

# Embedded *whether*-questions are not islands for active gap-filling in Norwegian

## Investigating active gap filling inside Norwegian embedded questions

**Background:** When processing filler-gap dependencies, comprehenders use an active gap-filling strategy that is sensitive to island constraints. It is unclear how cross-linguistic variation in island effects impacts this strategy. Embedded polar questions are islands in English (*whether*-islands), but not in Norwegian. We test whether active gap-filling happens inside Norwegian embedded polar questions.

### Method

Filled-gap effects

2 x 2 Latin square

Self-paced reading

**Filled-Gap Effect (FGE):** after encountering a filler, increased difficulty processing a filled argument NP due to violated expectation for a gap. Stowe (1986) found increased RTs at 'us' in b. compared to a.:

My brother wanted to know ...

- if Ruth will bring us home to Mom at Christmas.
- who Ruth will bring us home to \_\_ at Christmas.

FGEs regarded as support for active gap-filling strategy: after encountering a filler, the processor posits a gap in upcoming argument positions without waiting for confirmation of the actual gap site.

**Island constraints** (Ross, 1967) suppress active gap-filling in English: True for both *strong* (Stowe, 1986; Traxler & Pickering, 1996) and *weak* islands (Villata et al., 2020; Cokal & Sturt, 2022).

**How does cross-linguistic variation in islands impact active gap-filling?**

- Manipulated filler-gap distance (**Short** vs. **Long**) and type of embedded clause (**Declarative** vs. **EQ**)
- In **Short** conditions, the dependency is resolved early; in **Long** conditions, the gap was in an oblique position inside the embedded clause, triggering FGE at the earlier potential gap site (DO)
- Measured FGEs as RT differences at the DO 'the lazy student' between 1-2 and 3-4
- 24 items distributed over 4 experimental lists and 48 fillers; 36 participants

Anna talked about the teacher who ...

- \_\_ knew that the principal scolded the lazy student in front of the class. **Short Decl.**
- she knew that the principal scolded the lazy student in front of \_\_. **Long Decl.**
- \_\_ wanted to know whether the principal scolded the lazy student in front of the class. **Short EQ**
- she wanted to know whether the principal scolded the lazy student in front of \_\_. **Long EQ**

