

Investigating relative clause dependencies into finite adjunct clauses in Norwegian
Ingrid Bondevik (NTNU), Dave Kush (University of Toronto) & Terje Lohndal (NTNU)
ingrid.bondevik@ntnu.no

Filler-gap dependencies (FGDs) can hold between two elements across a distance (1). However, certain domains, known as *islands* [1], seem to block FGDs. Finite adjunct clauses have been established as islands [2]. For example, the *wh*-dependency in (2) is unacceptable.

- (1) What does Mary think that John bought _ ?
(2) *Which book did you go to college because you read _ ?

Islands have been conceptualized as absolute syntactic bans on FGD formation [3], and finite adjunct clauses particularly so [4]. However, several recent acceptability judgment studies have challenged the view that finite adjunct clauses are categorical syntactic islands [6 English; 7, 8, 9 Norwegian]. First, variation in dependency type has been found: In both English and Norwegian, *wh*-dependencies into finite conditional ‘if’-adjunct clauses induce island effects [6, 7, 11]. However relative clause (RC) dependencies into ‘if’-adjuncts appear not to result in island effects [6, 11]. The same holds true for topicalization in Norwegian [8]. Second, variation across adjunct type has been reported. A recent study of Norwegian testing conditional ‘if’-adjuncts, temporal ‘when’-clauses and causal ‘because’-clauses found that the acceptability of topicalization from adjuncts varied by adjunct type. Topicalization from ‘when’ and ‘because’-clauses induced large island effects, but topicalization from ‘if’-clauses induced small, marginal island effects.

Research question: Past findings are compatible with two conclusions: (i) that RC-dependency formation is not sensitive to finite adjunct island effects across adjunct type, or (ii) that ‘if’-adjuncts specifically are not islands for non-*wh*-FGDs (RC and topicalization) – as suggested by [9]. We therefore tested whether we would see variation in island effects across adjunct types with RC-dependencies.

Method & Analysis: We conducted an acceptability judgment study in Norwegian testing the acceptability of an RC-dependency across five embedded clause types identified as islands: three adjunct clauses – conditional *om* ‘if’, temporal *når* ‘when’, causal *fordi* ‘because’ and two controls – ‘whether’-questions and subject-phrases (**Tab. 1**). For each clause type, test items were created according to a 2x2 factorial design [6] crossing *Structure* (NO-ISLAND, ISLAND) and *Distance* (LONG: gap in embedded clause, SHORT: gap not embedded). An island effect is quantified as the super-additive interaction of *Structure X Distance*. Participants rated sentences on a 1-7 scale. The data was z-score transformed prior to analysis. Initial omnibus analysis used a linear mixed effects model (LMEM) with Clause type, Distance, Structure, and their interactions as fixed effects, random intercepts by subject and item, and random slopes by subject. Follow up analyses fit separate LMEMs for each island type.

Results: Data from 75 native speakers of Norwegian were analyzed. The omnibus model showed that the presence and size of an island effect varied by clause type. Island effects for ‘when’ and ‘because’ were comparable in size ($p > 0.16$), while ‘if’ and both control islands were different from ‘because’ (‘if’: $p < 0.001$; subject: $p < 0.035$; ‘whether’: $p < 0.001$). Separate models confirmed a significant island effect for all island types except for ‘whether’ (see visual illustration in **Fig 1**). Although we observe an island effect with ‘if’, the distribution of z-scores in the LONG-ISLAND condition exhibits a higher degree of variation between judgments for ‘if’ than seen with the other adjuncts (**Fig 2**).

Discussion: We found significant island effects for RC-dependencies into all three adjunct clauses tested. However, consistent with [9], RC-dependencies into ‘if’-adjuncts induce significantly smaller island effects and more variation in judgment than other adjuncts. Cross-adjunct variation in acceptability suggests that “adjunct” may not be a uniform category in relation to islands. Theories of adjunct islandhood must account for the difference between ‘if’-adjuncts versus other adjuncts and explain why island effects also vary as a function of dependency type.

