Subject islands are not caused by information structure clashes: cross-constructional evidence

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Syntactic subjects are known to be islands, such that they cannot contain a gap in a filler-gap dependency [1-3]. Several researchers attribute the islandhood of subjects to information structure constraints [4-8], more recently formalized as the FOCUS-BACKGROUND CONSTRAINT (FBC): a focused element should not be part of a backgrounded constituent. Filler-gap dependencies into subjects create an information structure 'clash,' as subjects are backgrounded or given in discourse, while fillers are often focused [8]. When the filler isn't focused, the FBC predicts no subject-island effect, consistent with [8]'s finding that a gap within a subject is no worse than that within an object for relativization, whereas a subject gap is worse than an object gap for wh-extraction. The present study further investigates the FBC in English using a factorial design across three constructions which vary in their information structural profiles: topicalization [9], wh-extraction, and relativization. This design allows us to estimate the superadditive effect of creating a gap within a complex DP within both subjects and objects, without relying on comparisons between subject and object extractions. The FBC does not predict a subject island effect with topicalization or relativization, since these do not introduce a clash: like subjects, both topics and relative clause heads are discourse given, and not typically associated with focus. Conversely, the FBC predicts subjects to be islands for wh-extraction, as the filler is part of a backgrounded constituent but is placed in a focused position, engendering an information structure clash. **Design & Materials:** This study estimates the superadditive cost of sub-extraction (creating a gap in a complex DP), while holding extraction (presence of filler-gap dependency) and DP complexity constant [10-13]. We manipulate POSITION of extraction (the gap site, *subject* or *object*), DP COMPLEXITY (*simple* or *complex*) and EXTRACTION TYPE (*no*, *full*, or *sub-extraction*). This allows us to estimate an island effect as the additional cost of sub-extraction that cannot be attributed to the baseline costs of DP complexity and extraction. We ran three experiments with this design, across three constructions: topicalization, wh-extraction, relativization. An example topicalization itemset is given in (1). While [8] examine PP sub-extraction (i.e., with pied-piping), we chose to examine DP sub-extraction (p-stranding), which is more frequent in a number of syntactic environments [14], and does not introduce a potential attachment ambiguity. In each experiment, 72 participants rated 36 target sentences and 72 fillers on a 6pt scale. **Results:** See below for mean acceptability ratings for subject conditions by experiment (Fig. 1) and subject island effect (Difference of Difference scores [10-13]) by experiment (Fig. 2). Acceptability ratings from each experiment were analyzed using separate ordinal mixed-effects regressions with a cumulative probit link function in `brms` [15]. Table 1 reports the critical interaction effects between DP COMPLEXITY and EXTRACTION TYPE for Subjects in each experiment as the measure of an island effect [13]. We found significant superadditive subject island effects for topicalization, wh-extraction, and relativization. These results are not compatible with the FBC, which only predicts subjects to be islands for wh-extraction, though we note differences in the effect size across constructions, as seen in Fig. 2 and Table 1. **Discussion:** Crucially, the degradation in ratings for subject sub-extraction is more costly than the predicted cost of complexity + extraction for subjects across all three constructions. Subjects were found to be islands for topicalization (as [13] observed in Norwegian), wh-extraction, and relativization. Since topicalizing or relativizing from a subject is not expected to produce an information structure clash, this finding is unpredicted by the FBC. Our results show that the ban on subject sub-extraction cannot entirely be attributed to construction specific discourse-based preferences, and are consistent with the claim that subjects are strong syntactic islands. Moreover, we observed comparable ratings of object and subject sub-extraction, which explains why [8] could not find a reliable island effect with relativization. However, the island effect is clear when, using a superadditive design [10-13], we take into consideration the baseline differences in the acceptability of full extraction in subjects vs objects.

(1) Example topicalization itemset

No extraction

Simple	Mary realized the news had completely shocked the member.
Complex obj	Mary realized the news had completely shocked the member of the council.
Complex subj	Mary realized the news about the city had completely shocked the member.

