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Reconsidering Intervention: A Case of Japanese EFL Learners' Production Choice

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Introduction

Topic: Intervention in L2 Production of ORCs

(1) a. The cat that is kissing the dog (SRC)
b. The dog that the cat is kissing (ORC)

Observation 1

ORCs are harder to comprehend and produce than SRCs in L1 acquisition due to the presence of the subject DP in the RC.
(Adani 2012, Belletti et al. 2012, Friedmann et al. 2009)

◎ This difficulty is assumed to emerge as a violation of Relativized Minimality (RM). (Villata, Rizzi, & Franck 2016: 78)

(2) a. The cat that △ is kissing the dog (SRC)
|___local___|
b. The dog that the cat is kissing △ (ORC)
|_____<intervenor>_____|
*local

Introduction

Observation 2

Japanese EFL learners do not exhibit a significant intervention effect when comprehending the ORCs in English.

⇒They don't violate the RM, do they?

◎L1 grammatical knowledge can help nullify this effect in L2 acquisition if the relevant structure is sufficiently similar between the two languages. (Fujimori et al. 2022, Nakayama et al. 2024)

(2) a. [$_{DP}$The dog [$_{CP}$that [$_{TP}$the cat [$_{VP}$is kissing △]]]].

b. [$_{DP}$[$_{CP}$[$_{TP}$Neko-ga [$_{VP}$△ kisusiteiru]]] inu].

Introduction

Observation 3

L2 learners of English frequently tend to produce SRCs in passive form when attempting to construct ORCs in writing.

(Fujimori et al. 2023, Suzuki & Hirakawa 2018, Xia et al. 2022,)

(3) a. The dog that the cat kissed. (ORC)

b. The dog that was kissed by the cat. (passive SRC)

⇒Does this tendency reflect L2 learners' difficulty stemming from structural intervention effects on the production of ORCs?

Main Purpose

To explore this question using the elicitation-experiment data from Japanese intermediate EFL learners.

Previous Studies

L1 Acquisition

Hu, Gavarró, Vernice, & Guasti (2016)

Task—picture-sentence matching
Participants—120 Chinese children (3 ~ 8 years of age)
Results—preference for SRC over ORC
This preference persists as they grow older.
Finding—ORCs are difficult due to an intervening subject.

Friedmann, Belletti, & Rizzi (2009)

Tasks—picture-matching and sentence-scenario
Participants—22 Hebrew children (3;7 ~ 5 years of age)
Results—55% for ORCs with a lexical DP
79% for ORCs without a lexical DP (free ORC)
('Show me the one that the boy is wetting.')
Finding—The difficulty with the ORC is selective, depending on the (dis)similarity in feature between the relative head and the intervening subject.

Previous Studies

L2 Acquisition

Yoshimura, Nakayama, & Fujimori (2021)

Participants—128 Japanese college EFL learners in Japan (Low, *n*=64, mean TOEIC=442.8; Upper-low, *n*=64, mean TOEIC=530.1)

Task—Reading comprehension with picture selection

Target—ORCs under four [+/-animate] conditions ([+AN][-AN]; [-AN][-AN]; [-AN][+AN]; [+AN][+AN])

Finding—The L2 learners performed well on the reading task, with the range of average correct response rates between 63.3% and 81.3%.

Claim—Japanese EFL learners can adopt a strategy to mitigate the intervention effect in English once they identify structural similarities between L1 and L2 ORCs. (Observation 2)

Previous Studies

L2 Acquisition

Fujimori, Yoshimura, & Nakayama (2023)

Participants－16 Japanese college EFL learners in Japan (mean TOEIC=Reading 234.4, Listening 273.4, Total 507.8, CEFR B1)

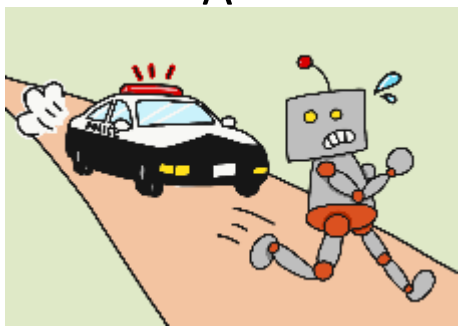
Task－Picture-cued RC completion in writing

(5) 「マリさんにBのパトカーを選ぶように伝えましょう」

'Let's tell Mari to select the police car in B.'

