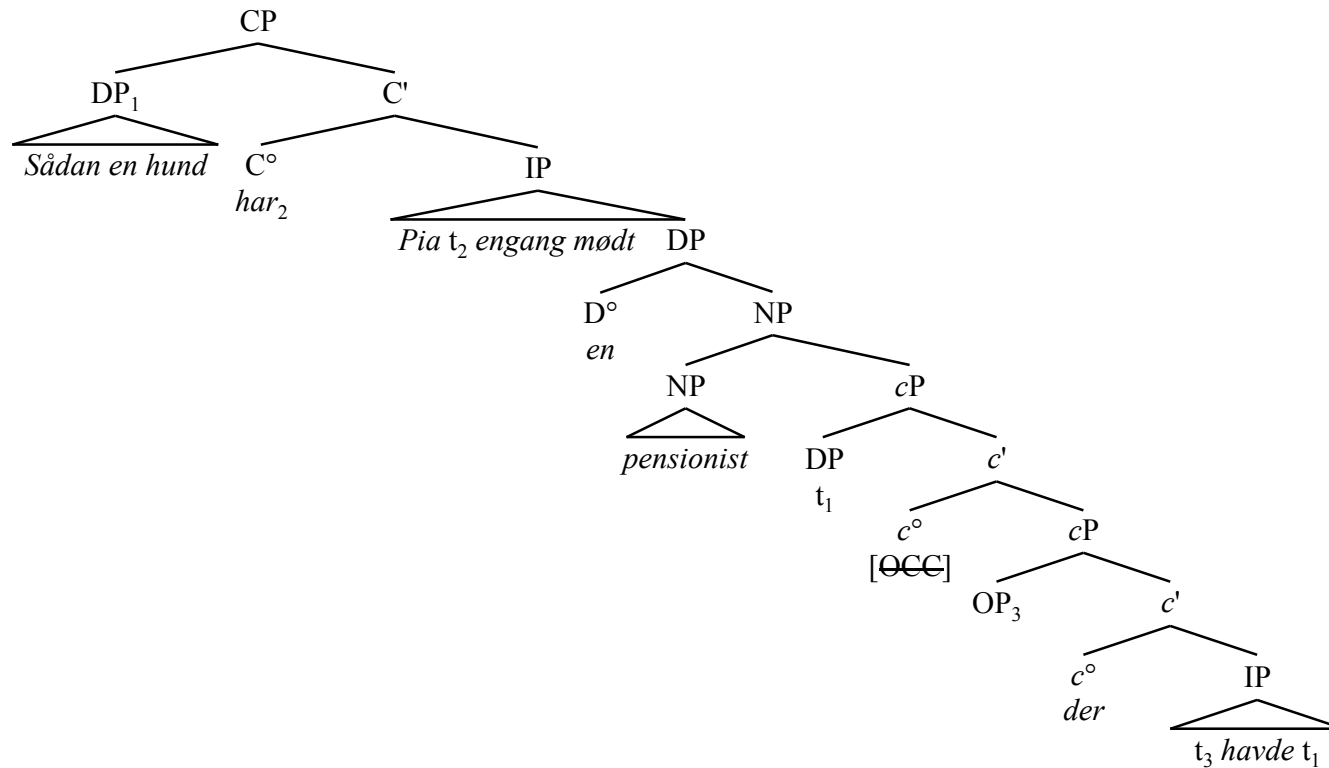


b.



Nyvad, Anne Mette, Ken Ramshøj Christensen, and Sten Vikner. 2017. "CP-Recursion in Danish: A CP/CP-Analysis." *The Linguistic Review* 34 (3): 449–477. <https://doi.org/10.1515/tlr-2017-0008>.
 Vikner, Sten, Ken Ramshøj Christensen, and Anne Mette Nyvad. 2017. "V2 and CP/CP." In *Order and Structure in Syntax I: Word Order and Syntactic Structure*, edited by Laura Bailey and Michelle Sheehan, 313–24. Open Generative Syntax 1. Berlin: Language Science Press. <https://doi.org/10.5281/zenodo.1117724>.