Simple full extraction

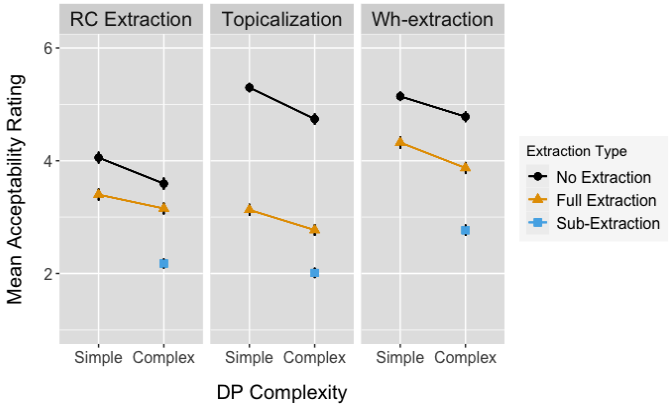
Object	That member, Mary realized the news had completely shocked _.
Subject	That news, Mary realized _ had completely shocked the member.

Complex full extraction

Object	That member of the council, Mary realized the news had completely shocked _.
Subject	That news about the city, Mary realized _ had completely shocked the member.

Sub-extraction

Object	That council, Mary realized the news had completely shocked the member of _.
Subject	That city, Mary realized the news about _ had completely shocked the member.



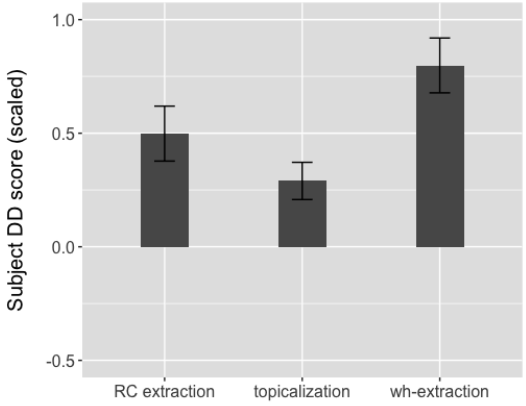


Figure 1 (left): Mean Acceptability Ratings (S.E.) for Subject conditions.

Figure 2 (right): Scaled DD Scores (S.E.): cost of subject subject sub-extraction, or the difference between the observed cost of sub-extraction and the costs of complexity and extraction. *Complexity cost = no extraction,simple – no extraction,complex; Extraction cost = no extraction,simple – full extraction,simple.*

	β	**Est.Err**	**95%CrI**
Topicalization: Complexity*Extraction	-0.60	0.23	[-1.04, -0.14]
RC extraction: Complexity*Extraction	-0.98	0.22	[-1.41, -0.54]
Wh-extraction: Complexity*Extraction	-1.34	0.22	[-1.77, -0.91]

Table 1: `brms` results for Acceptability Ratings

References.

[1] Ross (1967), *MIT*; **[2]** Huang (1982), *Linguist. Rev*; **[3]** Privoznov (2021), *MIT*; **[4]** Erteschik-Shir (1973), *MIT*; **[5]** Ambridge & Goldberg (2008), *Cognitive Linguistics;* **[6]** Hofmeister & Sag (2010), *Language*; **[7]** Kluender (1992), *Island Constraints: Theory, Acquisition and Processing;* **[8]** Abeillé et al. (2020), *Cognition*; **[9]** Miyagawa (2017), *Journal of the Linguistic Society of Japan*; **[10]** Sprouse (2007), *UMD*; **[11]** Sprouse et al. (2012), *Language*; **[12]** Vincent et al. (2018), *Languages.* **[13]** Kush et al. (2019), *Language*. **[14]** Pullum & Huddleston (2002), *Cambridge Univ. Press*. **[15]** Bürkner (2017), *Journal of Statistical Software*.