Mari

A



B

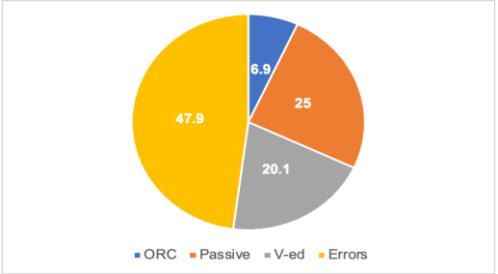
Mari, select the picture of the police car _____.

Previous Studies

Target—ORCs under four [+/-animate] conditions
20 slides: 12 ORCs and 8 SRCs

Findings—A preference for passive SRCs over ORCs, with percentages ranging from 20.8% to 31.3%, depending on the [+/- animate] nature of the relative head. A relatively high error rate of 47.9%

Analysis—A desire to get a [+TOP] argument into sentence-initial position (Pinker, Lebeaux, & Frost 1987, Synder & Hyams 2015)



When the direct object is the discourse topic, there is a strong bias to describe the event in the passive voice.

[+Topic] argument] ⇒ [$_{TOP}$DP] be + V-ed

The police car that is followed by a sailor.

Previous Studies

Xia, White, & Guzzo (2022)

Participants－39 Chinese EFL learners in Canada
(13 intermediate + 26 advanced)
16 NSE

Task－Reading comprehension(with pxs and self-paced)

Target－SRCs and ORCs

Finding－The Chinese learners did not exhibit significant difficulty in comprehending ORCs.
Accuracy for SRCs was significantly higher than for ORCs in all groups, a processing effect.

Suzuki & Hirakawa (2019)

Participants－6 heritage Chinese speakers in Japan (n= 6)

Task－Picture elicitation of SRCs and ORCs in Chinese under 2 conditions: [+] [+] and [+] [-].

Finding－The heritage speakers preferred passivized RCs to ORCs for 80.0% of the time, particularly in the case of [+] [-].

Research Questions

Does the preference to passive SRCs reflect L2 learners' attempts to avoid the intervention effect in the structure of ORCs, similar to those in L1 children?

(Recall that L2 learners can mitigate the intervention effect during reading thanks to their L1 grammatical knowledge.)

What is the nature of intervention in the production of ORCs in L2 acquisition?

Is it comparable to that observed in L1 acquisition?

Experiment

Participants－28 Japanese college students in Japan
(2 groups based on TOEIC L&R scores: (*n*=14,
Group 1: mean TOEIC score 602.57, SD 32.96;
G2: 528.93, SD 51.86;) *t*(26)=4.545, *p*<.001).

Target－ORC types under 4 [+/- animate] conditions: ORC 1
[-] [-], ORC 2 [-] [+], ORC 3 [+] [-], ORC 4 [+] [+]
SRC types under 3 [+/- animate] conditions: SRC 1
[-] [-], ORC 2 [-] [+], ORC 3 [+] [-]

Task－Picture-cued writing completion of RCs (Crain & Thornton 1998)

(6)

Kota

A

A helicopter struck a roller coaster.

B

A roller coaster struck a helicopter.

「コウタ君にBのヘリコプターを選ぶように指示しましょう。」

Answer sheet: Kota, select the picture of the helicopter _____.