Escaping a relative clause in Danish



Nyvad, Anne Mette, Ken Ramshøj Christensen, and Sten Vikner. 2017. "CP-Recursion in Danish: A CP/CP-Analysis." *The Linguistic Review* 34 (3): 449–477. <https://doi.org/10.1515/tlr-2017-0008>.
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Formal vs. informal ratings

- Acceptability ratings are often lower in formal experiments than in informal settings
 - Examples in naturalistic discourse are rated low in experiments (see Müller 2019, 182, 185 for discussion and references)
- Perhaps due to misparse (structural misanalysis)?
 - (Kush et al. 2019, 24)
- Difficult to maintain naturalness while trying to control for everything else
 - Lexical material, coherence, early attachment, length, frequency, etc.
- Perhaps a supporting context would help: Supportive context facilitates comprehension of object-initial clauses (Kristensen et al. 2014)

Kristensen, Line Burholt, Elisabeth Engberg-Pedersen, and Mads Poulsen. 2014. "Context Improves Comprehension of Fronted Objects." *Journal of Psycholinguistic Research* 43 (2): 125–40.
<https://doi.org/10.1007/s10936-013-9241-y>.

Kush, Dave, Terje Lohndal, and Jon Sprouse. 2019. "On the Island Sensitivity of Topicalization in Norwegian: An Experimental Investigation." *lingbuzz/004442*. <https://ling.auf.net/lingbuzz/004442>.

Müller, Christiane. 2019. "Permeable Islands. A Contrastive Study of Swedish and English Adjunct Clause Extractions." Lund: Lund University.

Is the pattern the same
in English as in Danish?

Extraction from RCs in English

- Assuming that RCs are not strong islands in English, Christensen and Nyvad (2022) made three predictions:
 - **Prediction 1:** The level of acceptability of extraction from an RC correlates with the frequency of occurrence of the matrix verb.
 - Processing effect found for Danish.
 - **Prediction 2:** The level of acceptability of extraction from an RC increases as a function of exposure over time (trial effect).
 - Processing effect found for Danish.
 - **Prediction 3:** Topicalization from an RC is more acceptable than extracting a *wh*-element.
 - Information structure effect (topicalization better than *wh*-movement) found for Swedish (Lindahl 2017) and Norwegian (Kush et al. 2019)

Christensen, Ken Ramshøj, and Anne Mette Nyvad. 2022. "The Island Is Still There: Experimental Evidence For The Inescapability Of Relative Clauses In English." *Studia Linguistica*, 1–25. <https://doi.org/10.1111/stul.12192>.

Kush, Dave, Terje Lohndal, and Jon Sprouse. 2019. "On the Island Sensitivity of Topicalization in Norwegian: An Experimental Investigation." *Language* 95 (3): 393–420. <https://doi.org/10.1353/lan.2019.0051>.

Lindahl, Filippa. 2017. "Extraction from Relative Clauses in Swedish." Gothenburg: University of Gothenburg. <https://gupea.ub.gu.se/handle/2077/51985>.

Extraction from RCs in English

- The target stimuli consisted of 48 target sentences, 12 sets corresponding to:

