

Word order preference in the on-line processing of multiple adverbial constructions of Korean

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Background

- **Word order preference in the sentences with multiple AdvPs**
- In head-initial languages like English, a locative AdvP is preferred to be placed prior to a temporal AdvP (1).
- In contrast, a temporal AdvP is placed before a locative AdvP in Korean, a typical head-final, free word order language (2).
- These seemingly different word order preferences reflect a single identical processing strategy: A locative AdvP is placed closer to the verb than a temporal one.

(1) Cheolsu played [in the school] [yesterday].
 (2) 철수는 [어제] [학교에서] 놀았다.
 "yesterday" "in the school" "played"

- What is the profit of such a strategy in terms of processing costs? The answer appears to be: AdvP of stronger semantic relation with the verb should be placed relatively closer to it (Behaghel, 1932).
- Correspondingly, it has been demonstrated that locative adverbials are placed closer to the sentence final verb than the temporal ones in Korean sentence production (Nam, Yoo, & Hong, 2018).
- On the other hand, the instrumental AdvPs tend to occur very closely to the verbs, even competing with the verbal arguments in the Korean sentence production (Kwon et al., 2010)
- However, there is still no evidence on the word order preference in question in the on-line comprehension of Korean sentences.

Research Question & Hypotheses

- **Any specific word order preferences among sentences with scrambled AdvPs, i.e. nouns marked with temporal(T), locative(L), or instrumental(I) postpositions in comprehension tasks?**
- Reading times needed for the less preferred word orders would be longer than those for the more preferred ones. (Experiment 1 : Self-paced-Reading)
- Typical language-related ERPs (N400? P600?) would be observed in the less preferred word orders compared to the more preferred ones. (Experiment 2 : Event-Related Potentials)

The study

Materials / Experiment conditions

- **Six conditions manipulated by the relative orders of T, L and I**

< Table 1. Exp. Conditions and Example sentences >

Con.	Subject	Adverbial Phrase 1	Adverbial Phrase 2	Adverbial Phrase 3	Direct Object	Verb
TLI	철수는 "Cheolsu" - top.	어젯밤에 "last night"	마당에서 "in the yard"	톱으로 "with a saw"	나무를 "the tree"-acc.	잘랐다. "cut"- past.
LTI		마당에서 "in the yard"	어젯밤에 "last night"	톱으로 "with a saw"		
TIL		어젯밤에 "last night"	톱으로 "with a saw"	마당에서 "in the yard"		
LIT		마당에서 "in the yard"	톱으로 "with a saw"	어젯밤에 "last night"		
ITL		톱으로 "with a saw"	어젯밤에 "last night"	마당에서 "in the yard"		
ILT		톱으로 "with a saw"	마당에서 "in the yard"	어젯밤에 "last night"		

