L2 Acquisition of English Prepositions with Transitives

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1. Introduction

This is a preliminary study of how Japanese EFL learners acquire the functions of prepositions (Ps). Learners experience difficulty in understanding English Ps in both L1 and L2 (Inagaki, 2002; Hayashi, 2008; Kochan et al., 2008; Morgenstern & Sekali, 2009). Then, the question arises as to what are the factors which delay the acquisition of Ps. The difficulty is partially due to a large number of English Ps with semantic subtleties, as shown in (1).

(1)   List of English prepositions (non-exhaustive)
   in, at, on, above, under, near, by, next to, as, of, back, up, down, off, out, after, since, until, during, before, but, despite, except, together, for, against, like, per, to, from, through, over, via, beneath, underneath, beside, behind, below, between, beyond, with, without, within, inside, outside, aside, along, above, about, across, against, aboard, aloft, amid(st), among(st), around, ashore, along, away, apart, onboard, overboard, aboveboard, overhead, toward(s), forward(s), backward(s), afterward(s), off of, out of, upon, into, onto, throughout, upstairs, downstairs, hereabouts, thereabouts, whereabouts, hereafter, thereafter, hereupon, thereupon, whereupon
   (Déchaine, 2005)

In this study, however, the focus is more on syntactic properties of Ps. Ps occur with verbs in sentences, as in (2).

(2)   Mary walked into the park.

Verbs can occur with or without Ps while Ps cannot occur without verbs, as shown in (3a) and (3b), respectively.

(3)   a. Mary walked (into the park).
      b. *Mary into the park.

This optionality of Ps is another potential factor for delaying the acquisition of Ps, which is pursued in the rest of this paper. The paper is organized as follows. In section 2, we introduce the syntactic

assumption of Ps and previous studies of Ps in L2 acquisition. In section 3, we explain the experimental design. In section 4, we show the results of the experiment. In section 5, we discuss several implications of the results. In section 6, we conclude this paper.

2. Background

2.1. Syntactic assumption

English Ps are a syntactic category akin to verbs (Jackendoff, 1977; Fukui, 1987; Baker, 2003; Svenonius, 2010; den Dicken, 2010). However, verbs and Ps differ in syntactic distribution. Verbs occur at the head of the verb phrase while Ps can basically occur at different syntactic positions, mostly internal to vP and adjunct to the verb phrase, as shown in (4).

(4)
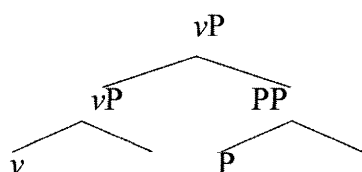
Japanese postpositions are similarly treated as adjunct to vP in most cases, as in (5).

(5)
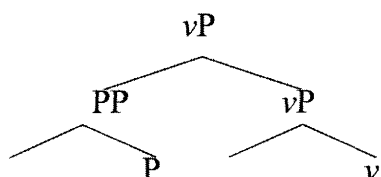
(Tsujimura, 2007)

Thus, we assume here that both in English and in Japanese, Ps are adjunct to vP. English and Japanese only differ in headedness; English is head-initial while Japanese is head-final.

2.2. Prepositions in second language

The adjuncthood of P has largely been unexplored in second language (L2) acquisition, particularly in association with the semantic notion of telicity (Inagaki, 2002; Fujimori & Kondo, 2012). The telicity is the endpoint of an event inherently denoted by the verb phrase. This semantic notion is compositional, and the verb and the P play a role in determining the phrase-level telicity (Verkuyl, 1972, 1993). In (6), for example, the verb *fell* is telic ([+telic]) and the ball's motion of falling comes to an end when the ball reaches the ground or the well.

(6) A ball fell to the ground/in the well.

In contrast, in (7), the verb *walk* is atelic ([-telic]) and Mary's motion of walking continues. This continuous motion ends with a telic P *to*, but not with an atelic P *in*, as shown in (8).

(7) Mary walked.

(8) a. Mary walked to the station.
     b. Mary walked in the park.