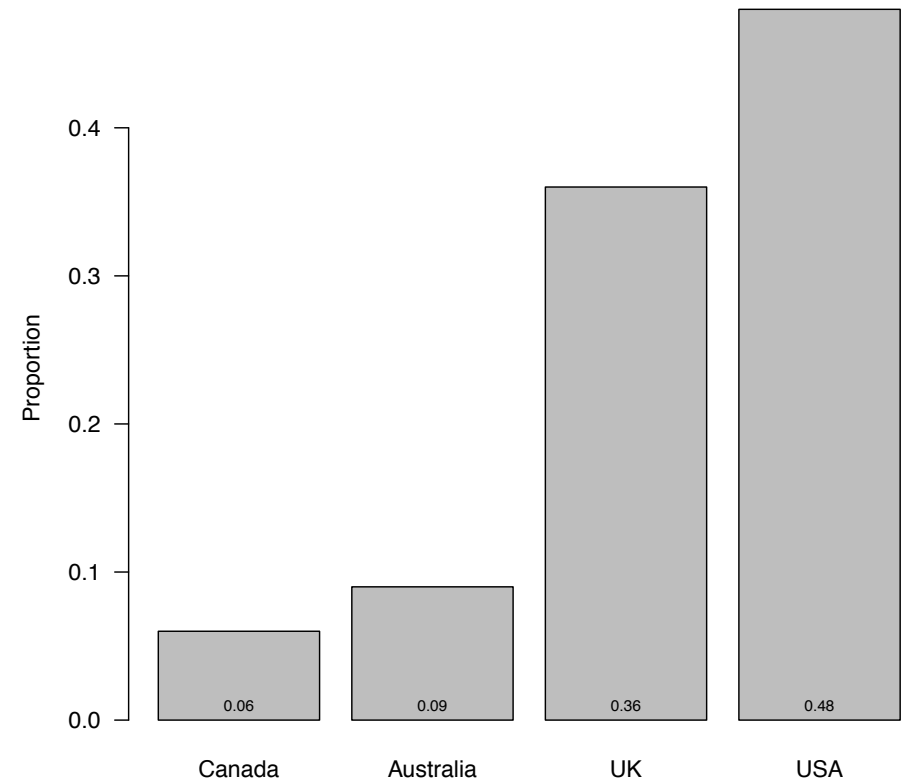
- | | | |
|------|---|------------|
| (20) | Peter once kissed a girl who preferred that type of man. | (Baseline) |
| (21) | What type of man did Peter once kiss a girl who preferred? | (Wh) |
| (22) | That type of man Peter once kissed a girl who preferred. | (Topic) |
| (23) | *What type of man did Peter once kiss a girl who preferred men? | (Anomaly) |

