

## Quantitative evidence on the linguistic analysis of Japanese numeral classifier constructions

Keisuke Kume – University of York

This paper reports on an experimental investigation of definiteness and specificity effects in two types of Japanese numeral classifier (NC) construction the post-nominal construction, where the NC appears between a noun and a case marker (1a); and the floating construction, where the NC follows a case-marker (1b) (CL = classifier):

1. a. Hon san-satsu-o katta.  
book 3-CL-ACC bought  
'I bought three books.'
- b. Hon-o san-satsu katta  
book-ACC 3-CL bought  
'I bought three books.'

Theoretical linguists agree that the distributions of each construction are constrained by definiteness and specificity. However, the precise nature of the constraints is disputed. Huang and Ochi (2014) judge that only the floating quantifier is felicitous in a non-specific context such as (2) (where the preamble ensures a [–definite –specific] interpretation of ‘three books’), whereas Furuya (2012) argues that both constructions are possible. For specific contexts (3–4), Watanabe (2006; among others) argues that only the post-nominal construction is felicitous; but Nakanishi (2008; among others) proposes an adverbial analysis of floating NCs which predicts felicitous occurrence of both constructions in indefinite specific contexts (4).

2. [–definite, –specific] PREAMBLE: Taro does online shopping almost every day.  
Kinoo-wa {hon san-satsu-o / hon-o san-satsu} kaimashita.  
yesterday-TOP book 3-CL-ACC / book-ACC 3-CL bought  
'He bought three books yesterday.'
3. [+definite, +specific] PREAMBLE: Taro has two little sisters.  
Sensyu sono {imooto futa-ri-o / imooto-o futa-ri} yuuenchi-ni  
last.week that little.sister 2-CL-ACC / little.sister-ACC 2-CL amusement.park-to  
tureteikimashita.  
took  
'He took the two sisters to an amusement park last week.'
4. [–definite, +specific] PREAMBLE: Hanako got two PCs and one printer from a friend.  
{pasokon ichi-dai-o / pasokon-o ichi-dai} shigoto yoo ni tsukau-koto ni shimashita.  
PC 1-CL-ACC PC-ACC 1-CL for.work using to decided

‘She decided to use one PC for work.’

One cause of disagreement is methodological: researchers build their arguments essentially on informally collected native language intuitions (including their own), incurring the problems of a limited amount of data and potential expert bias (Sprouse, 2015). To shed a different light on the role of definiteness and specificity in NC position, this study employed experimental techniques including random presentation of multiple test sentences and recruitment of non-linguist judges.

A battery of 36 pairs of test items was created, 12 for each of the three definite-specific permutations in (2–4), with a post-nominal NC and floating NC version within each pair. Twenty native Japanese speakers each judged a subset ( $n = 18$ ) of the items, ensuring that no individual judged both the post-nominal and floating version of the same sentence. They rated the acceptability of each NC sentence as a continuation of its preamble, on a scale of 0 (completely odd) to 6 (completely natural).

Table 1 summarises the results. High ratings ( $\geq 4.7/6$ ) obtained in all conditions except for the floating NC in the [+definite +specific] context. The effect of construction type in each context was analysed using linear mixed effects models. The Likelihood Ratio Test (Winter, 2013) found that construction type significantly affected z-transformed ratings ( $\chi^2(1) = 22.76, p < 0.001$ ), lowering the rating by  $0.92 \pm 0.14$  in the definite but not in the two indefinite contexts. This between-construction difference only in the [+definite, +specific] context provides quantitative evidence for the floating construction being incompatible with definite contexts and, crucially, for the acceptability of both constructions in [–definite,  $\pm$ specific] contexts. This result is consistent only with analyses of floating NCs as adverbials, thereby adding quantitative support to that view.

**Table 1: Mean ratings out of 6 (SD) on the AJT**

	[–definite, –specific]	[+definite, +specific ]	[–definite, +specific]
Post-nominal	4.97 (1.22)	5.05 (1.47)	4.73 (1.51)
Floating	5.20 (1.20)	2.78 (2.03)	4.70 (1.39)

### Selected references

- Furuya, K. (2012). Specificity effects for Japanese, an articleless language. *Studies in the Linguistic Sciences: Illinois Working Papers 2012*, 32–43.
- Huang, C. T. J., & Ochi, M. (2014). Remarks on classifiers and nominal structure in East Asian. In C.T.J. Huang and F. Liu (Eds.), *Peaches and Plums* (pp.53–74). Taipei: Academia Sinica.
- Nakanishi, K. (2008). *Formal properties of measurement constructions*. Berlin: Walter de Gruyter.
- Watanabe, A. (2006). Functional projections of nominals in Japanese: Syntax of classifiers. *Natural Language & Linguistic Theory*, 24(1), 241–306.