Interpreting Ambiguous Stripping Sentences in Persian: A Naturalness Rating Study

Introduction. Previous experimental studies in English have found a strong preference for the remnant to contrast with the most local possible correlate (typically the object) in sluicing and stripping constructions (Carlson 2014; Harris 2015). These studies have also found a strong effect of interpretive parallelism, in that non-local (subject) nouns become more salient correlates when they are marked for focus, contain a contrastive adjective, or are otherwise semantically parallel with the remnant (Carlson 2001, Harris & Carlson 2017). In this study, we examine the role of *morphological parallelism* in resolving ambiguous stripping constructions in Persian (Toosarvandani 2015; Rasekhi 2018). Persian is important because it allows us to compare the effects of morphological and structural similarity between the remnant and potential correlates in the antecedent clause via the *–ra* marker on the definite/specific object and object scrambling. In this study, we investigated how Persian speakers disambiguate Polarity Stripping ellipsis (1), in which the remnant *panguan* (penguin) can contrast with either the subject *koose* ('shark') or the object *māhi* ('fish').

(1) koose māhi gereft, vali panguan na
shark fish caught but penguin not
a. 'The shark caught fish but the shark did not catch penguin.' (Object reading)
b. 'The shark caught fish but the penguin did not catch fish.' (Subject reading)

Design. We manipulated the degree of morphological and structural parallelism between the matrix and the ellipsis clause by manipulating *–ra* marker and word order in a 3x2 design (2).

(2) Possible variations of (1) with regard to *–ra* marking and scrambling

Antecedent clause	**No *–ra* in remnant**	***–ra* in remnant**
Canonical: SOV	koose māhi gereft, vali panguan na *shark fish caught but penguin not*	koose māhi gereft, vali panguan-**ra** na *shark fish caught but penguin-ra not*
Canonical *–ra* marked: SO-raV	koose māhi-**ra** gereft, vali panguan na *shark fish-ra caught but penguin not*	koose māhi-**ra** gereft, vali panguan-**ra** na *shark fish-ra caught but penguin-ra not*
Scrambled: O-raSV	māhi-**ra** koose gereft, vali panguan na *fish-ra shark caught but penguin not*	māhi-**ra** koose gereft, vali panguan-**ra** na *fish-ra shark caught but penguin-ra not*

We hypothesized a preference for **Morphological Parallelism**, in which there is a strong preference for the correlate-remnant pair to share a similar morphological shape that would potentially trump any preference for the most local correlate. Our predictions were as follows:

(3) a. Remnants without *–ra* marking are ambiguous with respect to Subject/Object contrast for antecedents with Canonical word orders.
b. Remnants with *–ra* marking disambiguate to Object contrast, regardless of the order in the antecedent clause.
c. If *–ra* marking is on the antecedent, ambiguous remnants are biased towards Subject contrast.

Results. An Internet questionnaire was completed by 60 native speakers of Persian, who rated items like (2) on their naturalness, and then answered a comprehension question, choosing between (a Subject interpretation, and Object interpretation, Both, or Neither). Results were

modeled as (G)LMERs. As shown in Fig. 1, there was an interaction between Remnant type and Antecedent clause for **acceptability ratings**: whereas Canonical SOV order was equally acceptable with both Ambiguous and *ra*-marked remnants, *ra*-marking improved acceptability ratings by .78 for Canonical Marked conditions and by .81 for Scrambled conditions, p's < 0.001 (confirmed by planned by-subject and by-item paired t-test comparisons). In addition, Scrambled word order in the antecedent decreased acceptability ratings overall (p<.001).

We also analyzed answers for **comprehension questions** (removing Neither responses for convenience; < 4% data loss). Fig. 2 illustrates the results for each condition, summarized in (4).

(4) a. Subject and Object readings are both possible when there is no *–ra* marking.
b. For all antecedent types: *–ra* marking on the Remnant strongly biases towards an Object contrast interpretation, regardless of whether the object is also *–ra* marked in the antecedent clause.
c. Canonical Marked and Scrambled antecedent clause: there is a moderate bias towards Subject contrast when the Remnant is not marked morphologically.

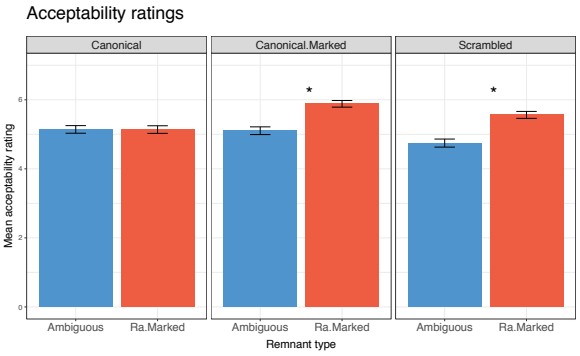

Figure 1. Acceptability ratings

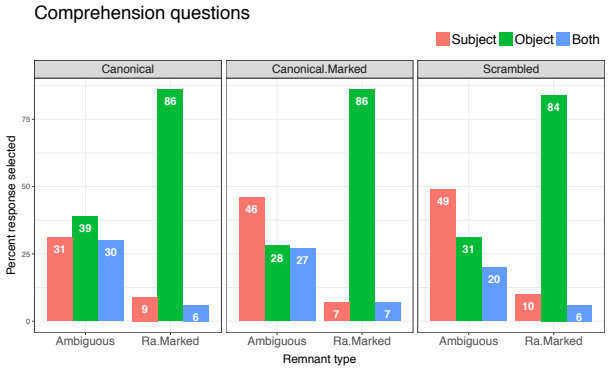

Figure 2. Comprehension questions

The findings show that unmarked remnants were compatible with either Subject or Object contrasts (4a), but that Object contrast was strongly preferred when the remnant was *–ra* marked (4b). However, participants chose the Subject contrast more often when the remnant was ambiguous and the antecedent was *–ra* marked (46% in Canonical Marked and 49% in Scrambled word orders; 4c). The results suggest that despite a general bias towards Object contrasts with *ra*-marked remnants, comprehenders used Morphological Parallelism to resolve ambiguous remnants, pairing two nouns that were not *–ra* marked as the remnant and correlate.

Conclusions. The study contributes a novel experiment on Persian to the growing literature on the processing and interpretation of ellipsis. The findings are consistent with the Morphological Parallelism hypothesis, in which comprehenders prefer to contrast remnants with correlates that match on morphological shape, even overriding structural biases.

References. Carlson (2001). The effects of parallelism and prosody in the processing of Gapping structures. *L&S* 44, 1-26. **Carlson (2014).** Predicting contrast in sentences with and without focus marking. *Lingua* 1, 78-91. **Harris & Carlson (2017).** Information structure preferences in focus-sensitive ellipsis: How default persist. *Language and Speech* 61, 480-512. **Harris (2019).** Locality and alternatives on demand: Resolving discourse-linked *wh*-phrases in sluiced structures. In: *Grammatical Approaches to Language Processing-Essays in Honor of Lyn Frazier.* **Rasekhi (2018).** Ellipsis and Information structure: Evidence from Persian. PhD Dissertation. Stony Brook University. **Toosarvandani (2015).** Persian. In: *The Oxford Handbook of Ellipsis.*