

Lexically Mediated Ungrammatical Structural Priming in Japanese

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Structural priming - the tendency to repeat a recently encountered syntactic structure - has played a central role in debates about the nature of syntactic representations [1]. Competing accounts attribute priming either to the persistence of abstract structural representations [2] or to lexically specific mechanisms in which priming depends on repetition of particular verb-construction pairings [3]. Evidence from English suggests that even ungrammatical structures can induce priming, particularly under verb repetition [4] with similar findings reported for L2 speakers of several Indo-European languages [5]. It remains unclear, however, whether such effects reflect language-specific properties or more general mechanisms of sentence production.

We report two picture-description experiments investigating this issue in Japanese, a typologically distinct language in which grammatical relations are marked by overt case particles rather than word order. This property allows grammaticality to be manipulated while holding word order constant. Participants completed a picture-description task in which each trial consisted of a prime phase, where a picture was presented followed by a sentence and participants judged whether the sentence correctly described the picture, and a target phase, where participants orally described a new picture. Fillers with various structures were included to reduce strategic responding. Prime sentences were (1a) grammatical active, (1b) grammatical passive, or (1c) active with ungrammatical case marking (use of -ni instead of -o). Target scenes (2a and b) were constructed to bias active descriptions, although passive descriptions were also compatible. All analyses were conducted using Bayesian logistic mixed-effects models [6].

In Experiment 1 (33 participants), where verbs were shared between prime and target, participants produced ungrammatical case markings more frequently following ungrammatical primes (8.8%) than following grammatical active (0%; $\beta = 2.76$, 95% CrI [1.05, 4.83]) or grammatical passive primes (1.2%; $\beta = 2.19$, 95% CrI [0.58, 4.11]). There was no clear evidence of a difference between grammatical active and passive conditions ($\beta = -1.46$, 95% CrI [-4.36, 0.99]). In Experiment 2 (33 participants), where verbs differed between prime and target, the effect was substantially reduced (3.5% vs. 0% and 2.5%; all $|\beta| < 1.7$, all 95% CrIs spanning zero).

Taken together, these findings provide the first evidence that ungrammatical structural priming occurs in Japanese, extending previous results beyond Indo-European languages. The stronger effect under verb repetition is difficult to explain under accounts that attribute priming solely to abstract structural persistence and instead supports lexically mediated accounts of structural priming.

(1) Prime conditions

a. Grammatical active

gaka-ga patoka-o oshita

Artist-nominative police car-accusative pushed.

The artist pushed the police car.

b. Grammatical passive

patoka-ga gaka-ni osareta

Police car-nominative artist-dative pushed-passive.

The police car was pushed by the artist.

c. Ungrammatical active

*gaka-ga patoka-ni oshita

Artist-nominative police car-dative pushed.

**The artist pushed to the police car.*

(2) Target

a. The baby pushing the car (Experiment 1).

b. The conductor poking the driver (Experiment 2).

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