

Verb position predicts processing difficulty in a flexible SOV language

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Background: Previous research on processing in flexible SOV languages has shown that non-canonical constituent orders result in processing difficulty (Miyamoto & Takahashi 2001; Weskott & Fanselow 2011). However, most of this research has focused on the position of the arguments rather than the position of the verb. In Malayalam (Dravidian), canonical constituent order is SOV, but each of the six logical orders is grammatical and attested. In isolation, these sentences should result in differential processing difficulty caused by factors such as syntactic dependencies (due to movement from SOV) and the construction of a discourse context (because non-canonical orders are associated with particular discourse contexts; Kaiser & Trueswell 2004). By these criteria, SOV should be easiest to process, but the relative difficulty of the other orders is unknown.

Proposal: Because Malayalam has a default SOV order, does not have subject-verb agreement and has pervasive argument dropping, post-verbal arguments should result in processing difficulty due to reanalysis. For example, with an SVO sentence, the processor could posit a sentence boundary after the subject and verb and then be forced to reanalyze upon encountering the object. Likewise, with a VOS sentence, the processor would posit two sentence boundaries, as V alone and VO are both grammatical utterances. Thus, each post-verbal argument should result in additional processing difficulty, predicting a three-way distinction in which verb-final orders are most easily processed, followed by verb-medial, and then verb-initial. Contrary to what has been assumed until now, then, we predict a sharp, three-way distinction in processing difficulty and acceptability among the six possible orders. Here we test the prediction for acceptability using a formal acceptability experiment.

Experiment: The study employed a one-way design with 6 levels, in which ORDER included each of the 6 logical orders. Each experimental stimulus had three constituents: an animate subject, an inanimate object, and a verb, ensuring that the semantic role of each argument would be unambiguous. Stimuli were distributed among lists pseudorandomly using a Latin Square. Each participant saw 5 tokens of each condition and 40 filler items (10 of very low acceptability). 18 participants (native speakers residing in a Malayalam-speaking region of India) rated these sentences using a 7-point scale.

Results: Results (as z-scores) are presented in the figure (error bars = SE). There was a main effect of ORDER ($p < 0.001$). The differences between each of the verb positions were significant as calculated by pairwise t-tests ($p < 0.001$ for each). Additionally, pairwise t-tests between the orders within each verb position (SOV and OSV, SVO and OVS, and VSO and VOS) were not significant. The 10 low-acceptability fillers were significantly less acceptable than the verb-initial sentences ($p < 0.001$).

Discussion: We found a three-way distinction in which the position of the verb affects acceptability exactly as predicted, supporting the idea that, in flexible SOV languages such as Malayalam, post-verbal arguments result in reanalysis and concomitant processing difficulty. Future work will look more directly at the processing mechanisms involved and explore other factors that may be influencing acceptability.

