

## The processing of backward sluicing

Masaya Yoshida, Lauren Ackerman, Rebekah Ward, & Morgan Purrier (Northwestern University)

m-yoshida@northwestern.edu

Online clausal ellipsis resolution; Sluicing; Word-by-word moving window; English

Backward Sluicing (BwS) e.g., (1a), is a construction in which a clausal-ellipsis ([SΔ]) in an embedded wh-interrogative precedes the antecedent-clause ([SANT]), providing the content of [SΔ]. In BwS, the parser must find the antecedent-clause for the ellipsis, and “recover” the content of the elided clause from the antecedent. This study aims to uncover the mechanism behind this online ellipsis resolution process. We specifically show: the parser’s active search for the antecedent clause drives the active search for the licensing verb of wh-phrases, like in wh-filler-gap (WhFG) dependency formation as in (1b), but, unlike WhFG, this search is not constrained by islands.

There are two possible scenarios for online clausal-ellipsis resolution: the parser waits until the end of the sentence to choose the appropriate antecedent clause, or the parser actively searches for the antecedent clause whereby the closest clause to the ellipsis site is taken as the antecedent. Wh-dependency processing in BwS can tease apart these hypotheses since, like WhFG dependency, BwS involves wh-phrases that must be licensed by a verb, which itself must be contained in the antecedent clause. Thus if the antecedent clause is found, so is the licensing verb. The first experiment tests these hypotheses utilizing the plausibility manipulation paradigm ([1]). 40 participants read the sentences in (2) in a moving-window study: we compare BwS against WhFG dependency, where semantic congruency of verbs and wh-phrases are manipulated. We find a main effect of plausibility: verbs in (2a/b) are read significantly slower than verbs in (2c/d) ( $P$ 's<.05). Thus, like WhFG dependency formation, the parser connects wh-phrases with their closest licensing verb, suggesting the parser actively searches for the antecedent clause.

The second experiment tests the island sensitivity of this search process. Islands have been debated between grammatical accounts ([2,3,4]) and processing-based accounts ([5,6]). If storage of the wh-filler and the processing of the resource-demanding intervening element induce island effects, the parser should not try to connect the wh-phrase to the licensing verb in an island during BwS processing due to processing-overload. Conversely, if the parser computes grammatical constraints related to BwS, the parser may search for the licensing verb inside an island because sluicing is insensitive to islands ([7,8,9]). Employing the plausibility paradigm again, we manipulate plausibility of verbs inside a relative clause island in subject position and compared BwS and WhFG in terms of semantic congruency:(3). We find an interaction of dependency type and congruency; incongruent verbs are read slower than congruent verbs in the BwS condition ((3a/c)) but no such differences in WhFG conditions ((3b/d)) ( $P$ 's<.05). Thus, the results suggest that the parser employs an active search strategy while ignoring islands in sluicing conditions.

In summary, processing of BwS, like WhFG, employs active search for licensing verbs, which is motivated by the active search for the antecedent clause of ellipsis, while BwS processing is different from WhFG processing since BwS processing ignores islands. This finding argues against the processing-accounts of islands since they do not predict the plausibility effects, which is the mark of dependency formation, in the island domain.

- (1) a. I don't remember which writer [SΔ], but [SANT the editor notified a writer about a new project]  
b. I don't remember which writer the editor notified \_\_ about a new project.
- (2) a./b. Incongruent: I don't remember which book {, but/∅} the editor notified the publisher about {a new book/\_\_\_}...  
c./d. Congruent: I don't remember which writer {, but/∅} the editor notified the publisher about {a new book/\_\_\_}...
- (3) a./b. Incongruent: I don't remember which book {, but/∅} [RC the editor who notified the publisher about some science book had recommended {a new book/\_\_\_} to me.  
c./d. Congruent: I don't remember which writer {, but/∅} [RC the editor who notified the publisher about a fiction writer had recommended{a new writer/\_\_\_}to me.

**References** [1] Traxler & Pickering (1996) JML, [2] Ross (1967) MIT PhD. Dissertation, [3] Chomsky (1981), Foris.[4] Phillips (2006), Language, [5] Kluender & Kutas (1993) LCP, [6] Hofmeister& Sag (2010), Language, [7] Ross (1969) CLS, [8] Chung et al., (1995) NLS, [9] Merchant (2010), OUP.