Cross-linguistic Effects in L2 Acquisition
of Causative Constructions

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1. Introduction

We report on an experimental study that examines causative constructions in L2 English by Japanese-speaking learners. Causatives are generally assumed to involve an additional/noncore argument that is interpreted as a causer of the event described by the verb. However, it has been observed that causatives exhibit cross-linguistic variation. One variation involves the distribution of causativization. For example, in English, transitive and unergative verbs do not have lexical causative counterparts, while they do in Japanese,[1] as shown in (1) and (2) (cf., Kageyama, 1996; Ritter & Rosen, 1993). Japanese also allows lexical causatives based on unaccusative verbs that are not allowed in English, as shown in (3).

(1) Transitive verbs

    a. *John wore Mary a dress. (English)

    b. ✓John-ga   Mary-ni   doresu-o   kis-se-ta. (Japanese)
       John-NOM   Mary-DAT   dress-ACC   wear-CAUSE-PAST
       'John made Mary wear a dress.'

(2) Unergative verbs

    a. *Mary cried the baby. (English)

    b. ✓Mary-ga   aka-chan-o   nak-asi-ta. (Japanese)
       Mary-NOM   baby-ACC   cry-CAUSE-PAST
       'Mary made the baby cry.'

[1] Finnish is also a Japanese-type language so that transitive and unergative verbs have causative counterparts in Finnish. See Pylkkänen (2008) for a detailed description.

(3) Unaccusative verbs

   a. *John died his son.   (English)

   b. ✓John-ga   musuko-o   sin-ase-ta.   (Japanese)
   John-NOM   son-ACC   die-CAUSE-PAST
       'John made his son die.'

Based on differences between English and Japanese, we examined the acquisition of causative constructions in English by Japanese-speaking learners. We focus on what counts as 'subject' of the lexical causatives in Japanese. Japanese lexical causative forms are usually associated with morphology *-ase-*, which is similar to but different from the productive causative *-sase*.

The rest of this paper is organized as follows: Cross-linguistic differences of causative constructions, especially in English and Japanese, based on the Voice-bundling parameter that is proposed by Pylkkänen (2008), are presented in section two. Our research questions, hypotheses, and predictions are given in section three. The present experimental study is outlined in section four. The results of the experimental study are presented in section five. Finally, in section six, we discuss the results and conclude our study, including implications for further studies.

2. Theoretical Background: Voice-bundling Parameter (Pylkkänen, 2008)

Pylkkänen (2008) argues that causativization involves the syntactic head Cause, which combines with non-causative predicates and introduces a causing event to their thematic structure. Pylkkänen further proposes the Voice-bundling parameter, according to which languages are divided into two types, as shown in (4) and (5): Voice-bundling languages like English where the heads Voice, introducing an external argument, and Cause, introducing a causing event, are bundled together, and non-Voice-bundling languages like Japanese where Voice and Cause are separated.[2]
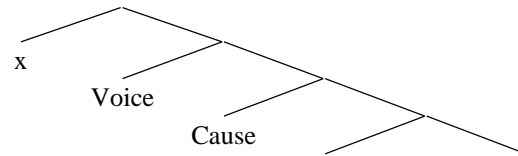
(4) Voice-bundling languages (e.g., English)
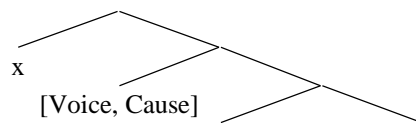
                                (Pylkkänen, 2008: 84 (10b))

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[2] See Fujita (1996) and Travis (2005) for similar proposals that there are two different heads for Cause and external argument.

(5)   Non-Voice-bundling languages (e.g., Japanese)

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              _____
             /           \
            x            /\
                       Voice \
                            /\
                        Cause \
                             /  \
                            /    \
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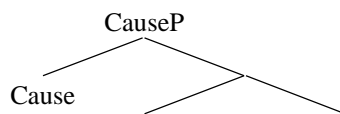<div align="right">(Pylkkänen, 2008: 84 (10a))</div>

Previous studies have examined transitivity alternations (e.g., Montrul, 1997; Montrul, 2000), unaccusativity in L2 English and Japanese (e.g., Hirakawa, 2003), and typical over-passivized unaccusative errors in L2 English (e.g., Balcom, 1997; Hirakawa, 1995; Oshita, 1997), but as far as we are aware no studies have examined causatives in terms of the Voice-bundling parameter.