- Target sentences and fillers distributed over 6 lists which were presented as online surveys using Google Drive.

Participants

- 190 native speakers of English (84 male, 106 female), mean age 42 years (range = 16–81, SD = 16).
- Including only nationalities with 10 or more participants.

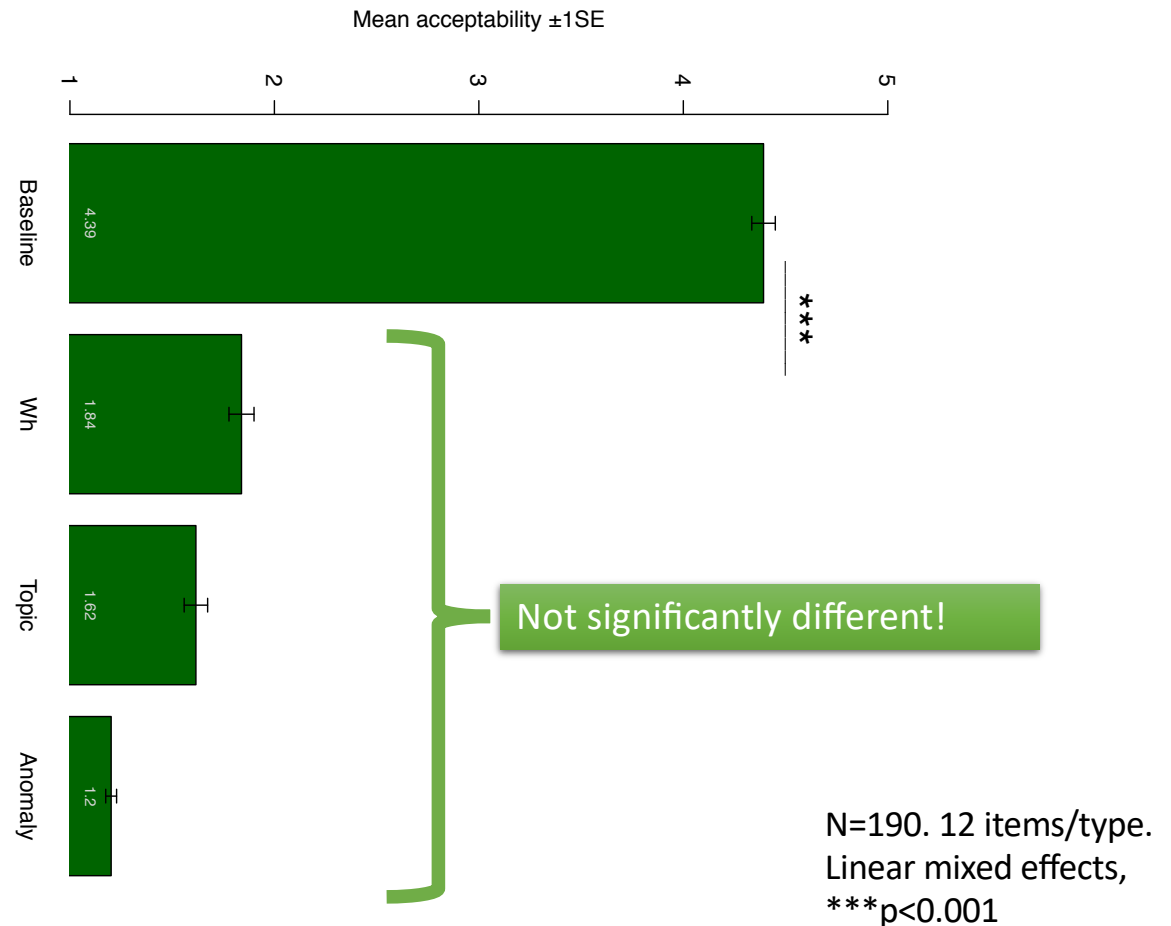
Proportion of participants by nationality (n=190)



