

On word order, prosody, and focus

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Word order permutations such as scrambling often go hand in hand with changes in sentence prosody. A better understanding of the nature of this interaction between word order and prosody would be central in designing better sentence processing experiments and improving our models of parsing. This paper looks at word order variation in Korean, and investigates how it interacts with prosody and focus.

Korean allows a number of word order permutations among preverbal arguments, but a subject- object-verb order is preferred [1]. An object can also be initial simply because the subject is dropped. Previous research found a preference to align the end of an initial object with an intonation phrase (IP) boundary in Japanese [2]. This prosodic boundary signaled scrambled word order and facilitated a scrambling analysis, as compared to when the boundary was absent. Linear ordering of sentential arguments is also associated with argument prominence. Contrastive focus is known to motivate scrambling because discourse-prominent items tend to be produced earlier than non-prominent items [3]. Looking at Korean, we investigated (i) whether prosody signals non-default word orders and (ii) how word order (& its corresponding prosody) interacts with focus.

A speech production study crossed scrambled versus canonical ditransitive target sentences with the presence versus absence of the contrastive focus marker (*-man*, 'only') on either the accusative phrase (N=24; called 'ACC' (1)) or the dative phrase (N=24; 'DAT' (2)). Each target sentence was preceded by a context sentence and contained a sentence-initial adverb (in parentheses in (1)) that supported the intended linear phrasal ordering and interpretation. In each trial, 34 participants silently read context and target sentences for meaning. Next, they heard the context sentence played from sound- file and then produced the target sentence aloud as a response. The elicitation in form of a pseudo- dialogue helped to render the productions more natural.

Among multiple acoustic measures (duration, pitch, intensity) extracted from each constituent of each production, durational cues distinguished best between conditions. Our key results are that both the scrambled accusative and the scrambled dative were longer than their canonical counterparts ($ps < 0.001$) and were more often followed by silence ($ps < 0.01$), regardless of whether they were focused or not. These measures indicate the presence of IP boundaries because in Korean, final-syllables at IP boundaries but not those at weaker boundaries are lengthened and followed by silence [4]. Moreover, focused phrases incurred longer duration than unfocused ones ($ps < 0.001$) and induced an alignment of an IP at their left edges ($ps < 0.05$). Together, these data indicate that i) scrambling is reflected in prosodic phrasing, independent of whether the fronted constituent is focused or not, and ii) focus affects phrasing even in the canonical word order. It can be hypothesized that IP boundaries marking scrambled phrases inform the processing system of the permuted word order in comprehension [2]. ERP experiments are underway to identify whether prosodic boundaries alone are sufficient to override the canonical word order preference or if the scrambling operation is licensed by a combination of factors.

1. ACC sentences

(*When a focus marker is attached to accusative phrases in (c-d), a case marker drops.)

(a) Canonical – without contrastive focus marker

An official from the school board who visited the school to attend the entrance ceremony came by the teachers' room.

Vice. principal-NOM director of the school board-DAT Korean teacher-ACC introduced.

'The vice-principal introduced a Korean teacher to the director of the school board.'

(b) Scrambled – without contrastive focus marker

An official from the school board who visited the school to attend the entrance ceremony came by the teachers' room where all the teachers gathered.

(First) Korean teacher-ACC vice. Principal-NOM director of the school board-DAT introduced.

'The vice-principal first introduced a Korean teacher to the director of the school board.'

(c) Canonical – with contrastive focus marker

An official from the school board who visited the school to attend the entrance ceremony came by the teachers' room where all the teachers gathered.

(However) vice. principal-NOM director of the school board-DAT Korean teacher-ONLY introduced.

'However, the vice-principal introduced only a Korean teacher to the director of the school board.'

(d) Scrambled – with contrastive focus marker

An official from the school board who visited the school to attend the entrance ceremony came by the teachers' room where all the teachers gathered.

(However only) Korean teacher-ONLY vice. Principal-NOM director of the school board-DAT introduced.

'However, the vice-principal introduced only a Korean teacher to the director of the school board.'

2. DAT sentences

(*When a focus marker is attached to dative phrases in (c-d), a case marker remains. Context sentences and sentence-initial adverbs are the same as ACC sentences.)

(a) Vice. principal-NOM Korean teacher-DAT director of the school board-ACC introduced.

(b) Korean teacher-DAT vice. Principal-NOM director of the school board-ACC introduced.

(c) Vice. principal-NOM Korean teacher-DAT-ONLY director of the school board-ACC introduced.

(d) Korean teacher-DAT-ONLY vice. Principal-NOM director of the school board-ACC introduced.