

# Frequency effects on the prenominal adjectival participle in L2 English

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## Abstract

This preliminary study investigates effects of frequency on L2 acquisition of the adjectival participle and noun phrase (AedPNs; e.g., *broken glasses*, *found evidence* etc.) in English. American National Corpus, a 14-million word corpus, was used to extract AedPNs and their association measures. Native and L2 speakers' judgment data were collected and will be discussed.

## Adjectival Participle and NP (AedNP) in English

- Adjectival participles are derived from verbs with suffix *-ed* (or *-ing*) and appear either post-nominally (as in (1)) or pre-nominally (as in (2)).
  - The door closed by John is broken now.
  - Please look at that closed door.
- Post-nominal (verbal) AedNPs have an eventive interpretation whereas pre-nominal AedNPs have resultative/stative interpretations (Embick, 2004; Kratzer, 1995).
  - eventive:** *the jewel stolen (yesterday)*
  - resultative/stative:** *the stolen jewel*
- Since the resultative interpretation requires the end point of an action (telic), many pre-nominal adjectival participles are *change-of-state* verbs (Bresnan, 1982; Haspelmath, 1994; Levin & Rappaport Hovav, 1986)
  - a broken vase, a burnt letter, an exploded bomb, an improved skill, some melted cheese, an opened door*
- Therefore, verbs without an inherent end point, such as *activity verbs*, are not felicitous in the pre-nominal position.
  - ? a pushed cart, ? a pulled rope, ? a carried suitcase, ? a danced dancer, ? a jumped clown, ? a cried baby, ? a slept baby*

## Adjectival Participle and NP (AedNP) in Japanese

- There is no post-nominal participle adjective in Japanese. Due to the head-final structure of Japanese, the pre-nominal adjectival participle can be interpreted as a reduced relative clause (Ogihara, 2004; cf. (1) and (2)).
  - taore-ta hashira  
fall-PAST pole  
*a pole which is lying on the ground* (resultative reading; cf. (4))
  - (kinou) taore-ta hashira  
yesterday fall-PAST pole  
*a pole which fell yesterday* (but possibly not lying on the ground now; cf. (3))
- Since the pre-nominal participles in Japanese can be either a reduced relative clause or an adjective, activity verbs are perfectly acceptable in the pre-nominal position in Japanese.
  - oshita nidai  
push-PAST cart  
*a pushed cart* (cf. the card that is pushed)

## Corpus data of AedPNs

- AedPNs were extracted from American National Corpus, a 14-million word American English corpus (Reppen, Ide, & Suderman, 2005). 71,246 prenominal participles tokens were found.
- The number of change-of-state verbs and activity verbs were counted based on Levin's verb classes (1993).
- The corpus data also show that activity verbs are rarely used as AedPNs in English.** As expected, the number of change-of-state verbs is considerably larger than that of activity verbs in the pre-nominal AedPNs.

- change-of-state: 2,966 tokens (e.g., *broke, closed, increased, closed* etc.)
- activity: 196 tokens (e.g., *pushed, kicked, run, drifted, swum, walked* etc.)

- In sum, activity verbs are not allowed in AedPNs in English because the eventive interpretation of AedPNs is not available. In Japanese both change-of-state and activity verbs are acceptable as AedPNs.

	JAPANESE	ENGLISH
prenominal	resultative/stative or eventive	resultative/stative
postnominal	– (not allowed)	eventive

## Research Questions

- Can L2 English learners who are native speakers of Japanese acquire the correct interpretation of English pre-nominal AedNPs (i.e., resultative/stative)?
- Also, what is the role of frequency in this process?

## Analysis 1

- A grammatical judgment task was conducted with a small number of English native and L2 speakers.
  - Items: 100 pre-nominal adjectival participles (50 change-of-state and fifty activity verbs; e.g., *the closed door, the walked baby* etc.)
  - Participants: 5 native speakers of English and five native speakers of Japanese who are learning English as L2. The English proficiency of L2 participants was tested with the MTELP/MELAB (English Language Institute, 1979) (all participants were in the intermediate level).
- A computer-based experiment was written in Psychopy (Peirce, 2012). Prenominal adjectival participles were presented on the computer screen and participants were asked to make grammatical judgment on the 1-7 scale (1=ungrammatical / 7=grammatical).
 

the kicked ball

## Analysis 1 (cont.)

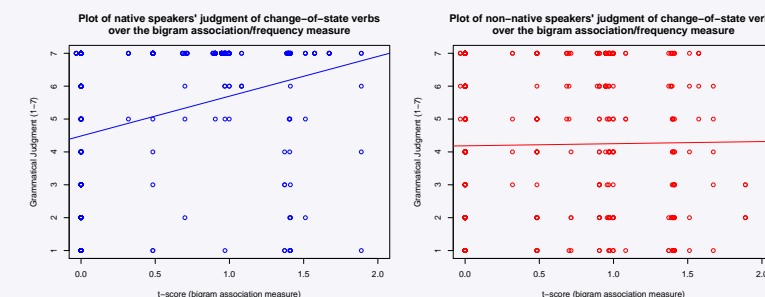
- Results (standard errors are in the parentheses)

	CHANGE-OF-STATE	ACTIVITY
ENGLISH L2 GROUP	4.39 (0.14)	4.04 (0.14)
ENGLISH L1 GROUP	6.32 (0.10)	3.86 (0.15)

- Two sample *t*-tests show that the difference between the change-of-state and the activity verbs is statistically significant among the English L1 group ( $t = 13.22, df = 434.37, p < .01$ ) but not among the English L2 group ( $t = 1.76, df = 497.96, p = .08$ )

## Analysis 2

- The data from Analysis 1 were re-analyzed with frequency of pre-nominal adjectival participles as an additional controlling variable.
- Raw frequency is not a good indicator for the acceptability of phrases since many low-frequency phrases (e.g., *improved work, shattered family* (both of which appeared only once in the 14-million word corpus)) are grammatically acceptable.
  - *t*-scores (as suggested by Manning and Schütze (1999)) are used as a bigram association measure in place of raw frequency
- Linear regressions using grammatical judgement scores and frequency scores (*t*-scores) for L1 English group and L2 English group.
- Results



## Conclusions

- Intermediate English L2 speakers who speak Japanese as native language failed to detect the ungrammaticality of activity verbs in the prenominal adjectival participle phrase.
  - Possibility of the L1 influence/transfer
- The association measure (*t*-score) shows a significant effect only among the L1 English group, but not in the L2 English group.
  - Some systematic difference in the sensitivity to word frequency among L1 and L2 speakers
- A more careful study will elucidate the exact nature of these influences.

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