3. Research Questions, Hypotheses and Predictions

Assuming the parameter proposed by Pylkkänen (2008), we have two research questions: (I) Is there any effect of syntactic properties of L1 Japanese causatives constructions (i.e., unaccusative causatives) on L2 English?, and (II) Is there any developmental progress in L2 acquisition of causative constructions in English? We hypothesized that syntactic properties in L1 may influence L2 acquisition. Specifically, unaccusative causatives in L1 Japanese may intervene in L2 acquisition of English. We thus predicted that Japanese-speaking learners of English would incorrectly accept the following: (i) unaccusative verbs with *by*-phrases naming a causing event, and (ii) unaccusative verbs with instrumental modifiers. We also predicted that learners' English proficiency level would affect the accuracy rates of their judgment of these unaccusative structures.

The tree diagram shown in (6) presents the hierarchical structure of unaccusative causatives proposed by Pylkkänen (2008). As mentioned above, Japanese allows unaccusative causatives but English does not.

(6)   Unacusative causative

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          CauseP
         /      \
        /        \
     Cause       /\
                /  \
               /    \
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<div align="right">(Pylkkänen, 2008: 99 (40b))</div>

4. Experimental Study
4.1. Participants

We had 30 Japanese-speaking learners of English as an experimental group and 10 English native speakers as a control group. Learners were college students in Japan, and they were English majors. Native speakers of English (NSE) were also college students in the U.S.A. Based on the results of English

language proficiency test scores (i.e., CASEC[3] or TOEIC[4]), learners were classified into three proficiency levels: Lower-Intermediate (L-Int.), Higher-Intermediate (H-Int.), and Advanced (Adv.). Each group consisted of 10 participants.[5] Table 1 gives background information of the participants: the number of participants, scores of English proficiency tests, mean age, and mean length of study for each group.

Table 1. Background information of the participants

Group		L-Int.	H-Int.	Adv.	NSE
Number of participants		10	10	10	10
English proficiency (scores)	Test	CASEC	CASEC	TOEIC	—
	Mean	530.1	587.0	651.1	—
	SD	8.3	7.3	110.2	—
	Range	517−540	577−596	535−795	—
Age (years; months)	Mean	19;2	19;3	21;4	21;6
	SD	0.6	0.5	1.2	0.8
	Range	18;9−20;3	18;8−19;11	20;6−24;3	18;11−22;3
Length of study (years)	Mean	8.1	7.9	9.3	—
	SD	3.6	2.5	3.2	—
	Range	2.1−13.3	5.8−13.3	8.8−11.5	—

4.2. Task

We administered a scaled acceptability judgment task with various types of structures. It was an offline paper-and-pencil task. There were 50 pairs of dialogues, with 4 sentence types (Types A, B, C, and D), each represented by 10 tokens, and 2 sentence types (Types E and F) with 5 tokens each. Participants were asked to judge whether the sentence underlined was natural or unnatural in the given context, by circling one of the numbers given: 1 (unnatural) to 7 (natural). A choice of "don't know" was also given in case that they were unable to judge. An example of the test stimuli is shown in (7), testing the unaccusative verb (i.e., *break*) with an instrumental modifier (i.e., *with a ball*). Please note that (7B) is supposed to be an unnatural sentence.

(7) A: What happened?
    B: The window broke with a ball.

    1   2   3   4   5   6   7   don't know
    (unnatural)   (in-between)   (natural)

Structures of sentence types are explained in (8) to (13) below. Types A, B, C, and D, as in (8) through (11), were used as test stimuli. Each type consisted of 10 tokens, 5 out of 10 were natural/grammatical sentences and the rest were unnatural/ungrammatical sentences. Types E and F, in (12) and (13), were used as the Syntax Test, examining participants' linguistic knowledge of argument structure of unaccusative and unergative verbs. Each consisted of 5 tokens. Structures in Type E were all natural/grammatical sentences whereas structures in Type F were all unnatural/ungrammatical sentences.

(8) Type A: Unaccusative verbs with "by oneself" or *by*-phrases naming a causing event

 a. ✓The laundry dried by itself.
  (cf., ✓Sentakumono-ga   katte-ni   kawai-ta.)
    Laundry-NOM   by itself   dry-PAST

 b. *The laundry dried by the good weather.
  (cf., ✓Sentakumono-ga   yoi-tenki-de   kawai-ta.)
    Laundry-NOM   good weather-by   dry-PAST