Experiment 1 : Self-Paced-Reading

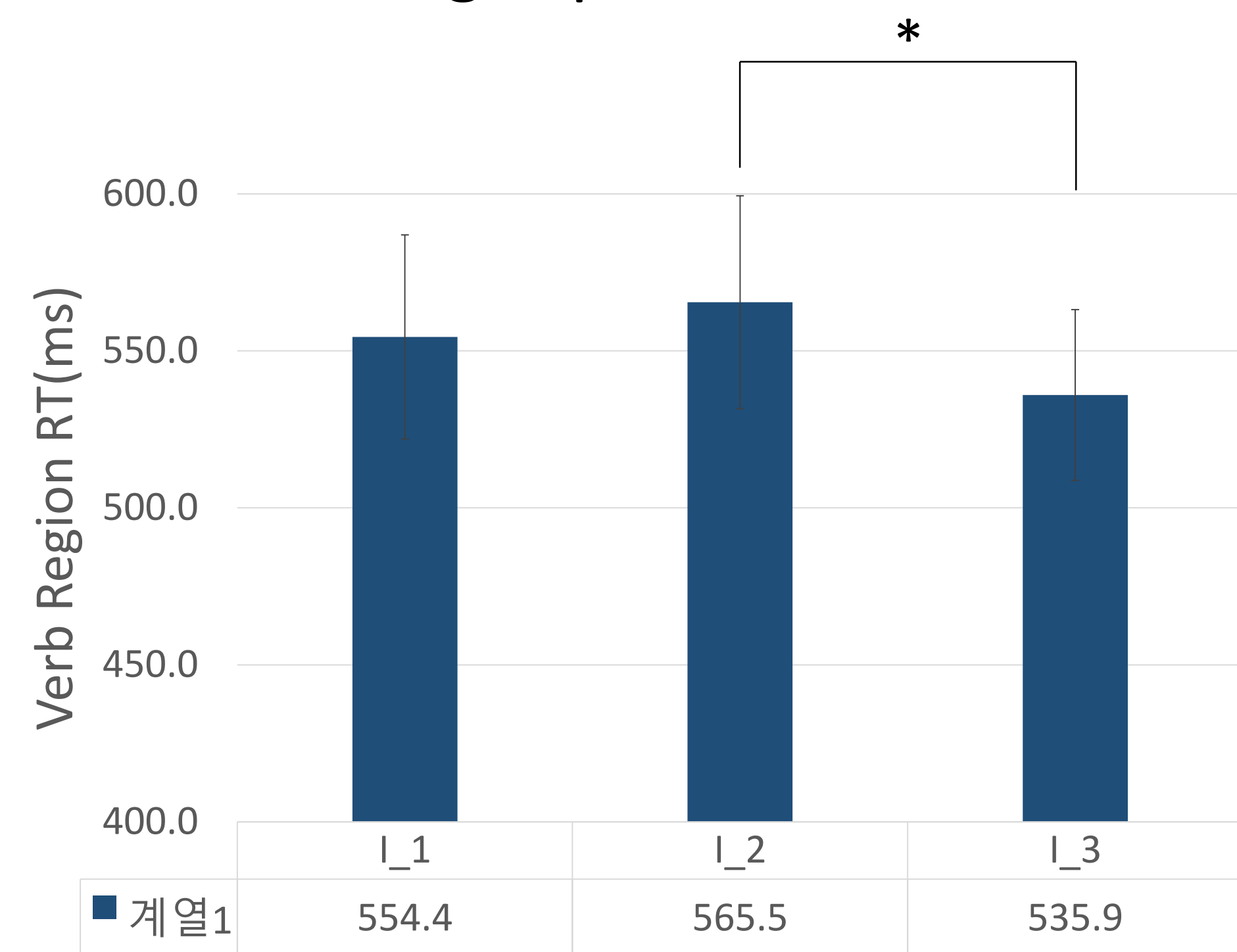
- 36 native Korean speakers(male 21 / mean age 22.9)
- Total 108 sentences(76 fillers)
- Words(phrases) presented in a non-accumulative way

Experiment 2 : Event-Related-Potentials

- 18 native Korean speakers(male 8 / mean age 23.3)
- Total 576 sentences(288 fillers)
- Each word was presented for 500ms, and ISI(Interstimulus interval) was 800ms.
- Critical words for ERPs recording: Each AdvP & verb

