

An NLP analysis of **VP-ellipsis** and **Gapping** in EFL input

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OVERVIEW

1. Previous literature on **VP-ellipsis (VPE)** and **Gapping**
2. The present study
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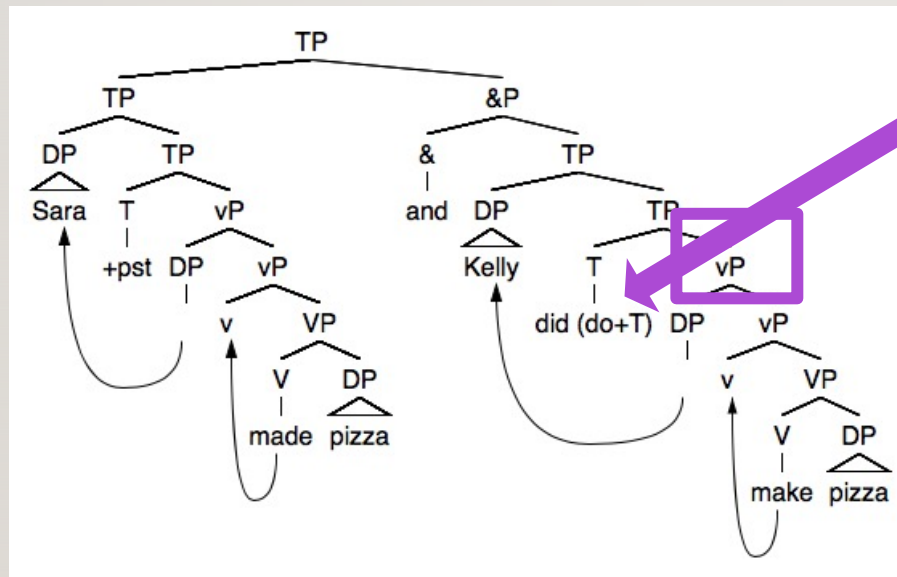
Previous literature on VPE and Gapping

VPE

- VP deletion

(Chomsky, 1995; Fiengo & May, 1994; Hankamer & Sag, 1976; Sag, 1976)

(1) Sara made pizza, and Kelly did [e] too.



Do-support

if the verb in the antecedent
clause is a simple present
or preterite lexical verb

L2 ACQUISITION OF VPE

- Parallelism constraint

(2) a. Someone took the wood out to the shed last night.
Tom told us that Sally did [e]. (VPE-Active)

b. * The wood was taken out to the shed last night.
Tom told us that Sally did [e]. (VPE-Passive)

(adapted from Duffield & Matsuo, 2009, p. 17, (15))

(for L2 acquisition, see Al-Thubaiti, 2019;
Duffield & Matsuo, 2009; Hawkins, 2012)

DUFFIELD & MATSUO (2009)

- L2ers' knowledge of the parallelism constraint in English **VPE**
- Participants:
 - Native speakers of English ($n = 22$)
 - L1-Dutch L2ers of English ($n = 20$)
 - L1-Japanese L2ers of English ($n = 19$)
 - L1-Spanish L2ers of English ($n = 20$)

Note: According to Duffield and Matsuo, neither the L1 grammars nor the Target Language (TL) input is able to lead L2ers to know that English **VPE** is sensitive to parallelism