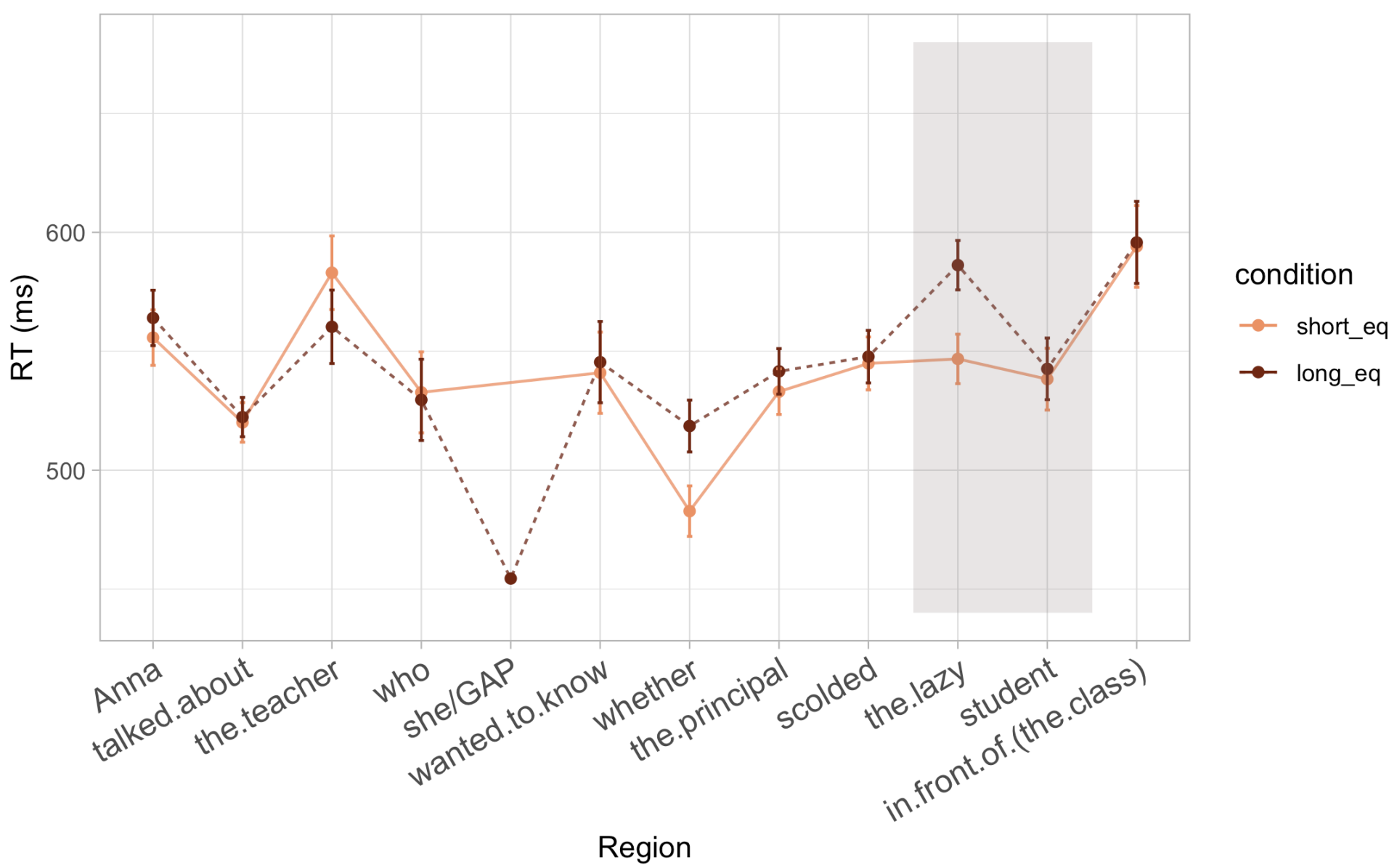
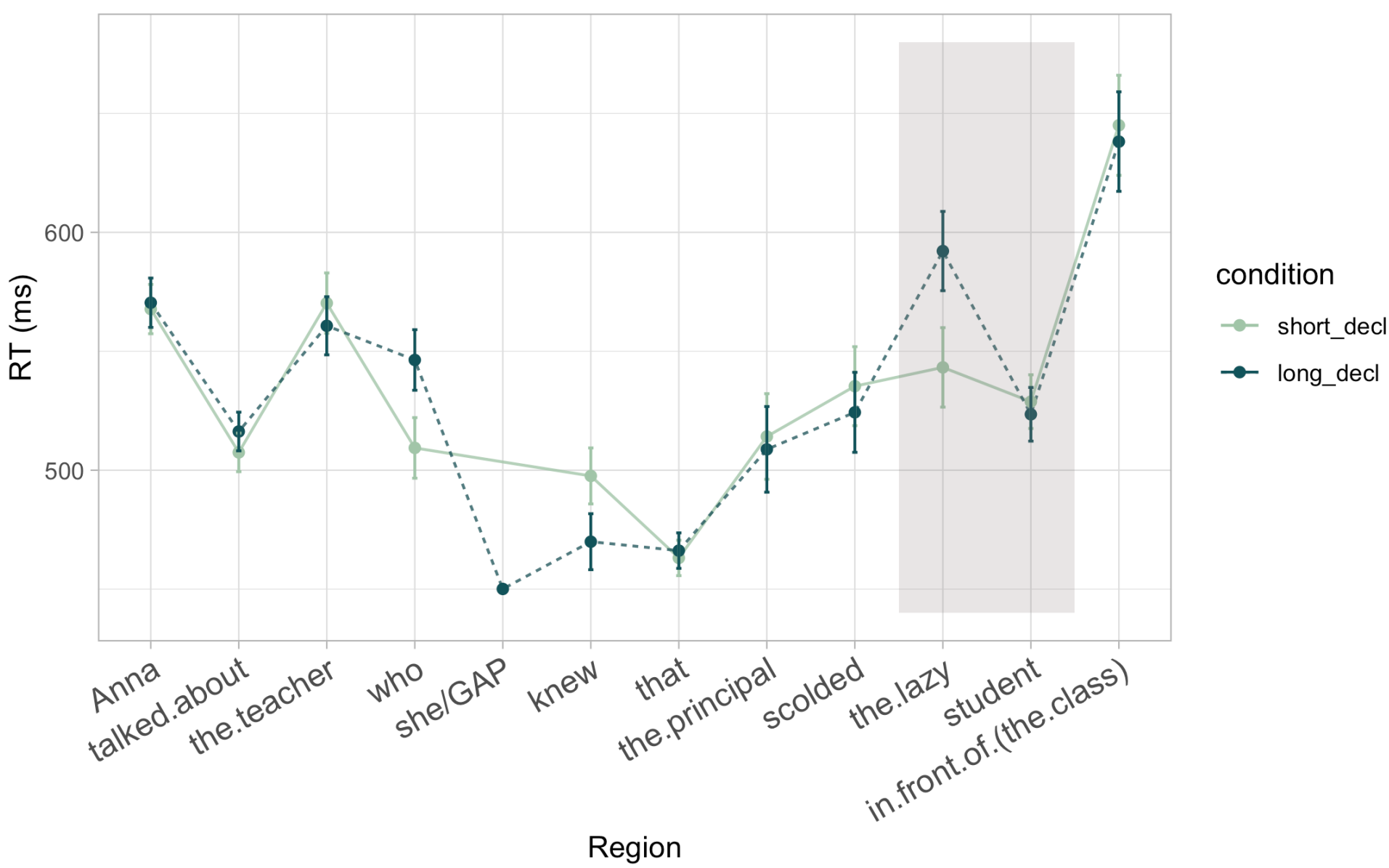
- Analyzed log-RTs at 'the lazy' and 'student' using mixed-effect linear regression models with sum-coded fixed effects of distance (-0.5 for Short, 0.5 for Long and clause type (-0.5 for Declarative and 0.5 for EQ) and maximal random effect structure (Barr, 2013)

