Language use matters: Construction-verb fusion in the comprehension of dative alternation in Korean

In Construction Grammar, an argument structure construction integrates or *fuses* with a verb to constitute overall sentence meaning[1]. One core factor for the degree of fusion between the two components is language use. Interfacing with usage-based models, constructionist accounts favour the idea that people's perceptual experience with actual language use affects cognitive representations of language[2][3][4]. Dative alternation in Korean as in (1) provides another interesting testing ground for this issue. A recipient of dative constructions (*Jiho*) can be either case-marked dative or case-marked accusative[5][6], resulting in Dative-Accusative (DA) or Accusative-Accusative (AA), respectively. In this study, we argue that speakers' understanding of DA and AA is contingent on language use, particularly on the interplay between construction frequency and verb frequency in the course of fusion.

   (1) Mina-ka   Jiho-eykey/-lul chak-ul   cwu-ess-ta.[1]
        Mina-NOM Jiho-DAT/-ACC book-ACC give-PST-SE.   'Mina gave Jiho a book.'

Study 1 explored frequency distribution of the two patterns in the Sejong written corpus (891,680 sentences) as a proxy of speakers' language use. We extracted these patterns based on POS-tagging information through *komoran3py*[7] and also cross-checked them manually.
<u>Results</u>: We found an asymmetry between the two patterns: DA (4925 cases) occurred far more frequently than AA (7 cases). This asymmetry suggests that DA may be entrenched more than AA in speakers' language knowledge about dative alternation.

Study 2 investigated speakers' comprehension of DA and AA combined with verb frequency through an online acceptability judgment task (AJT) with a 4-point Likert scale. 24 university students in Korea rated the acceptability of 24 test items by crossing the two patterns and 6 high-frequency (HV) or 6 low-frequency (LV) verbs (Table 1). Their reaction times (RTs) for the judgment of each item were also measured. We used human names as an agent and a recipient arguments, and controlled for the relationship between a recipient and a theme arguments as alienable. Data from the AJT (Z-transformed) and the RT (log-transformed and residualised) were submitted to linear mixed-effects models[8], respectively.
<u>Prediction</u>: 1) Speakers would judge DA to be more acceptable than AA in general, reflecting the asymmetry found in the corpus; 2) Speakers' judgment (and processing speed) would be modulated by the degree of fusion which may be sensitive to construction frequency and verb frequency. Speakers are thus expected to rate DA-HV (sentences with a higher degree of fusion) higher than in DA-LV (those with a lower degree of fusion) whereas little judgmental gap is predicted between AA-HV and AA-LV due to the extremely low frequency of AA.
<u>Results</u> (Table 2): Participants preferred DA over AA in general. Their preference is ascribable to accumulated experience of language use skewed towards DA, leading to stronger entrenchment of this pattern over the other. Whilst no judgmental difference was found within AA, sentences with HV were rated significantly higher than those with LV within DA (β=-0.430, *SE*=0.123, *p*<.001). This contrast supports the interactive role of frequency in verb-construction fusion. Comparison of the RTs in HV and LV controlling for construction frequency yielded no significant difference. The same comparison in DA and AA controlling for verb frequency, however, showed a significant difference only in HV (β=-0.131, *SE*=0.063, *p*<.05). These findings imply a larger contribution of construction frequency to the degree of fusion than verb frequency: construction frequency effects may override verb frequency effects (DA vs. AA in HV), and verb frequency effects may become visible when construction frequency loses its priority in the course of fusion (HV vs. LV in DA).

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[1] Abbreviation: ACC = accusative case marker; DAT = dative marker; NOM = nominative case marker; PST = past tense marker; SE = sentence ender.

Table 1. Verbs used in Study 2 (extracted from the Sejong written corpus)

Type	HV	LV
Verb: # (%[1])	cwu- 'to give': 9693 (0.566)	ssenay- 'to write and submit': 87 (0.005)
	ponay- 'to send': 4868 (0.284)	timil- 'to push in': 85 (0.005)
	kaluchi- 'to teach': 2194 (0.128)	phalamek- 'to bargain away': 84 (0.005)
	pachi- 'to offer': 793 (0.046)	nayliccoy- 'to blaze down': 50 (0.003)
	kenney- 'to hand': 582 (0.034)	tulipwus- 'to pour': 22 (0.001)
	kaph- 'to repay': 560 (0.033)	taymwulli- 'to hand down to': 10 (0.001)

1) % out of the total number of verb use (1,712,762 tokens)
Note. We excluded verbal noun + ha- 'to do' verbs when we extracted verb frequency.

Table 2. Results: AJT and RT

	AJT				RT			
	Raw		Z-transformation		Raw		Treatment[1]	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
DA * HV	3.875	0.333	1.066	0.293	3.442	1.517	0.089	0.369
DA * LV	3.347	0.790	0.636	0.599	3.265	1.749	-0.002	0.388
AA * HV	1.486	0.581	-0.821	0.324	3.122	1.795	-0.042	0.391
AA * LV	1.430	0.577	-0.881	0.366	3.222	2.094	-0.046	0.455

1) treatment: log transformation $\rightarrow$ residualisation; data loss: 3 / 285 cases (1.05%)

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