Results

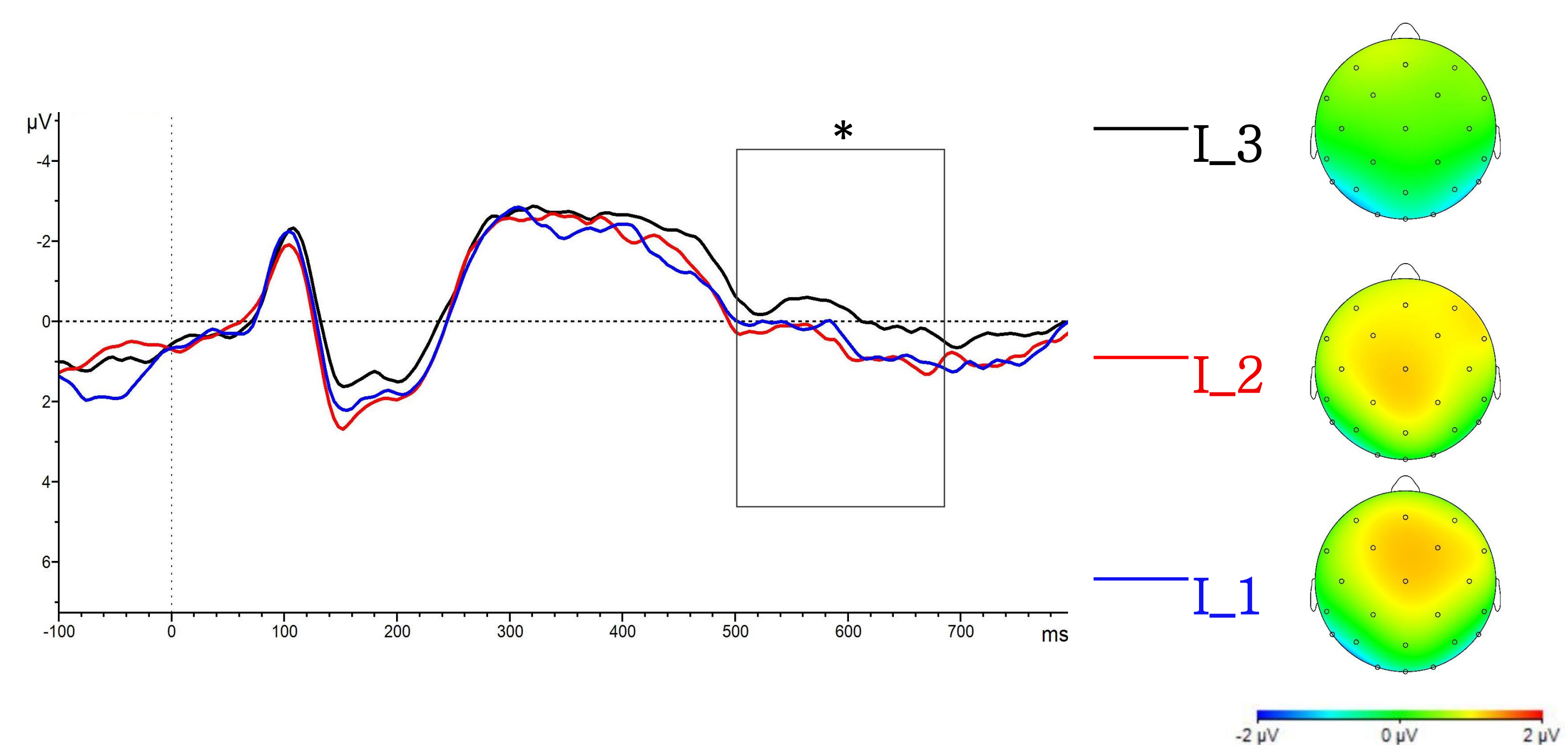
Exp 1 : Self-Paced Reading Experiment



< Figure 1. Mean RTs for verb in different I positions >

- RTs were affected only by the relative positions of I, not by those of T or L.
- When the instrumental AdvP was placed behind the other AdvPs(TLI / LTI), i.e. closest to the verb, the mean RT for the verb was the shortest, and RTs for the other regions(AdvP1~3, DO) were basically the same.

Exp 2 : Event-related Potential Experiment



< Figure 2. Mean voltage to Verb by experiment condition >

- The word order preference observed in Exp 1 was also supported by the results of Exp 2: P600-like ERP was elicited by the verb, if other AdvP(s) intervened between I and the verb.
- Taken together, the results of two experiments indicate that (i) the Instrumental AdvPs are preferably located close to the verb, and (ii) the processing load by the violation of this preference reveals a bit later at the verb position.

Discussion

- The 'temporal before locative' preference reported in the previous production study has not been observed in the present comprehension study: Why?
- The instrumental adverbials are strongly preferred to be placed closest to the verb, not only in the production, but also in the comprehension of Korean sentences: strongest semantic(or rather syntactic: P600!) relation of I with the verb for the event description
- The processing (dis)advantage affects not the processing of the involved AdvP *per se*, but that of the sentence final verb to which the AdvPs should be integrated: A kind of wait-and-see strategy in head-final languages?
- The word order of so-called free word order languages might not be so free at the performance level: More robust psycholinguistic evidence is needed.

Reference

- Min Jae Kwon, Myung Won Choi, Jin Joo Hong, U Pyong Hong. (2010). Zur Kontrolle der relativen Wortstellung von Arguments und Adjunks. *Koreanische Zeitschrift für Deutsche Sprachwissenschaft*, 21(0), 1-21.
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 Behaghel, O. (1932). *Deutsche Syntax: Wortstellung, Periodenbau*. Winter.