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)).
  (1) The door closed by John is broken now.
  (2) Please look at that closed door.
• Post-nominal (verbal) AedPNs have an eventive interpretation whereas pre-nominal AedPNs have resultative/stative interpretations (Embick, 2004; Kratzer, 1995).
• Since the resultative interpretation requires the end point of an action (telic), many pre-nominal adjectival participles are change-of-state verbs (Brensman, 1992; 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 (Ogashira, 2004; cf. (1) and (3)).
• 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 adjectival, activity verbs are perfectly acceptable in the pre-nominal position in Japanese.
• oshta-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: 2,986 tokens (e.g., broke, closed, increased, closed etc.)
  - activity: 196 tokens (e.g., pushed, kicked, ran, 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.

Research Questions
• Can L2 English learners who are native speakers of Japanese acquire the correct interpretation of English pre-nominal AedPNs (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 MTELPP/MLER (English Language Institute, 1979) (all participants were in the intermediate level).
• A computer-based experiment was written in Psychopy (Peirce, 2012). Premonominal 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).

Analysis 1 (cont.)
• Results (standard errors are in the parentheses)

<table>
<thead>
<tr>
<th></th>
<th>CHANGE-OF-STATE</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English L2 group</strong></td>
<td>4.39 (0.14)</td>
<td>4.04 (0.14)</td>
</tr>
<tr>
<td><strong>English L1 group</strong></td>
<td>6.32 (0.10)</td>
<td>3.86 (0.15)</td>
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</table>

• 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.
• 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.
References