Christensen, Ken Ramshøj, and Anne Mette Nyvad. 2022. "The Island Is Still There: Experimental Evidence For The Inescapability Of Relative Clauses In English." *Studia Linguistica*, 1–25.
<https://doi.org/10.1111/stul.12192>.

Results

1. Emma truly disliked guys [who₁ _1 drove that type of car].
2. *What type of car₂ did Emma truly dislike guys [who₁ _1 drove _2]?
3. *That type of car₂ Emma truly disliked guys [who₁ _1 drove].
4. *What type of car_? did Emma truly dislike guys [who₁ _1 drove cars]?

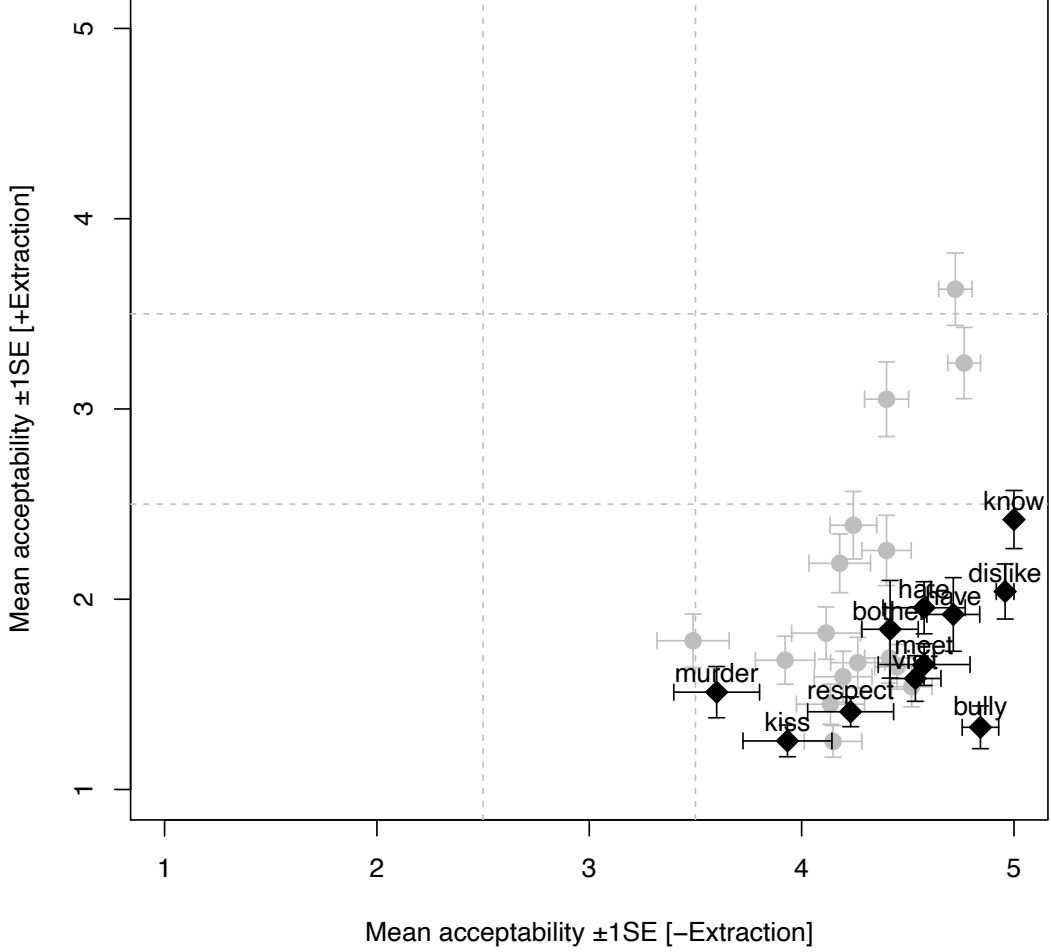


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<https://doi.org/10.1111/stul.12192>.

(Danish)
English

Results

- Extraction reduces acceptability (p<0.001)
- Marginal difference between TOPIC and WH (p<0.1)
- No main effects of education, bilingualism, nationality, or frequency (p>0.1)
- TRIAL
 - Negative (!) effects on WH (p=0.07)
 - No effect on TOPIC or ANOM
- LINGUIST
 - Small positive (!) effect on BASE (p<0.001), WH (p<0.001), and TOPIC (p<0.01)
 - No effect on ANOM



Christensen, Ken Ramshøj, and Anne Mette Nyvad. 2022. "The Island Is Still There: Experimental Evidence For The Inescapability Of Relative Clauses In English." *Studia Linguistica*, 1–25. <https://doi.org/10.1111/stul.12192>.