Experiement

(8) Example slides for each type of ORC

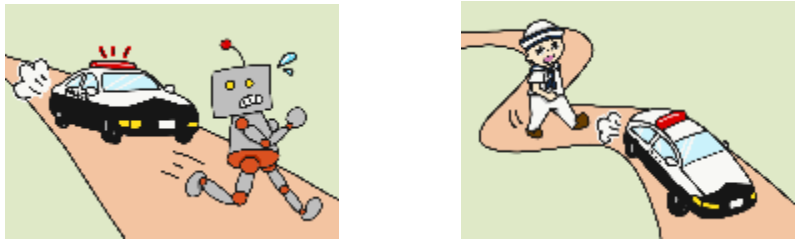
a. ORC 1 [-][-]

(**A**) B

A: A roller coaster struck a tractor.
B: A bus is chasing a tractor.
Target: The tractor that the roller coaster struck.

b. ORC 2 [-] [+]

A (**B**)



A: A police car is chasing a robot.
B: A sailor is chasing a police car.
Target: The police car that the sailor is chasing.

c. ORC 3 [+] [-]

A (**B**)

A: A fan is taking a picture of a soccer player.
B: A ball hit a soccer player.
Target: The soccer player that the ball hit.

d. ORC 4 [+] [+]

(**A**) B

A: A girl is hugging a boy.
B: A boy with a hood is pointing at a girl.
Target: The boy that the girl is hugging.

Experiment

Materials—2 examples in the practice session
21 slides were used: 3 slides each for 4 ORC types
3 slides each for 3 SRC types

Table 1. Numbers of RC responses by type and group

ORC vs. SRC	ORC					SRC			
Type	I	II	III	IV	Total	I	II	III	Total
Animacy	[-] [-]	[-] [+]	[+] [-]	[+] [+]		[-] [-]	[-] [+]	[+] [-]	
Test Tokens	3	3	3	3	12	3	3	3	9
Group 1 (n=14)	42	42	42	42	168	42	42	42	126
Group 2 (n=14)	42	42	42	42	168	42	42	42	126
Total (n=28)	84	84	84	84	336	84	84	84	252

588 responses in total: 336 for ORCs and 252 for SRCs
(294 responses per group)

Results

Group

Table 2. Mean appropriate response rates by RC types (%)

Type	ORC		SRC	
Group	G 1	G 2	G 1	G 2
Appropriate Response Rate	69.05	63.69	86.51	84.92

(7) Appropriate ORC Response Types

a. Target ORC
The helicopter that the roller coaster struck.

b. Passive SRC
The helicopter that was struck by the roller coaster.

c. Reduced Passive V-ed
The helicopter struck by the roller coaster.

