Processing verb gaps in a second language

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Introduction

Constructions involving "missing" material

- **Gapping** (Johnson, 2009):
  e.g. *Bill ordered coffee and Jane __ sandwiches.*
- **VP-ellipsis** (**VPE**; Merchant, 2001):
  e.g. *Bill ordered coffee and Jane did ~~order coffee~~ too.*

Questions regarding the processing of "missing" material

- How does structure get built and how is meaning assigned?
- When do these occur in real-time processing?

→ Understudied in L1 processing and never studied in L2 processing

→ **This study**: Processing of **Gapping** by L1-Korean L2ers of English

Kaan, Wijnen & Swaab (2004) on adult L1 English

- Event related potential (ERP) study
  - Verbs were manipulated such that the NP object in the **Gapping** conjunct was either a plausible object or implausible object of the **gapped verb**
    e.g. *Ron **took** / ***sanded** the planks for the bookcase, and Bill [e] the **hammer** with the big head.*

    (Kaan et al., 2004, p. 591, Appendix A, [24])
- ERPs at the head noun of the object in the **Gapping** conjunct (e.g. *hammer*) in Implausible condition vs. Plausible condition
  - Semantic anomaly effect (N400) → Syntactic integration effect (P600)
    → Native speakers identified a **verb gap** and reconstructed the verb information at the **gap** site

Research gaps addressed in current study

- No well-matched baseline conditions
  → **Gapping** as critical conditions and **VPE** as baseline conditions
- Element types following the **gapped verb** were not controlled:
  e.g. a complex NP object containing a PP modifier or a direct object NP plus an indirect object NP
  → Conjoined direct object NP (e.g. *hammer and nail*)

Can L1-Korean L2ers of English posit a verb gap and reconstruct the verb information in real time?

Method

Participants

	English native speakers (L1-English; *n* = 53)	L1-Korean L2ers of English (L2-English; *n* = 48)
Age	21.6 (*SD* = 4.7)	22.7 (*SD* = 3.0)
Proficiency (Max = 50)	38.9 (*SD* = 5.9)	30.7 (*SD* = 8.8)

Procedure

1. Language background questionnaire
2. English proficiency test (Brown, 1980)
3. Self-paced reading task
   - 20 critical sentences (modeled on Kaan et al., 2004) + 50 fillers
   - Comprehension question followed each item
   - 2 × 2 Latin square design
     Factors: ***Construction*** (**Gapping** vs. **VPE**-baseline);
     Plausibility (Plausible [P] vs. Implausible [I])

Segments	1	2	3	4	5	6	7	8 critical	9 spill-over	10
(a) **Gapping-P**	Bill	ordered	coffee	and tea	at the cafe,	and	Jane	[e] sandwiches	and cake	at the bakery.
(b) **Gapping-I**	*Bill	drank	coffee	and tea	at the cafe,	and	Jane	[e] sandwiches	and cake	at the bakery.
(c) **VPE-P**	Bill	ordered	coffee	and tea	at the cafe,	and	Jane	did [e]	too	with his brother.
(d) **VPE-I**	Bill	drank	coffee	and tea	at the cafe,	and	Jane	did [e]	too	with his brother.

Note. The **VPE** conditions were included as a baseline; the so-called **VPE**-I condition items were not themselves 'implausible' but made use of the same verbs as the **Gapping**-I condition items as a control.

Data analysis on residual Reading Times (RTs)

- Mixed-effects regression: *Residual RT ~ construction * plausibility + (construction * plausibility | participant) + (construction * plausibility | item)*

Results

RQ: YES!

- Comprehension accuracy
  L1-English: 89.3% (*SD* = 4.3); L2-English: 87.3% (*SD* = 4.4)

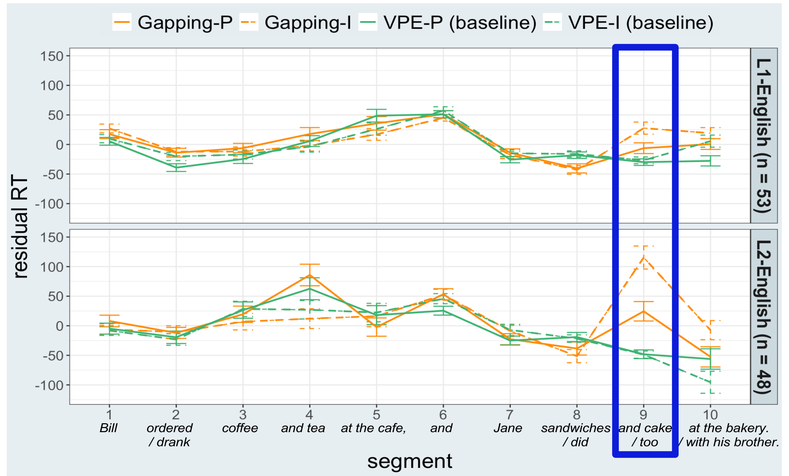

Figure 1. Mean residual RTs per segment, condition and group

- Mixed-effects regression analysis at Segment 9
  - Main effect of ***Construction*** in both groups
  - Main effect of ***Plausibility*** in both groups
  - Significant interaction between ***Construction*** and ***Plausibility*** in both groups
- Follow-up pairwise comparisons at Segment 9
  - No difference between the **VPE** conditions in either group
  - **Gapping-P < Gapping-I** in both groups
    → Processing difficulty right after the **gap** region when a verb filler is implausible for the following direct object

References

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Conclusion

L2ers with relatively high proficiency

- are able to posit a **verb gap** and reconstruct the verb information at the **gap** position in **Gapping**
- can make use of syntactic information during real-time processing in the same way native speakers do

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