Subject islands and the effect of transitivity on acceptability

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An intriguing phenomenon about language is that *wh* dependencies are unbounded on the one hand yet restricted at the same time: Dependencies inside certain environments, called "islands" are ill-formed [1]. In English, NPs in subject position are islands because dependencies inside them are judged unacceptable (1a) – versus dependencies inside object NPs, which are ok (1b).

(1) a. *Which car did **[the color of __]** delight Sam?* b. *Which car did Sam like [**the color of __**]?*

This "subject island" effect is especially puzzling because subject dependencies are usually easier to process than object dependencies (e.g., [2], [3]) and are more frequently attested cross-linguistically (e.g., [4]). Thus, theories of language claim that subjects are the most easily accessible NPs in mental representation (e.g., [5], [6]). Thus, the contrast in (1) has received a lot of attention in formal syntax and in experimental linguistics. Existing analyses are largely two-fold:

- **Structural** approaches claim that the effect is rooted in formal syntactic representations that become codified and inflexible when one acquires a language. These include *Condition on Extraction Domains* [7] and *Critical Freezing* [8], and they claim that the syntactic "movement" which creates the dependency is illicit, hence the unacceptability.
- **Discourse** approaches argue that subject islands arise because subjects are pragmatically backgrounded information (e.g., [9]) and dependency formation places the *wh* filler in the focal domain of the utterance [10]. Thus, a discourse clash arises in sentences like (1a): the filler is both focused and background [11], [12], [13]. Indeed, the subject island effect is attenuated in relative clauses (RCs) vs. *wh* questions [13]. Critically, whQs and RCs are alike in terms of *wh* syntax but differ in discourse function: *wh*Q focus the filler more than RCs do.

However, there are findings that neither type of approach can straightforwardly explain: subjects of transitive verbs ('A's) respond differently to the subject island effect compared with subjects of intransitive (unergative) verbs ('S's) [14, 15]; A and S involve movement from the same syntactic position, and both are backgrounded. But differences between dependencies inside As vs. Ss might reflect orthogonal differences between lexical verb roots (e.g., trans. "build" vs. intr. "work").

Our acceptability judgement study tested how transitivity affects subject island-hood, in both whQs and RCs, using the same verbal root forms (e.g., trans. "write **a letter** (to X)" vs. intr. "write (to X)"). Our 2 x 3 design crossed (i) SUBJECT TYPE (A, S) and (ii) CLAUSE TYPE (no extraction baseline, *wh* question, relative clause). 90 L1 speakers of English (12 exclusions), recruited via *Prolific.com* read sentences like in Table1 and rated them for acceptability from 1 (unacceptable) to 7. We had 18 itemsets, and 22 fillers (6 lists, Latin sq., pseudo-randomized presentation order).

Results are shown in Fig. 1. We fit 2 x 3 mixed-effects cumulative link model. SUBJECT TYPE was sum coded and CLAUSE TYPE was coded with centered Helmert contrasts. There was no main effect of SUBJECT TYPE ($z = .5$, $p = .6$), but no extraction conditions were rated higher than whQ+RC, pooled (6.1 vs. 3.3, $z = 13$, $p < .001$), and RC was rated higher than whQ (3.6 vs. 3, $z = -4$, $p < .001$), replicating findings of [13] for both A and S, and supporting a discourse approach to subject islands. However, there was also an interaction of SUBJECT TYPE *baselineVSwhQ+RC ($z = -3.4$, $p = .001$), revealing that the subject island effect is accentuated for S compared with A.

Discussion. The critical interaction is unexpected under both existing syntactic and discourse approaches to subject islands. If anything, S is *less* pragmatically backgrounded than A ("Preferred Arg. Structure"; [16]), meaning that, if discourse status is solely at stake, then S islands should be attenuated compared with A islands. We pursue a new hypothesis framed around how the **knowledge state** of the speaker is packaged in a sentence: Extracting from a subject indicates that the speaker *knows* about the identity of that subject (hence their uttering it) yet also *doesn't know* the identity of part of it (hence sub-extraction): thus, a clash ([11], [12], [13]). But this clash is stark in intransitives, because there is **no argument** that the speaker can show consistent knowledge of (i.e., either full knowledge by uttering it whole, or no knowledge, by

extracting it whole). Thus, S island is accentuated because a **higher proportion of knowledge** is mis-packaged (100% vs. 50%; Expt2, ongoing, looks at A islands vs. ditransitive subj. islands).

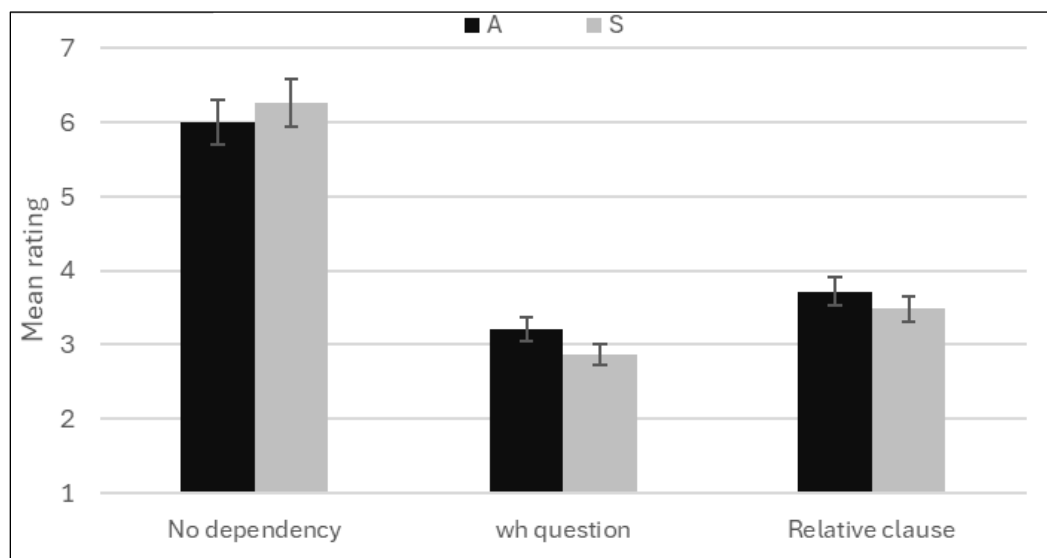|	No extraction (baseline)	Wh question	Relative clause
Transitive subject (A)	The child of a noble serviceman wrote a letter to the President on Memorial Day.	**Which serviceman** did the child of _ write a letter to the President on Memorial Day?	The sheriff praised a serviceman, whom the child of _ wrote a letter to the President on Memorial Day.
Intransitive subject (S)	The child of a noble serviceman wrote to the President on Memorial Day.	Which serviceman did the child of _ write to the President on Memorial Day?	The sheriff praised a serviceman, whom the child of _ wrote to the President on Memorial Day.

Table 1: A sample itemset.

Figure1: Mean ratings of sentences across experimental conditions: Three different clausal types (No extraction, *wh* question, relative clause). Extraction from transitive subject (A) in black bars and extraction from intransitive subject (S) in gray bars. Error bars represent 95% C.I.s.

References
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