Results

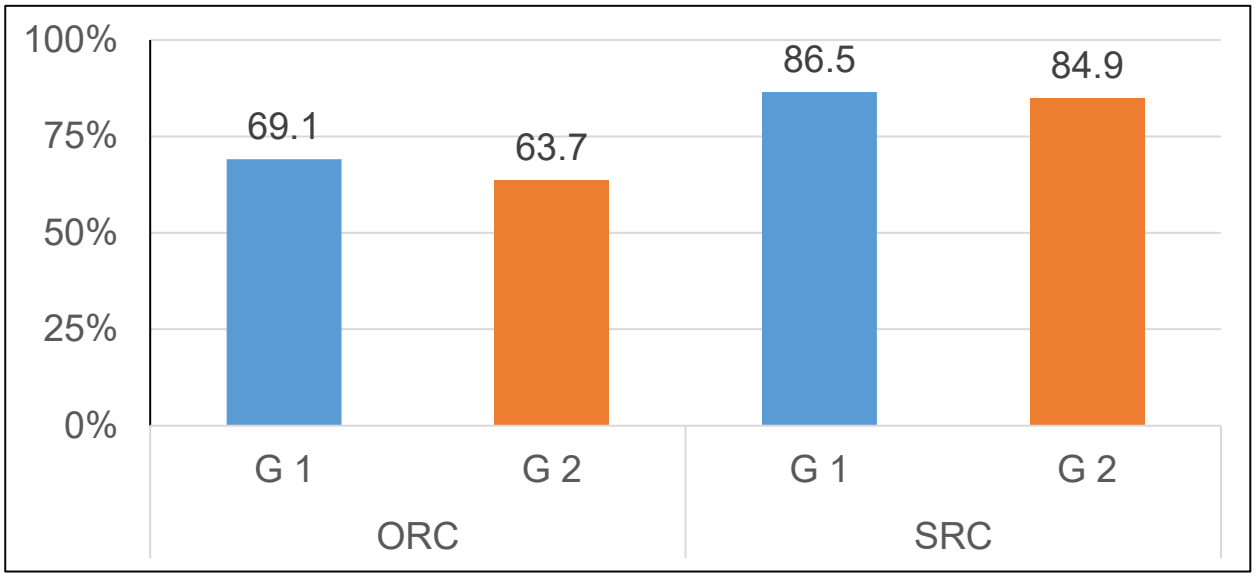


Figure 1. Appropriate response rates by group and RC type

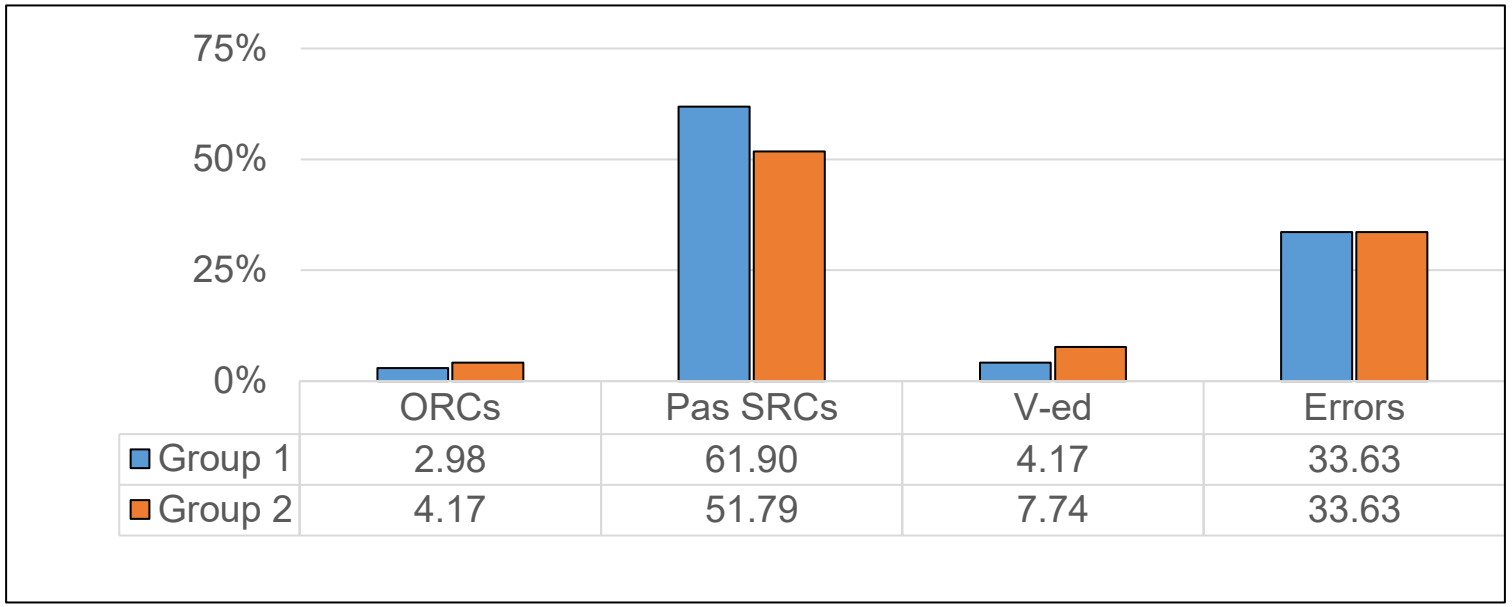
Finding 1

SRCs evoked more correct responses than ORCs in both groups ($F(1,584)=5.183$, $p=.023$).

Finding 2

G1 evoked more correct responses than G2 in ORCs and SRCs ($F(1,584)=5,183$, $p=023$).

Results



	ORCs	Pas SRCs	V-ed	Errors
Group 1	2.98	61.90	4.17	33.63
Group 2	4.17	51.79	7.74	33.63

Figure 2. Mean correct response rates by response type and group

Finding 3—Passive SRCs were produced far more frequently than target ORCs in both groups (p=.001).