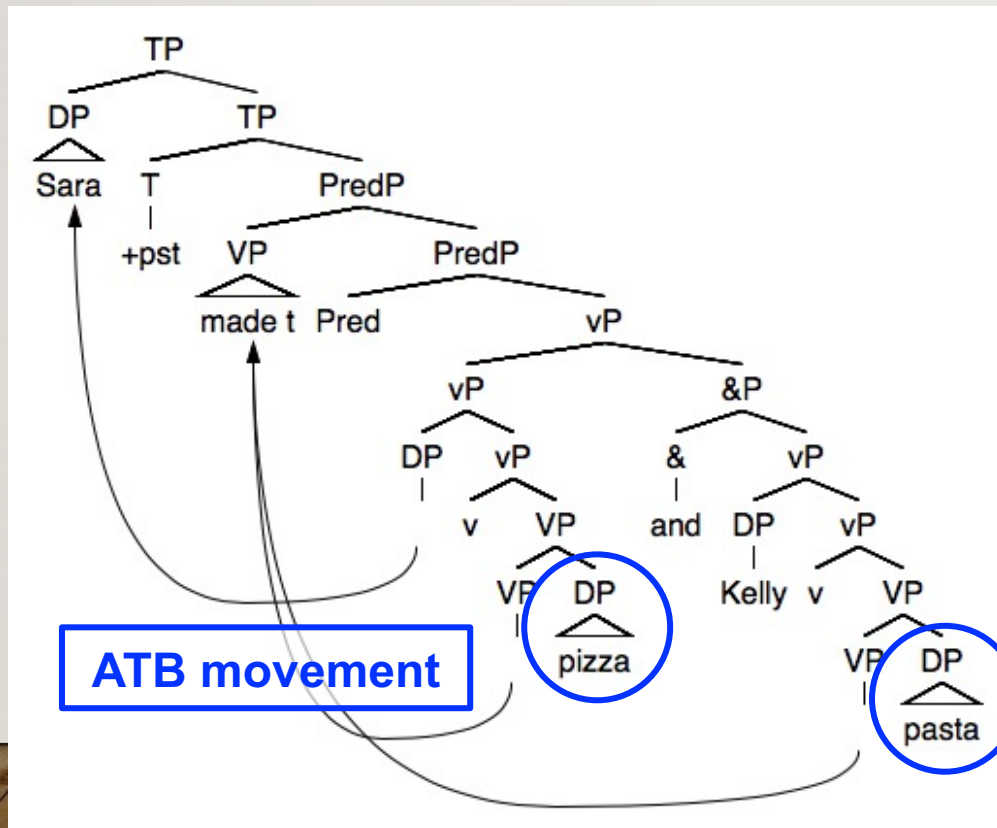
DUFFIELD & MATSUO (2009)

- Judgment task
 - Participants were asked to judge “whether the target sentence is a sensible and accurate completion of the [context sentence]” (p. 312)
- Results: Acceptability judgments (% acceptance)

	VPE-Active	VPE-Passive	Difference
Native speakers of English (<i>n</i> = 22)	90	48	$p < .001$ ***
L1-Dutch L2ers (<i>n</i> = 20)	89	74	$p < .05$ *
L1-Japanese L2ers (<i>n</i> = 19)	68	57	$p < .05$ *
L1-Spanish L2ers (<i>n</i> = 20)	68	62	<i>ns</i>

GAPPING

(3) Sara made pizza, and Kelly [e] pasta.



The VP is unpronounced under conditions of identity with the VP in the other conjunct by **across-the-board (ATB) movement**

(Johnson, 2000, 2009)

L2 ACQUISITION OF GAPPING

- Direction of **Gapping**

(for English, see O'Grady, 1999; for Japanese, see Kanno, 1999; O'Grady, 1999)

- Constraint on **Gapping** direction: Each **head-complement order** predicts the impossibility of a particular **Gapping** direction

(4) a. verb-object languages (e.g., English):

[S ... V ...] [S ... Ø ...] vs. * [S Ø] [S V]

b. object-verb languages (e.g., Japanese):

* [S ... V ...] [S ... Ø ...] vs. [S Ø] [S V]

(adapted from O'Grady, 1999, p. 143, (6))

GAPPING IN ENGLISH: FORWARD GAPPING

(5) a. **Gapping** in the second conjunct:

[John reads Time] and [Sue [e] Newsweek].

b. **Gapping** in the first conjunct:

* [John [e] Time] and [Sue reads Newsweek].

(adapted from O'Grady, 1999, p. 142, (1))

GAPPING IN JAPANESE: BACKWARD

(6) a. **Gapping** in the first conjunct:

[John-wa Time-o [e]] [Sue-wa Newsweek-o yon-da].
[John-TOP Time-ACC] [Sue-TOP Newsweek-ACC read-PST]
'John Time and Sue read Newsweek.'

b. **Gapping** in the second conjunct:

* [John-wa Time-o yon-de] [Sue-wa Newsweek-o [e]].
[John-TOP Time-ACC read-GER] [Sue-TOP Newsweek-ACC]
'John read Time and Sue Newsweek.'