(9) Type B: Transitive or unaccusative verbs with *by*-phrases naming a causing event

 a. ✓Luke stopped the car by breaking suddenly.
  (cf., ✓Luke-ga   kyuu-ni   bureeki-o-kake-te   kuruma-o
    tom-e-ta.)
    Luke-NOM   suddenly   break-by   car-ACC
    stop-CAUSE-PAST

 b. *The car stopped by breaking suddenly.
  (cf., ✓Kuruma-ga   kyuu-ni   bureeki-o kake-te   toma-tta.)
    Car-NOM   suddenly   break-by   stop-PAST

(10) Type C: Transitive or unaccusative verbs with instrumental modifiers

 a. ✓She cured her cold with medicine.
  (cf., ✓Kanojo-g   kaze-o   kusuri-de
    nao-si-ta.)
    She-NOM   cold-ACC   medicine-with
    cure-CAUSE-PAST

 b. *Her cold cured with medicine.
  (cf., ✓(Kanojo-no-)   kaze-ga   kusuri-de   nao-tta.)
    Her   cold-NOM   medicine-with   cure-PAST

(11) Type D: Passives or lexical causatives based on transitive verbs

    a. ✓Some treasure is buried here.
       (cf., ✓Takara-ga   koko-ni   ume-rare-te-iru.)
            Treasure-NOM   here   bury-PASSIVE-PRES

    b. *Some treasure buries here.
       (cf., ✓Takara-ga   koko-ni   uma-tte-iru.)
            Treasure-NOM   here   bury-PRES

(12) Type E: Unaccusative verbs

    ✓The train just left.
     (cf., ✓Densha-ga   choudo   shuppatsu-si-ta.)
           Train-NOM   just   leave-PAST

(13) Type F: Lexical causatives based on unergative verbs

    *John cried his sister.
     (cf., ✓John-ga   imouto-o   nak-asi-ta.)
   John-NOM   sister-ACC   cry-CAUSE-PAST

5. Results
5.1. Overall Results

We report on the results of the Syntax Test first, then those of the experimental test sentences. Table 2 and Figure 1 show overall results of the Syntax Test (i.e., Types E and F) in terms of mean scores for each group.

Table 2. Mean scores and standard deviations of the Syntax Test[6]

Type	Natural/Unnatural	L-Int.	H-Int.	Adv.	NSE
Type E	Natural	5.70	5.64	5.48	6.18
		(0.69)	(0.68)	(0.61)	(0.54)
Type F	Unnatural	2.30	2.40	2.12	1.26
		(0.81)	(0.79)	(0.89)	(0.28)

[6] Figures in the brackets indicate standard deviations (SD).
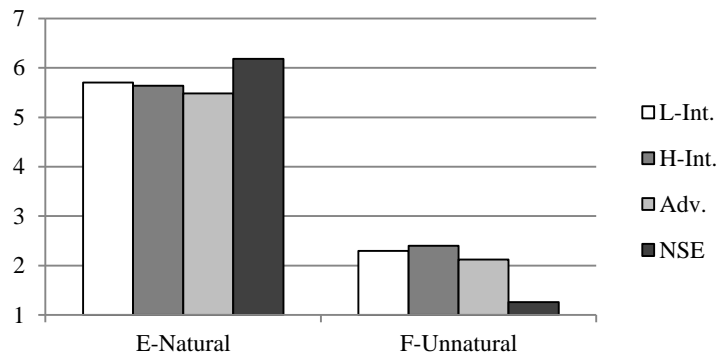
Figure 1. Mean scores of the Syntax Test

As can be seen in Table 2 and Figure 1, the NSE responded as we had expected, and they accepted sentences in Type E, i.e., natural/grammatical unaccusatives (mean: 6.18), and rejected sentences in Type F, i.e., unnatural/ungrammatical unergatives (mean: 1.26). Learners also responded as expected, accepting Type E (mean: L-Int. 5.70, H-Int. 5.64, Adv. 5.48) while rejecting Type F (mean: L-Int. 2.30, H-Int. 2.40, Adv. 2.12). Two-way repeated measures ANOVA revealed that there were statistically significant effects of Type (F (1, 3) = 544.25, $p < .01$) and Interaction (F (3, 36) = 6.19, $p < .01$), but no significant effect was found for Group (F (3, 36) = 1.02, $n.s.$). These results indicate that all the learners passed the Syntax Test, suggesting that they have acquired correct intransitive structures with unaccusative and unergative verbs. Therefore, all learners were retained for further analyses.

Turning to the results of the experimental test stimuli, Table 3 and Figure 2 present overall results of the sentence types A to D in terms of mean scores for each participant group.