Finding 4—Errors were made more frequently than ORCs in both groups (p=.001).

Results

Table 3. Mean breakdown % by group and response pattern (%)

Condition	ORC 1		ORC 2		ORC 3		ORC 4	
Animacy	[-AN]	[-AN]	[-AN]	[+AN]	[+AN]	[-AN]	[+AN]	[+AN]
Group	G1	G2	G1	G2	G1	G2	G1	G2
ORC	2.4	4.8	7.1	7.1	0.0	2.4	2.4	2.4
Passive SRC	59.5	47.6	57.1	50.0	61.9	52.4	69.1	57.1
V-ed	4.8	14.3	0.0	2.4	4.8	7.1	7.1	7.1
Error	33.3	33.3	35.7	40.5	33.3	38.1	21.4	33.3

Results

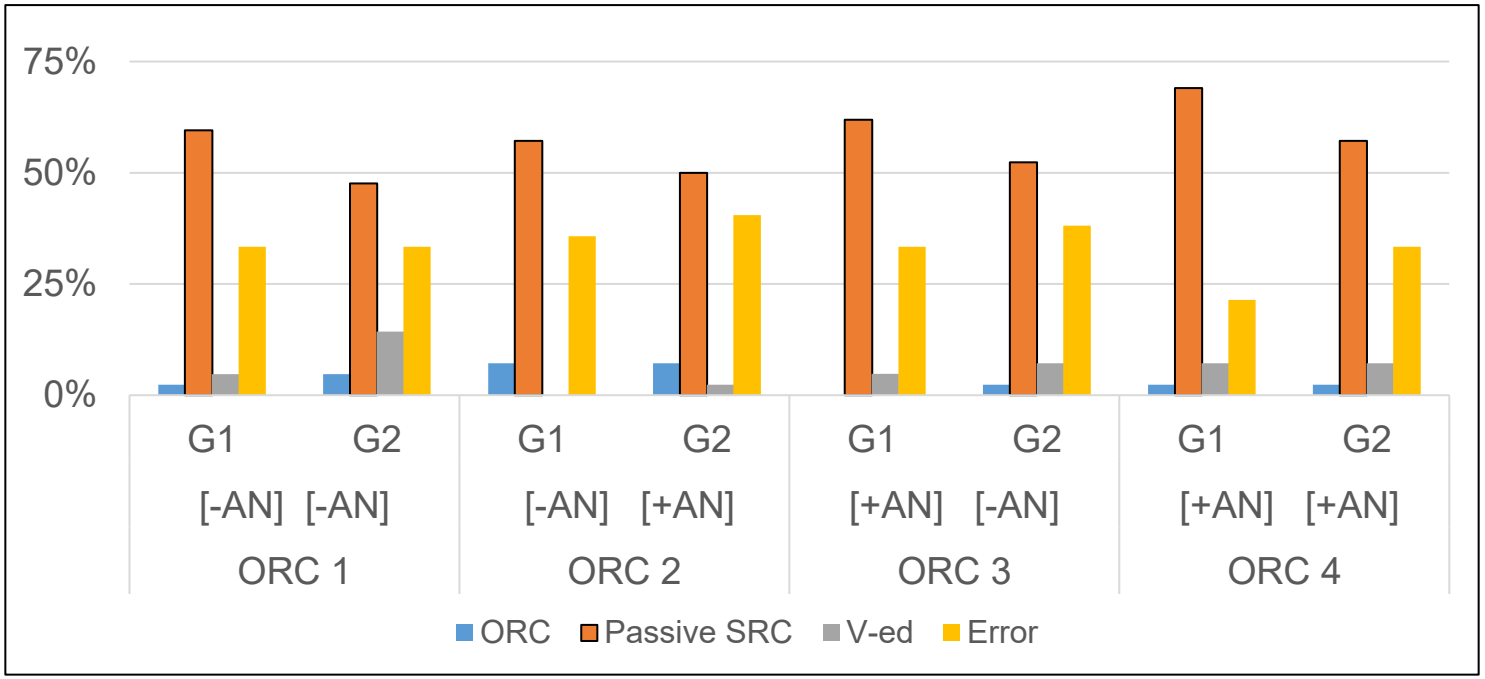


Figure 3. Mean breakdown by group, ORC type, and response pattern.

