

Dynamic Interaction of Animacy and semantic plausibility in Japanese Relative Clause Attachment: Evidence for Processing Redistribution

Chunhua BAI (The University of Tokyo)

Japanese relative clause (RC) attachment exhibits an overall preference for High Attachment (HA) [1], yet it remains unclear whether this preference emerges during early incremental processing or only at sentence-final integration. Previous ERP evidence suggests that attachment prediction may begin before disambiguation [2], but the role of animacy in predictive processing remains unresolved. While research on Chinese RC attachment has shown that animacy can modulate structural preferences [3], little is known about when animacy and semantic plausibility are integrated during Japanese RC processing. We examined whether Japanese RC attachment is driven solely by structural preferences or by the dynamic interaction of multiple cues. If readers rely primarily on structural information, semantic effects should be limited. In contrast, if animacy contributes to predictive processing, semantic effects should be stronger in ani–inani sentences than in ani–ani sentences. We further asked whether processing costs unresolved at early regions are redistributed to later sentence-final integration. Twenty-two native speakers of Japanese participated in a self-paced reading experiment employing a 2 (Animacy: ani–ani vs. ani–inani) $\times$ 3 (Context: High / Both / Low) within-participant design. Prior to the experiment, a separate norming study using five-point attachment ratings validated the semantic manipulation. Reading times were measured across seven sentence regions and analyzed using linear mixed-effects models with participants and items as random factors. The norming study confirmed the intended attachment biases for the High, Both, and Low contexts across animacy conditions. Crucially, linear mixed-effects analyses revealed a significant Animacy $\times$ Context interaction at the head noun region (R4) ($\beta = -26.1$, $t = -3.42$, $p < .001$). In ani–inani sentences, the Low condition yielded longer reading times than the High and Both conditions, whereas semantic differences were attenuated in ani–ani sentences. At the sentence-final region (R7), reading times increased in High contexts ($\beta = 20.4$, $t = 2.18$, $p < .05$), despite earlier facilitation effects. The present findings suggest that Japanese RC attachment cannot be explained solely in terms of structural preference. Instead, animacy and semantic plausibility appear to influence processing at different stages of comprehension, with semantic support facilitating early processing while later integration costs remain. Although further work with larger samples and independently normed materials is needed, the results provide initial evidence that Japanese RC attachment emerges through the dynamic interaction of multiple cues during online processing.

References

- [1] Kamide, Y., & Mitchell, D. C. (1997). Relative clause attachment: Nondeterminism in Japanese parsing. *Journal of Psycholinguistic Research*, 26(2), 247-254.
- [2] Bai, C., Kobayashi, Y., & Hirose, Y. (2014). Processing structurally ambiguous relative clauses in Japanese: Evidence from event-related potentials. Technical Report of the Institute of Electronics, Information and Communication Engineers, 114(176), 1-6.
- [3] Kwon, N., Ong, D., Chen, H., & Zhang, A. (2019). The role of animacy and structural information in relative clause attachment: evidence from Chinese. *Frontiers in psychology*, 10, 1576

Figures and Tables

Figure 1: Reading time at whole region

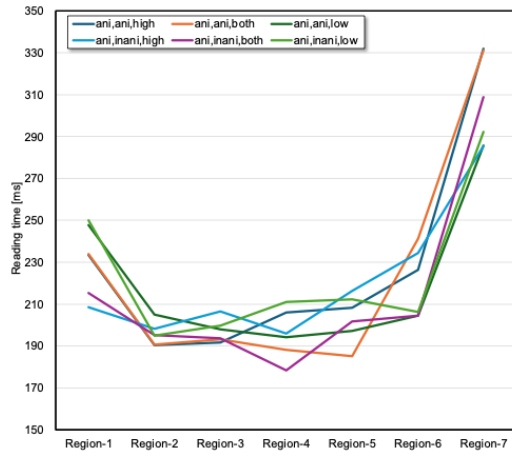


Table 1: Condition and Material

Condition		R1	R2	R3	R4	R5	R6	R7
ani + inani	High	冷蔵庫に	しまわれている	あの	男性料理人の	弁当は	非常に	きれいだ。
		In refrigerator	is stored	that	male chef's	bento is	very	beautiful
	Low	テレビ番組に	出演している	あの	男性料理人の	弁当は	非常に	きれいだ。
		On TV program	appearing	that	male chef's	bento is	very	beautiful
	Both	多くの人に	愛されている	あの	男性料理人の	弁当は	非常に	きれいだ。
		By many people	loved	that	male chef's	bento is	very	beautiful
ani + ani	High	彼氏と	喧嘩している	あの	男性料理人の	令嬢は	非常に	きれいだ。
		With boyfriend	fighting	that	male chef's	daughter is	very	beautiful
	Low	奥さんと	喧嘩している	あの	男性料理人の	令嬢は	非常に	きれいだ。
		With wife	fighting	that	male chef's	daughter is	very	beautiful
	Both	多くの人に	愛されている	あの	男性料理人の	令嬢は	非常に	きれいだ。
		By many people	loved	that	male chef's	daughter is	very	beautiful