The contrast between telic and atelic verbs indicate that telic verbs determine the phrase-level telicity regardless of the telicity of Ps while atelic verbs cannot solely determine the phrase-level telicity which depends on the telicity of Ps, as schematized in (9).

(9)

Verb	Preposition	Phrase-level telicity
[+telic]	[+telic]	[+telic]
[+telic]	[-atelic]	[+telic]
[-telic]	[+telic]	[+telic]
[-telic]	[-telic]	[-telic]

In Fujimori and Kondo, intransitive verbs which denote directed motion and manner of motion were combined with directional and locational Ps. The verb phrases were given in a Truth Value Judgment (TVJ) task where Japanese college EFL learners were asked to judge whether the given sentence matched its corresponding animated video clip. The results showed that the novice learners more accurately accepted directed motion verbs for telic events (DD and DL), compared with manner of motion verbs (MD and ML), regardless of P type, as summarized in table 1. The intermediate learners improved their acceptance rate for the combination of the directional P with the manner of motion V (MD). These results suggest that the novice Japanese EFL learners acquire the verbal telicity first.

		Directed motion V [+telic]	Manner of motion V [-telic]
Directional P [+telic]		DD *go + into*	MD *swim + to*
	Intermediate	0.988	0.963
	Novice	0.964	0.833
Locational P [-telic]		DL *go + behind*	ML *swim + under*
	Intermediate	0.929	0.405
	Novice	0.929	0.405

Table 1 Correct acceptance rates (Fujimori &Kondo, 2012)

The question arises here whether similar patterns will be observed with transitive verbs which take the direct object as its complement. Thus, the purpose of the present study is to empirically examine whether Japanese EFL learners, particularly, lower-level leaners, encounter difficulties in understanding the telicity of adjunct Ps in the transitive structure.

3. Experiment

The experiment was conducted with 154 Japanese college EFL learners whose English proficiency was lower-intermediate (TOEIC average 455.2, SD 58.8). The participants undertook a Truth Value Judgment (TVJ) task where they were asked to judge if each written test token matched its corresponding animated movie clip.

The test tokens included not only transitive achievement ([+telic]) verbs and activity ([-telic]) verbs but also ditransitive verbs ([+telic]). To examine the difficulty of the adjuncthood of Ps, the transitive verbs which can optionally take a P would be compared with the ditransitive verbs which obligatorily take a P. In a test token, both of the verbs occurred with a directional P or a locational P, as shown through (10) to (14) and in table 2.

(10) Pepe **gave** a book **to** Mary. (ditransitive V + directional P)

(11) Pepe **kicked** a soccer ball **into** the goal. (achievement V + directional P)

(12) Pepe **threw** a box **behind** the wall. (achievement V + locational P)

(13) Pepe **pushed** a cart **into** the garage. (activity V + directional P)

(14) Pepe **rode** a horse **behind** the guard. (activity V + locational P)

	Directional P		Locational P	
Verb type	GOAL	LOCATION	GOAL	LOCATION
Ditransitive [+telic]	DG True	DG False	n/a	n/a
Achievement [+telic]	TG True	TG False	TLG True	TLL True
Activity [-telic]	AG True	AG False	ALG True	ALL True

Table 2 Tested combinations of verbs and Ps

Two items were given for each of the five combinations: one with a movie clip depicting the goal of an event and the other with a clip depicting the location of an event. The participants were divided into two groups for which the same set of written test tokens was provided with different telicity movie clips in a Latin Square design. Five native speakers of English confirmed the truth-values of all the tokens. Four filler tokens were also included and the participants (n=77) were qualified for the statistics if their correct response was over 75%.