(adapted from O'Grady, 1999, p. 142, (2))

O'GRADY (1999)

- L2ers' knowledge of **Gapping** in English and Japanese
- Participants:
 - Native speakers of English ($n = 10$)
 - L1-Japanese L2ers of English ($n = 34$)
 - Native speakers of Japanese ($n = 10$)
 - L1-English L2ers of Japanese ($n = 75$)
- Acceptability judgment task with 5-point Likert scale
 - Forward **Gapping** ($k = 5$); Backward **Gapping** ($k = 5$)

O'GRADY (1999)

- Results: Gapping in English (max = 5)

	Forward Gapping	* Backward Gapping	Difference
Native Speakers of English ($n = 10$)	3.74	1.42	$p < .001$ ***
L1-Japanese L2ers of English ($n = 34$)	2.33	1.75	$p < .01$ **

O'GRADY (1999)

- Results: Gapping in Japanese (max = 5)

	* Forward Gapping	Backward Gapping	Difference
Native Speakers of Japanese ($n = 10$)	1.26	4.52	$p < .001$ ***
L1-English L2ers of Japanese ($n = 75$)	3.09	2.36	$p < .001$ ***

RESEARCH GAP

- While **VPE** and **Gapping** have received some attention in L2 research, their frequency in L2 input remains unknown
 - The incidence of **VPE** and **Gapping** in the EFL (English as a foreign language) input

The present study

RESEARCH QUESTION

- How (in)frequent are **VPE** and **Gapping** in EFL input to L1-Korean L2ers of English?

Method

DATA COLLECTION

- The EFL input that students from elementary school to high school get in the L1-Korean context
 - 4 types of data
 - L1-Korean EFL teacher speech: 3,311 utterances
 - L1-English EFL teacher speech: 2,037 utterances
 - Spoken input from EFL textbooks: 13,900 utterances
 - Written input from EFL textbooks: 25,398 utterances
- **EFL input corpus: 44,646 utterances**

DATA ANALYSIS

- The data were analyzed in 3 stages in Python
(Python Software Foundation, 2018)
 1. Data were parsed with spaCy and Benepar
(Honnibal & Montani, to appear; Kitaev & Klein, 2018)
 2. (a) **VPE**: A sentence was split into clauses and then a clause containing any auxiliary verb (e.g., *be*, *do*, *have*), modal verb, negation (*not*), or *to*-infinitive was identified; if such a trigger was not followed by another verb or an NP in the clause, that clause was extracted as a VPE candidate
(b) **Gapping**: Clauses that lack a verb were identified
 3. The extracted clauses were manually checked

DATA ANALYSIS

- **VPE** instances were classified into 8 categories
 - (a) **VPE** in a sentence separate from the antecedent
e.g., *I read books. Mommy does, too.*
 - (b) **VPE** in a conjunct clause
e.g., *I read books, and mom does, too.*
 - (c) **VPE** in an adjunct clause
e.g., *I read books because mom does.*
 - (d) **VPE** in a complement clause
e.g., *Mom thinks that I love books, but dad knows that I don't.*
 - (e) **VPE** in antecedent-contained deletion (ACD)
e.g., *I read every book that mom did.*
 - (f) **VPE** in an equative/comparative construction
e.g., *I love books more than mom does.*
 - (g) **VPE** in a tag question
e.g., *Mommy is reading a book, isn't she?*
 - (h) **VPE** in other