Table 3. Mean scores and standard deviations of the experimental sentence types[7]

Type	Natural/Unnatural	L-Int.	H-Int.	Adv.	NSE
Type A	Natural	5.21 (0.89)	4.00 (1.08)	4.15 (0.89)	4.96 (0.64)
	Unnatural	5.10 (1.24)	5.02 (1.27)	4.22 (0.77)	2.92 (1.04)
Type B	Natural	4.64 (1.33)	5.12 (0.98)	5.38 (0.91)	6.20 (0.54)
	Unnatural	4.60 (1.32)	4.08 (0.98)	4.72 (0.91)	3.66 (0.51)
Type C	Natural	5.88 (1.17)	5.40 (1.19)	5.66 (0.84)	6.48 (0.58)
	Unnatural	3.60 (0.98)	3.14 (1.14)	3.62 (1.12)	2.12 (0.90)
Type D	Natural	4.80 (1.43)	5.44 (0.92)	5.18 (1.63)	6.46 (0.42)
	Unnatural	4.38 (1.51)	2.84 (0.92)	2.76 (1.50)	1.36 (0.34)
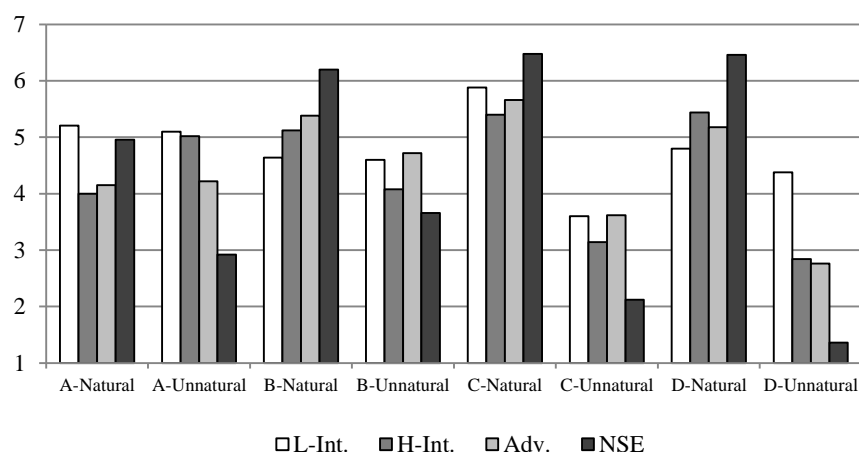
Figure 2. Mean scores of the experimental sentence types

The NSE generally responded as we had expected, observing the natural vs. unnatural contrast in each sentence type, but their rejection was rather weak on Types A (2.92) and B (3.66). As for the three learner groups, they behaved in a similar manner to the NSE on Type C, observing the sharp contrast between natural vs. unnatural sentence types. In other words, they accepted natural (L-Int. 5.88, H-Int. 5.40, Adv. 5.66), and rejected unnatural sentences (L-Int. 3.60, H-Int. 3.14, Adv. 3.62). On Type D, the H-Int. and Adv. groups responded like the NSE,

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[7] Figures in the brackets indicate standard deviations (SD).

i.e., they accepted natural sentences (H-Int. 5.44, Adv. 5.18), and rejected unnatural sentences (H-Int. 2.84, Adv. 2.76). The L-Int. however failed to make the distinction and accepted both types. Three learner groups failed to observe the distinction on Types A and B; i.e., they accepted not only natural sentences (Type A-Natural: L-Int. 5.21, H-Int. 4.00, Adv. 4.15; Type B-Natural: L-Int. 4.64, H-Int. 5.12, Adv. 5.38), but also unnatural sentences (Type A-Unnatural: L-Int. 5.10, H-Int. 5.02, Adv. 4.22; Type B-Unnatural: L-Int. 4.60, H-Int. 4.08, Adv. 4.72).

Two-way repeated measures ANOVA revealed that there were statistically significant effects of Type (F (7, 21) = 57.17, $p < .01$) and Interaction (F (21, 252) = 7.63, $p < .01$), but no significant effect was found for Group (F (3, 36) = 1.31, $n.s.$). Bonferroni's post-hoc tests showed that the NSE distinguished between natural and unnatural sentences in all types ($p < .05$), but their rejection was rather weak on Types A and B. As for Type C, Bonferroni's post-hoc tests revealed that not only the NSE but also three learner groups were able to distinguish the natural vs. unnatural sentences ($p < .05$). Post-hoc tests also showed that the H-Int. and Adv. groups established a distinction between natural and unnatural sentences in terms of Type D ($p < .05$) but the L-Int. did not differentiate between the two. As for Types A and B, Bonferroni's post-hoc tests revealed that no significant differences were observed between natural vs. unnatural sentences by all three learner groups. Hence, it is clear that learners had problems rejecting incorrect unaccusative causatives.