4. Results

A one-way ANOVA was performed with the correct acceptance rates for the seven TRUE conditions (see also table 2) and there was a significant effect on verb-preposition combination (F(6,532)=11.013, p<.01). Pairwise comparisons showed that the correct acceptance rates for ALG and ALL were significantly higher than those of TLG and TLL, as shown in figure 1. Also, TG was significantly higher than those of TLG and TLL in acceptance.
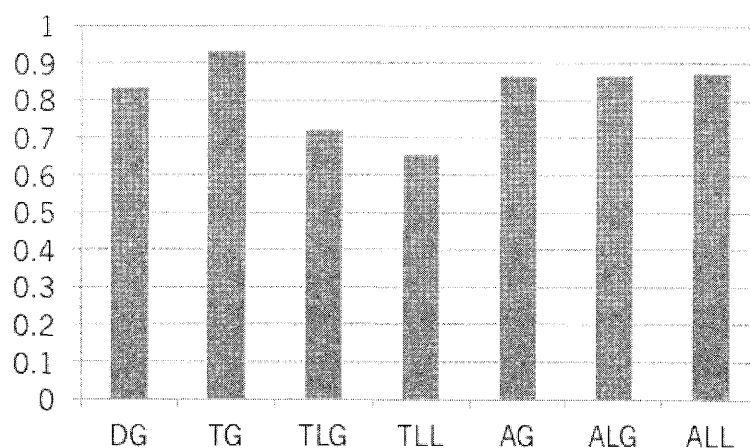

Figure 1 Correct acceptance rates (TRUE)

The participants performed well with the directional Ps across the verbs (DG, TG and AG) regarding the TRUE (goal) conditions. However, a one-way ANOVA showed that DG was significantly higher

than TG and AG in correct rejection rate for the FALSE (location) conditions ($F(2,228)$= 10.814, $p<.01$), as shown in figure 2.
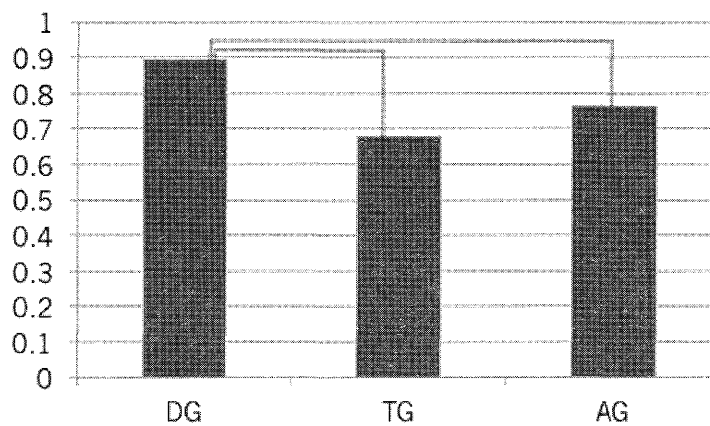

Figure 2 Correct rejection rates (FALSE)

5. Discussion

In the results section, the verb type comparison showed that with the directional Ps, the correct rejection rate for the ditransitive verbs was significantly higher than those of the other transitive verbs, as summarized in table 3.

Verb type	Directional P	
	GOAL	LOCATION
Ditransitive [+telic]	DG True (.838)	DG False (.896)
Achievement [+telic]	TG True (.935)	TG False (.682)
Activity [-telic]	AG True (.870)	AG False (.766)

Table 3 Correct response rates for directional Ps

The lower rejection rate of the transitive verbs is due to the optionality of Ps. Ditransitive verbs obligatorily take a P as one of its arguments while transitive verbs optionally take a P. Rigidly obligatory Ps with ditransitive verbs are acquired early while optional Ps with transitive verbs are acquired late.

Next, we consider the effects of both P type and verb type, as summarized in table 4. Regarding the achievement verbs, the directional Ps were more accurately accepted than the locational Ps. Looking closely at the locational Ps, the activity verbs were also more accurately accepted than the
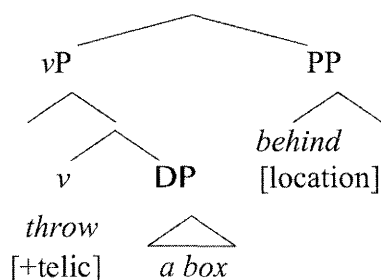
achievement verbs. In other words, the achievement verb with the locational P was the most difficult combination for the lower-intermediate learners.