Finding 5—Neither the difference in ORC type nor the difference between groups had a significant effect on response distribution patterns ($p>.30$, $p>.6$, respectively).

Results

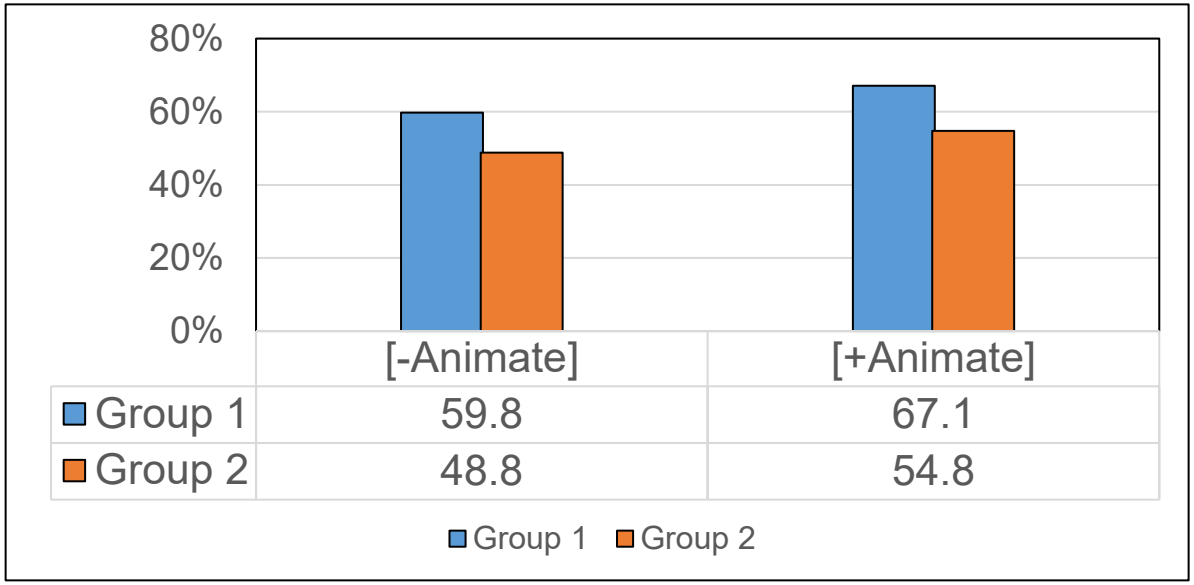


Figure 4. Mean passive SRC response rates by group and [+/-animate] head

Finding 6—Slightly more passive SRCs were generated in both groups when the relative head exhibited the [+animate] feature.

Note that passive SRCs occurred in approximately 70% of responses within ORC 4 of G1.

Results

Individuals

[Passive SRCs]

Table 4. Number of participants who produced passive SRCs over 60% of the time, exceeding 6 out of 12 tokens.

	60%~	70%~	80%~	90%~	100
Group 1 (*n*=14)	1	2	1	2	1
Group 2 (*n*=14)	2	2	0	0	1

Finding 7－Half of the participants in Group 1 produced passive SRCs over ORCs 60% of the time, compared to about 35% of those in Group 2.

Finding 8－One participant from each group responded with passive SRCs 100% of the time.

Results

[Errors]

Finding 9 – Overall, error rates were relatively high in both groups, exceeding 30% across all types of ORC, with a significant difference observed between ungrammatical responses and ORC-targets ($p < .001$). (Figure 3)

Finding 10 – One participant in Group 1 and three in Group 2 made made 6 errors while another patient in Group 1 made 8 errors out of 12 tokens.