Table 1: Example stimuli for a ‘when’-adjunct item. Stimuli is based on [6, 8, 9]. For all four conditions, there is a matrix clause where the head of the relative clause is the complement of the main verb. The distance conditions vary as to whether or not the head belongs in the matrix (short) or embedded (long) clause of the relative clause (a,c vs. b,d). The structure conditions vary as to the presence of an island clause (a,b vs. c,d):

		Distance	
		short	long
Structure	no-island	a. Konflikten handler om sjefen som [_ misliker [at de ansatte tar lange lunsjpauser]]. ‘The conflict is about the boss who dislikes that the employees take long lunch breaks’	b. Konflikten handler om lange lunsjpauser som [sjefen misliker [at de ansatte tar _]]. ‘The conflict is about the long lunch breaks that the boss dislikes that the employees take’
	island	c. Konflikten handler om sjefen som [_ blir sur [når de ansatte tar lange lunsjpauser]]. ‘The conflict is about the boss who gets mad when the employees take long lunch breaks’	d. Konflikten handler om lange lunsjpauser som [sjefen blir sur [når de ansatte tar _]]. ‘The conflict is about the long lunch breaks that the boss gets mad when the employees take’

Figure 1: Interaction plot for all clause types.

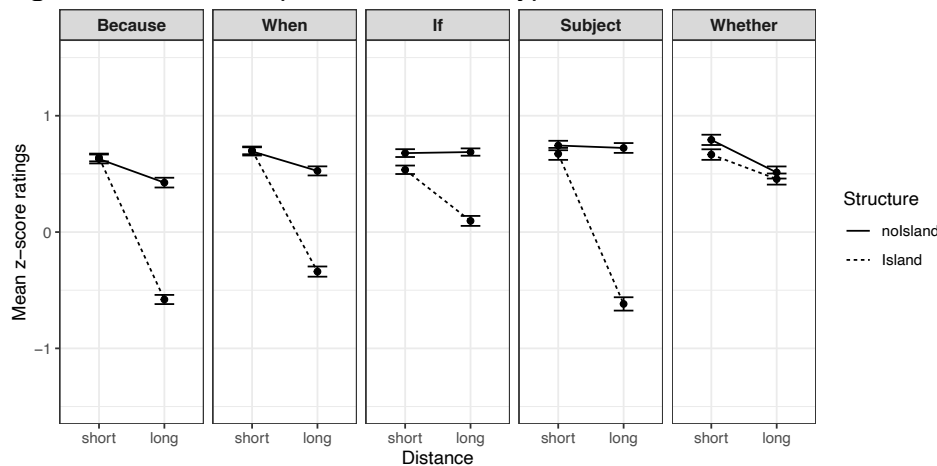
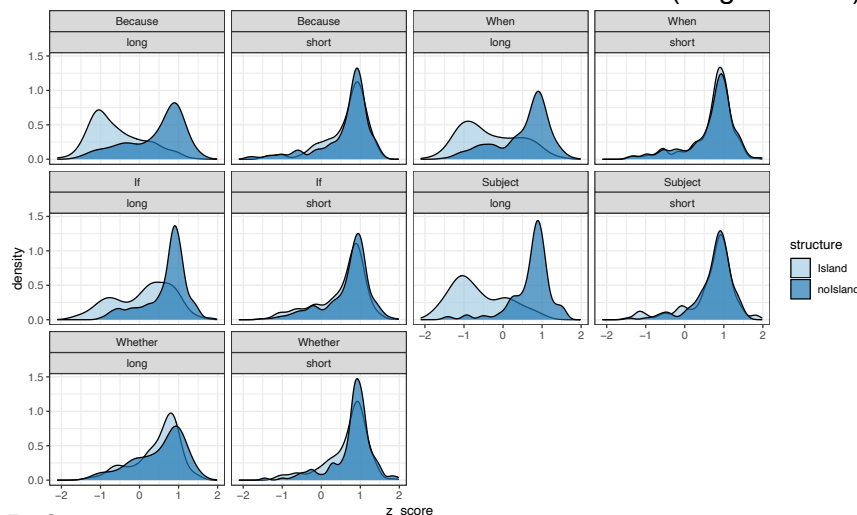


Table 2: DD-score (differences-in-differences score) by clause type.

clause type	DD-score
Because	1.02
When	0.87
If	0.45
Subject	1.27
Whether	-0.07

Figure 2: Density plot for all clause types, comparing no-island vs. island conditions at each level of the distance factor (long vs. short).



References

- [1] Ross (1967) PhD diss. MIT; [2] Huang (1982) PhD diss. MIT; [3] Chomsky 1986; [4] Stepanov (2007); [5] Truswell (2011) *Events, Phrases and Questions*; [6] Sprouse et al. (2016) *Nat Lang Linguistic Theory* 34; [7] Kush et al. (2018) *Nat Lang Linguistic Theory* 36; [8] Kush et al. (2019) *Language* 95; [9] Bondevik et al. (2020) *Nordic J. of Linguistics*; [10] Abeillé et al. (2020) *Cognition* 204; [11] Gibson et al. (2021) CUNY.