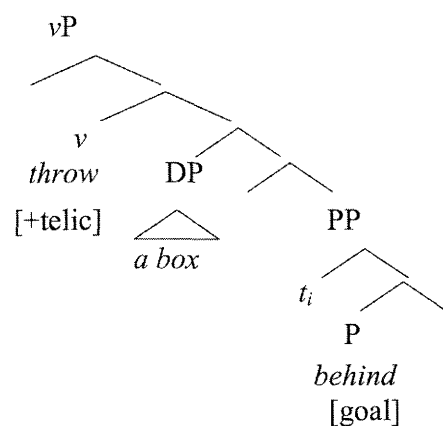| Verb type	Directional P GOAL	Locational P GOAL	Locational P LOCATION
Ditransitive [+telic]	DG	n/a	n/a
Achievement [+telic]	TG (.935)	TLG (.721)	TLL (.656)
Activity [-telic]	AG (.870)	ALG (.870)	ALL (.877)

Table 4 Correct acceptance rates for TRUE conditions

The difficulty is provoked by the structural ambiguity of the locational P in relation to the transitive, telic verb. Locational Ps can denote either the location or the goal. The locational P is adjunct to *v*P if the P denotes the location of the entire event, as represented in (15a). The same P appears within the complement of *v* if the P denotes the goal of the direct object, as in (15b) (cf. Ritter & Rosen, 1998; Hale & Keyser, 2002).
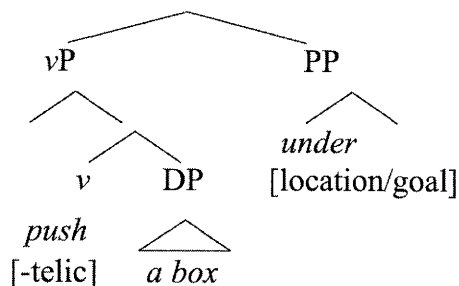
(15a)

```
              _____
        vP            PP
       / \           / \
      /   \      behind
     v    DP    [location]
   throw   / \
  [+telic] a box
```

(15b)

```
        vP
       / \
      /   \
     v     \
   throw    DP  \
  [+telic]  / \  PP
           a box / \
                t_i / \
                   P
                behind
                [goal]
```
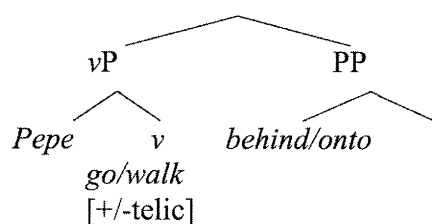
Such a problem would not occur with atelic verbs. If the verb is atelic, PP is unambiguously adjunct to vP, regardless of whether the P denotes the location or the goal of the entire event, as represented in (16).

(16)

```
                    _____
              vP                  PP
            /    \              /    \
          /   \              under
         v    DP         [location/goal]
       push   / \
      [-telic] a box
```

The structural ambiguity of Ps in the transitive construction accounts for the result differences between intransitive and transitive verbs. In Fujimori and Kondo (2012), even the low-level EFL learners accepted intransitive, telic verbs quite accurately, regardless of the telicity of Ps. This accurateness is chiefly due to the fact that intransitive verbs take a single argument, whether they are telic or atelic; the intransitive verb takes no complement which leads to the structural disambiguity of Ps, as in (17).

(17)

```
                 _____
            vP                 PP
          /    \             /    \
        Pepe    v     behind/onto
              go/walk
             [+/-telic]
```

6. Conclusion

This study has shown that the Japanese low-level EFL learners encountered difficulty in understanding PPs in the transitive structure. The difficulty was mainly provoked by (i) the optionality of Ps and (ii) the syntactic ambiguity of Ps. These findings suggest that the L2 acquisition of Ps is delayed due to a variety of syntactic behaviors of Ps in association with verb types.

Given that this study is preliminary, however, we need to increase the number of tokens to enhance the reliability of this line of studies. There also remains the question of whether Japanese EFL learners can ultimately acquire the functions of prepositions. Moreover, assuming that the above factors are maintained across languages, we anticipate that L2 learners will encounter difficulties in structurally understanding English prepositions, regardless of their L1.

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