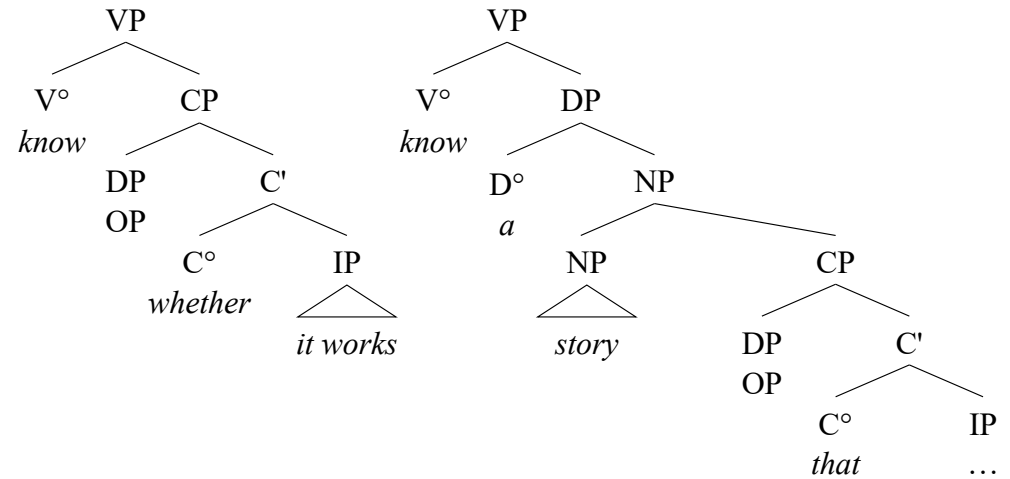
RC: conclusion

- Assuming that RCs are not strong islands in English, we made three predictions:
 - **Prediction 1:** The level of acceptability of extraction from an RC correlates with the frequency of occurrence of the matrix verb.
 - **Not confirmed: Freq. not significant**
 - **Prediction 2:** The level of acceptability of extraction from an RC increases as a function of exposure over time (trial effect).
 - **Not confirmed: No significant positive effect of Trial**
 - (Negative effect in WH)
 - **Prediction 3:** Topicalization from an RC is more acceptable than extracting a wh-element.
 - **Not confirmed**
- **Conclusion: RCs are (probably) strong islands in English**
- **Support for the standard assumption**

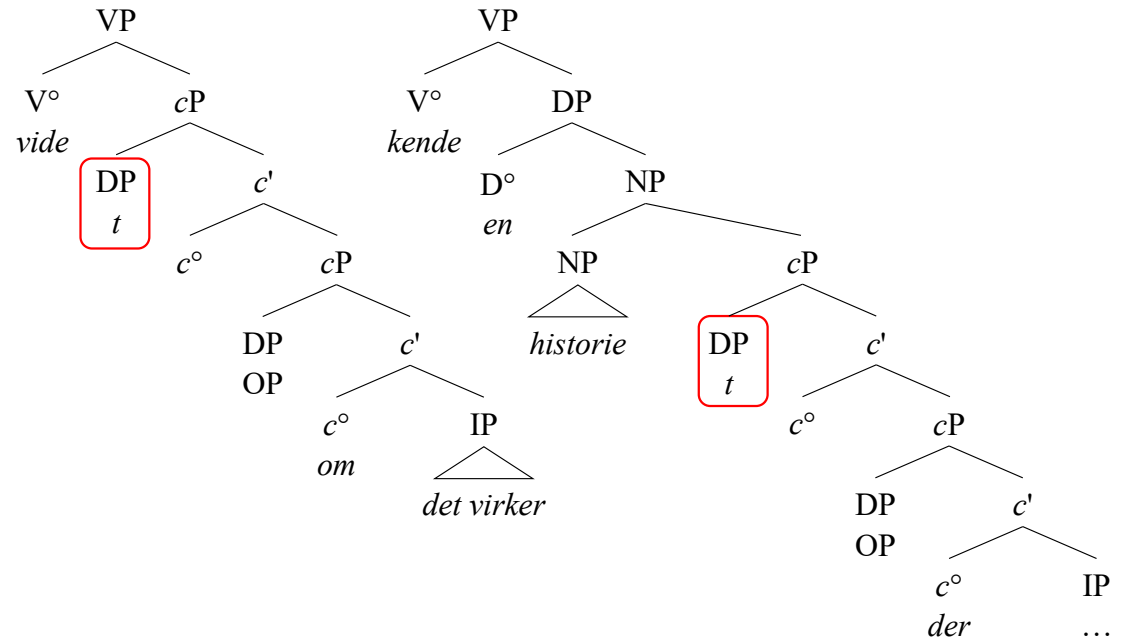
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<https://doi.org/10.1111/stul.12192>.

Parametric variation

- English RC = strong island:
 - All extraction from RC < 3 in acceptability
 - No lexical or processing effects



- Danish RC = “weak/non-island”:
 - Extraction ‘smeared’ from 1-4
 - Lexical effect of Freq.
 - Positive effect of Trial



- This suggests **parametric variation**
 - An ‘escape hatch’ is required in Danish
 - ±cP-recursion

Conclusions

- Island constraints are universal
 - UG-based: Locality & Successive cyclicity
- The status of particular island ‘constructions’ is subject to parametric variation
- Strong islands are ‘true’ islands: They block extraction.
- But if extraction is (sometimes) allowed, it cannot be a ‘strong’ syntactic island.
 - Acceptability is a matter of degree, depending on a range of syntactic and non-syntactic factors, such as semantics (factivity, event structure) and pragmatics (coherence, specificity).

Thanks