Animacy-based predictability effects on the case-marker omission in Japanese

Studies have proposed an intriguing hypothesis that human speech is shaped by functional pressure for speakers to communicate information efficiently (e.g., Piantadosi et al. 2009; Jaeger & Tily, 2010). Supporting evidences are given based on language users’ bias towards maintaining a constant rate of information transmission, which is theoretically proven to minimize information overflow or loss (“Uniform Information Density” Levy & Jaeger, 2007; Jaeger, 2010). For example, contextually predictable elements are subject to acoustic reduction or omission, while less predictable elements are more likely to be produced in their full forms. Little is known, however, about whether speakers’ preferences for omission are affected by their probabilistic knowledge about semantic categories of items being produced. Specifically, this study asks whether people show sensitivity to the relationship between a semantic category of a noun, animacy, and the grammatical role the noun serves in a sentence.

Because of its optionality, the Japanese case marking system allows us to best address this question. In Japanese, the accusative case-marker お can mark any direct object, regardless of its semantic properties. Also, in casual speech, it is often omissible without any changes in meaning.

(1) a. [Animate] Sensee-ga hannin-o/φ mi-ta. (The teacher saw a criminal.)
   teacher-NOM criminal-ACC see-PAST

b. [Inanimate] Sensee-ga shooboosha-o/φ mi-ta. (The teacher saw a fire engine.)
   teacher-NOM fire engine-ACC see-PAST

Based on a corpus of conversational speech, Fry (2003) reported a strong bias for referents of object noun phrases to be inanimate. This is in line with cross-linguistically attested asymmetry of animacy between grammatical roles (“Animacy hierarchy” Comrie, 1989). Theories of communicatively efficient language production predict that the strong association between the object role and animacy affects people’s use of the case-marker お. If speakers are to optimize their speech, they should omit お more often after an inanimate object because it is predictable and hence lean in information.

Experiment: 17 Japanese speakers participated in a recall experiment where they are exposed to 2 sentences at a time (36 pairs). The sentences are controlled for 1) animacy of the grammatical object and 2) the presence of the accusative case-marker. The speakers are later prompted to recall the sentences and recorded.

A mixed logit model analysis of the full factorial design and maximum random effect structure justified by the data revealed that inanimate object arguments are significantly more likely to be produced without お (p<.05). Presence and absence of お in the original sentences had the expected effect (P<.0001) and there was no interaction.

This study thus demonstrates that speakers prefer to produce an object noun phrase without case marked when the grammatical function of the noun is predictable given its semantic properties. The alternation pattern that has been regarded as optional can thus be the subject of systematic modulation of speech under functional pressure. This potentially offers a principled account of privileged status of animate objects in a case marking system (“Differential Case Marking” Aissen, 2000) in term of information-theoretically defined communicatively efficient production.
[References]