### Results

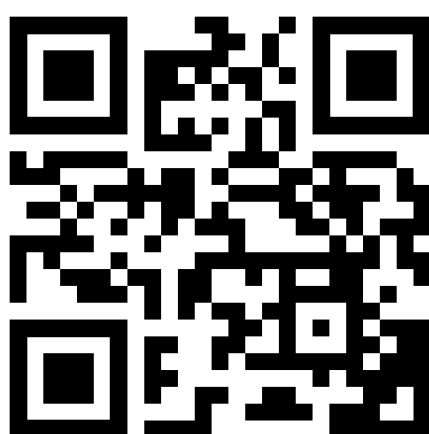
Embedded Declaratives

Embedded Questions

Main effect of distance at 'the lazy' ( $t = 2.19, p = .03$ )



**Discussion:** We found FGEs in embedded *whether*-questions comparable to FGEs in embedded declarative clauses. This suggests that active gap-filling is not suspended inside Norwegian embedded *whether*-questions, unlike in English (Villata et al., 2020; Cokal & Sturt, 2022). Our results provide further evidence that (i) embedded questions are not islands in Norwegian, and (ii) that active gap-filling occurs inside complex environments when dependencies are allowed by the grammar (Phillips, 2006). Our results argue against simple processing-based accounts that treat embedded questions as islands cross-linguistically due to inherent complexity (Hofmeister & Sag, 2010; Kluender & Kutas, 1993).



osf.io/g8bqf/

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