Results

RESULTS: EFL INPUT

EFL input type	Sub-corpus	VPE									Gapping
		separate ^a	conjunct ^b	adjunct ^c	complement ^d	ACD ^e	equative/ comparative ^f	tag ^g	other ^h	Total	Total
L1-Korean EFL teacher speech (3,311)		14 (0.42%)	-	-	-	-	1 (0.03%)	-	-	15 (0.45%)	-
L1-English EFL teacher speech (2,037)		12 (0.59%)	-	-	-	-	-	1 (0.05%)	-	13 (0.64%)	1 (0.05%)
Spoken input from EFL textbooks (13,900)	Elementary (9,857)	309 (3.13%)	-	-	-	-	-	-	-	309 (3.13%)	-
	Middle (1,899)	35 (1.84%)	-	-	-	-	-	1 (0.05%)	-	36 (1.90%)	-
	High (2,144)	15 (0.70%)	-	-	-	-	-	9 (0.42%)	-	24 (1.12%)	-
	Sub-total	359 (2.58%)	-	-	-	-	-	10 (0.07%)	-	369 (2.65%)	-
Written input from EFL textbooks (25,398)	Elementary (4,160)	68 (1.63%)	-	-	-	-	-	-	-	68 (1.63%)	-
	Middle (10,963)	90 (0.82%)	-	-	-	-	3 (0.03%)	14 (0.13%)	-	107 (0.98%)	-
	High (10,275)	18 (0.18%)	-	1 (0.01%)	-	-	3 (0.03%)	7 (0.07%)	-	29 (0.28%)	1 (0.01%)
	Sub-total	176 (0.69%)	-	1 (0.00%)	-	-	6 (0.02%)	21 (0.08%)	-	204 (0.80%)	1 (0.00%)
TOTAL (44,656)		561 (1.26%)	-	1 (0.00%)	-	-	7 (0.02%)	32 (0.07%)	-	601 (1.35%)	2 (0.00%)

Note. The number of utterances for each (sub-)corpus is in parentheses. The eight sub-categories for VPE are: ^aVPE in a separate sentence, ^bVPE in a conjunct clause, ^cVPE in an adjunct clause, ^dVPE in a complement clause, ^eVPE in antecedent-contained deletion (ACD), ^fVPE in an equative/comparative construction, ^gVPE in a tag question, and ^hVPE in other. The two categories for Gapping are ⁱsubject-reading Gapping and ^jobject-reading Gapping.

SUMMARY

- **VPE** appeared 602 times (1.35%)
- **VPE** occurred mostly as a separate utterance in a dialogue (561 cases, 1.26%)
(7) Q: Will you help me?
A: Sorry, I can't.
- There was no **VPE** at all in a conjunct clause
- **VPE** occurred only once in an adjunct clause (0.00%)
(8) It helps students study whenever and wherever they want to.
- **Gapping** was extremely rare (2 cases, 0.005%)
(9) Can I have the boys make one line here and our girls the other line here?

Discussion & Conclusion

KEY QUESTIONS TO FOLLOW

- Could such input alone lead Korean EFL learners in Korea to learn subtle contrasts between **VPE** and **Gapping** in English?

GRAMMATICALITY CONTRAST

- **VPE** in a conjunct clause
(10) Sara made pizza and Kelly did [e] too.
- **VPE** in an adjunct clause
(11) Sara made pizza because Kelly did [e].
- **Gapping** in a conjunct clause
(12) Sara made pizza and Kelly [e] pasta.
- **Gapping** in an adjunct clause
(13) * Sara made pizza because Kelly [e] pasta.

(paradigm adapted from Schwartz, 1999, p. 638, (6a)–(6d))

INTERPRETATION CONTRAST: GAPPING

(14) Mom hugged the boy at home and dad [e] in the park.

a. Subject reading (SR):

‘Mom hugged the boy at home and **dad** hugged the boy in the park.’

b. Object reading (OR):

‘Mom hugged the boy at home and mom hugged **dad** in the park.’

→ **ambiguous**

INTERPRETATION CONTRAST:VPE

(15) Mom hugged the boy at home and dad did [e] too.

a. SR:

‘Mom hugged the boy at home and **dad** hugged the boy at home.’

b. OR:

* ‘Mom hugged the boy at home and mom hugged **dad** at home.’

→ unambiguous

QUESTIONS TO BE ADDRESSED

- Do L1-Korean L2ers of English come to know the contrast between licit vs. illicit **VPE** and **Gapping** in English?
- Do L1-Korean L2ers of English come to know the contrast between possible vs. impossible interpretations of **VPE** and **Gapping** in English?

→ **Dissertation project (Hwang, 2020)**

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