Table 5. Error rates by group and ORC type (%)

Group	ORC 1	ORC 2	ORC 3	ORC 4
G 1	33.33	35.71	33.33	21.43
G 2	33.33	40.48	38.10	33.33
Total	33.33	38.10	35.71	27.38

Finding 11 – Overall, the animacy feature of either the relative head or the embedded subject did not affect the error rates in both groups, except in the case of ORC 4 in Group

Discussion

Finding 1 confirms that SRCs are easier to produce than ORCs among Japanese EFL learners, demonstrating that this is a general phenomenon in both L1 and L2 acquisition.

- This asymmetry appears to stem from intervention effects in the ORC structure. However, as their English proficiency improves, the asymmetry decreases. (Finding 2)

Finding 3, alongside Finding 8, highlights a relatively strong tendency among Japanese EFL learners to favor passive SRCs over ORCs, further supporting this common response behavior in L2 acquisition.

- This tendency can be interpreted as their attempt to respond to the topic-prompt direction of the task, which motivates them to elevate the patient/theme object to the subject position within the construction (Pinker et al. 1987, Snyder & Hyams 2015).

Discussion

Findings 6 and 7 imply that passive SRCs become increasingly accessible to Japanese EFL learners as their English proficiency improves.

➡ This increased accessibility encourages advanced learners to opt for the passive SRC over the ORC more frequently.

Our assumptions based on Collin's (2005) smuggling

(9) a. [[$_{head}$ DP2][$_{CP}$ [V **DP2** [$_{TP}$ DP1 [$_{vP}$ … [V DP2]]]]] (ORC)

relativization ↑ smuggling ↓

b. [[$_{head}$ DP2[$_{CP}$[$_{TP}$**DP2** [[V **DP2**] by DP1…[$_{vP}$ [V DP2] (passive SRC)

relativization ↑ raising ↓↑ smuggling ↓

(9b) is harder for L2 learners to produce than (9a), as the ORC requires relativization whereas the passive SRC involves raising before relativization. (See Belletti and Guasti (2015) for comparable findings on passive SRC versus ORC among L2 learners of Italian.)s

Discussion

Findings 9 and 10, alongside Finding 4, suggest that nearly 35% of Japanese college students have not yet developed a firm working knowledge of producing ORCs in English.

- They need to be provided with production practice in formal learning settings. Such training is necessary for them to transition their knowledge into effective language production.

Finding 5, along with Finding 11, indicates that the match or mismatch in animacy between the relative head and the embedded subject does not affect Japanese EFL learners in producing ORCs in L2 English.

- This does not provide supporting evidence for the *f*RM (Belleti & Rizzi 2013).

Summary

For Japanese EFL learners:

- SRCs are easier to produce than ORCs, likely due to intervention effects predicted in ORC constructions.
- Passive SRCs are strongly preferred over active ORCs in production. This preference appears to stem from their tendency to elevate the patient/theme-topic DP to the subject position of the sentence, along with their response to predicted intervention effects.
- Passive SRCs become more accessible in production as English proficiency improves. This is assumed to result from the structural complexity involved in passive SRC constructions, which require raising, along with smuggling and relativization.
- An apparent asymmetry is observed between comprehension and production, suggesting the need for intensive training to transit their knowledge into production.

Conclusion

Assumption: L1 ORC structural knowledge helps Japanese EFL learners in mitigating the intervention effect in ORC construction during L2 acquisition (Fujimori et al., 2024).

Experimental Evidence: Japanese EFL learners demonstrated proficiency in reading ORC constructions in English (Yoshimura et al., 2021).

Conclusion 1: Both SRCs and ORCs are appropriately represented in L2 grammar overall, and the difference between them reflects a production effect among L2 learners (see Xia 2022 for a processing effect).

Conclusion 2: The intervention effect manifests as a strong tendency toward passive ORCs in production. This does not indicate a syntactic problem but rather something influencing L2 production performance.

Answer to Research Question 1: The nature of intervention does not pose a representational issue in the production of ORCs in L2 acquisition.

Answer to Research Question2: Intervention effects are not comparable to those observed in L1 acquisition.

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