Processing factors in negative island contexts

Introduction. Negative islands (NIs) were originally analyzed as a syntactic phenomenon, and it was claimed that only arguments could escape them (1), while adjuncts could not (2) [1,2,3]. Subsequent semantic research [4] showed that factors limiting the size of the set of possible answers to the question (e.g. d(iscourse)-linking [5] and modality [6]) improve NI sentences; other analyses have shown additional influences of pragmatic factors [7]. However, what all of these accounts have failed to take into consideration are the well-documented independent processing costs associated with negation [8,9,10], extraction [11], and referentiality [12] in the psycholinguistics literature. In this paper, we investigate the effect of all of these various processing factors on the acceptability of negative island configurations and report results that are problematic for current proposals about NIs but compatible with a processing approach [13]. This approach receives additional support from the novel finding that NI-like effects are produced when configurations parallel to NIs are created not by negation, but by other lexical items known to affect processing, such as the presupposition trigger also [14].

Experimental 1. Like adjunct extraction (2), argument extraction (1) involves both negation and extraction. If the phenomenon of NIs is at least partly attributable to these processing factors, an acceptability judgment study should reveal a drop in acceptability of negative object wh-interrogatives in contrast to other interrogatives, even in cases where the construction is predicted to be perfectly acceptable from the perspective of linguistic theory, as it involves both argument extraction and d-linking. METHODS. 28 native speakers of English judged the acceptability of English sentences (3a-f) on a seven-point scale in a counterbalanced and factorial design. All experimental items were predicted to be fully grammatical and acceptable by linguistic accounts of NIs, as all extracted constituents were d-linked and crucially arguments of the verb. RESULTS. An ANOVA with factors polarity (positive vs. negative) and question type (yes/no vs. subject-wh vs. object-wh) yielded a main effect of polarity (p_{1,2} < 0.001), a main effect of interrogative type (p_{1,2} < 0.001) and an interaction between the two (p_{1,2} < 0.001). Subsequent multiple pair-wise comparisons (Tukey HSD) showed that the effects were driven by significant differences between negative object wh-interrogatives and all other positive and negative interrogative types (all p ≤ 0.001). DISCUSSION. As predicted from independently known processing costs of negation and extraction, negative object wh-interrogatives showed a significant drop in acceptability that was due to an interaction of the factors negation and extraction. A further prediction from a processing perspective is that the effects obtained in Experiment 1 should not be restricted to negation, but should replicate for lexical items that share with negation an increase in processing cost.

Experimental 2. The same method and item sets as in Experiment 1 were used but with 3 extra conditions: for all 3 question types, a condition without negation but using also instead (3g-i) was added. RESULTS. An ANOVA with factors intervener (none vs. negation vs. also) and interrogative type yielded a main effect of intervener (p_{1,2} < 0.001), a main effect of interrogative type (p_{1,2} < 0.001) and an interaction between the two (p_{1,2} < 0.001). Subsequent multiple pair-wise comparisons showed that the effects were mainly driven by significant differences between the mean ratings of object wh-interrogatives that included negation/also intervener and all other conditions (all p ≤ 0.05), except also subject wh-interrogatives. DISCUSSION. Acceptability ratings for object wh-interrogatives with both n’t and also as intervener showed a large drop compared with other interrogative types. This result indicates that the drop in acceptability of NIs may be related to factors other than negation itself.

Conclusion. There are three well-documented independent (as confirmed by current results) factors that contribute to processing costs: (i) negation/also; (ii) extraction; (iii) non-referentiality. Our results show the cost of negation and the cost of extraction in the case of argument extraction. The importance of referentiality has been amply demonstrated in the generative literature on islands and reported in the psycholinguistics literature. The current results show that these factors affect not only ungrammatical adjunct extraction NIs, but also grammatical structures involving argument extraction. The traditional ban on adjunct extraction out of NIs can then be reduced to the interactions of all three of these factors, while the acceptability drop of argument extraction is due to the interactions of just factors (i) and (ii). These findings may also provide a way to improve our understanding of other island phenomena.
(1) Which car didn’t you drive __ on the Autobahn?

(2) *How fast didn’t you drive on the Autobahn __?

(3) a. Did the politician support the bill in the caucus?
   b. Didn’t the politician support the bill in the caucus?
   c. Which politician supported the bill in the caucus?
   d. Which politician didn’t support the bill in the caucus?
   e. Which bill did the politician support in the caucus?
   f. Which bill didn’t the politician support in the caucus?
   g. Did the politician also support the bill in the caucus?
   h. Which politician also supported the bill in the caucus?
   i. Which bill did the politician also support in the caucus?

References.