5.2. Individual Results

Individual analyses were further conducted on learners' consistency in their responses. Consistency was determined as being accurate on 7 or more out of the 10 items within each type, i.e., being accurate more than 70%. In other words, the number of acceptances in natural contexts (i.e., choices of "5", "6", or "7") and that of rejections in unnatural contexts (i.e., choices of "1", "2", or "3") were calculated. Table 4 summarizes the number and percentages of those who were consistently accurate.

Table 4. Percentages of the participants who were consistently accurate[8]

	L-Int.	H-Int.	Adv.	NSE
Type A	10%	0%	10%	50%
	(1/10)	(0/10)	(1/10)	(5/10)
Type B	0%	30%	20%	50%
	(0/10)	(3/10)	(2/10)	(5/10)
Type C	50%	50%	50%	100%
	(5/10)	(5/10)	(5/10)	(10/10)
Type D	20%	60%	60%	100%
	(2/10)	(6/10)	(6/10)	(10/10)

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[8] Figures in the brackets indicate the number of the participants who were consistently accurate out of 10 learners in each group.

As we can see from Table 4, only half of the NSE group (n = 5) respond as expected in Types A and B. The learners had most difficulty with Types A and B, i.e., unaccusative verbs with *by*-phrases naming a causing event. We can also see some developmental progress among Groups, i.e., the H-Int. and Adv. groups were more accurate than the L-Int. group in Types B (i.e., unaccusative verbs with *by*-phrases naming a causing event) and D (i.e., passives or lexical causatives based on transitive verbs) (Type B: L-Int. 0%, H-Int. 30%, Adv. 20%; Type D: L-Int. 20%, H-Int. 60%, Adv. 60%). Moreover, learners were more accurate in Types C (L-Int. 50%, H-Int. 50%, Adv. 50%) and D (L-Int. 20%, H-Int. 60%, Adv. 60%) than in Types A (L-Int. 10%, H-Int. 0%, Adv. 10%) and B (L-Int. 0%, H-Int. 30%, Adv. 20%). In sum, it appears that Types A and B were more difficult to detect their ungrammaticality than Types A and B, i.e., unaccusative verbs with instrumental modifiers and lexical causatives based on transitive verbs, at least for our participants.

6. Discussion and Conclusion

The purpose of this study was to investigate whether or not there was any effect of syntactic properties of L1 Japanese causative constructions (i.e., unaccusative causatives) on L2 English, and whether or not there was any developmental progress in L2 acquisition of causative constructions in English. Given the Voice-bundling parameter proposed by Pylkkänen (2008), we predicted that Japanese-speaking learners of English would incorrectly accept unaccusative verbs with *by*-phrases naming a causing event and those with instrumental modifiers, due to the cross-linguistic variations of causative constructions. We also predicted that learners' English proficiency level would affect the accuracy rates of their grammaticality judgments of unaccusative causatives disallowed in English.

Overall results from the scaled acceptability judgment task indicated that Japanese learners of English incorrectly accepted unaccusative verbs in English (i.e., unaccusative verbs with *by*-phrases naming a causing event (Types A and B) and those with instrumental modifiers (Type C)) which confirmed our first prediction.

Learners' English proficiency level affected the accuracy rates to some extent, so that some developmental progress was observed between the L-Int. vs. the H-Int. and Adv. learner groups. Hence, our second prediction was also confirmed. Individual analyses further showed that the H-Int. and Adv. groups were more accurate than L-Int group. Learners were less accurate in rejecting unaccusative verbs with *by*-phrases naming a causing event than unaccusative verbs with instrumental modifiers and passives or lexical causatives based on transitive verbs. Thus, we can suggest some developmental stages for the acquisition of causative constructions in L2 English.

Even though we predicted that learners would have difficulty with unaccusative verbs with instrumental modifiers (i.e., Type C), the overall and individual results suggest that it is possible for learners to acquire the correct unaccusative construction. It is interesting that learners had difficulty with unaccusative causatives in Types A and B (i.e., unaccusative verbs with *by*-phrases naming a causing event) but they had less difficulty with those in Type C (i.e., unaccusative verbs with instrumental modifiers). Further analyses

on cross-linguistic differences on causative constructions are required to explain such differences in the learners' responses.

　　To conclude, it may be possible for Japanese-speaking learners of English to acquire the properties of the Voice-bundling parameter even when their L1 represents a non-Voice-bundling language. Future studies with more advanced proficiency level learners of L2 English, and with other language combinations are necessary.

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