Cross-linguistic Effects in L2 Acquisition of Causative Constructions

Kazunori Suzuki, Koki Shioda, Nozomi Kikuchi, Maki Maetsu, and Makiko Hirakawa

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 causative counterparts, while they do in Japanese,¹ as shown in (1) and (2) (cf., Kageyama, 1996; Ritter & Rosen, 1993). Japanese also allows 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. ʻJohn-ga Mary-ni doresu-o kis-se-ta. (Japanese)
   John-NOM Mary-DAT dress-ACC wear-CAUSE-PAST
   ʻJohn made Mary wear a dress.ʻ
(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.’

(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. It should be noted that Japanese lexical causatives have transitive bases, yielding ditransitive lexical causatives. 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 Voice-bundling parameter that is proposed by Pykkänen (2008), are presented in section two. Our research questions, hypothesis, 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 of the study and conclude our study, including further study implications.

2. Theoretical Background: Voice-bundling parameter (Pykkänen, 2008)

Pykkänen (2008) argues that causativization involves the syntactic head Cause, which is combined with non-causative predicates and introduces a causing event to their thematic structure. Pykkänen 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

² See Fujita (1996) and Travis (2005) for similar proposals that there are two different heads for Cause and external argument.
(4) Voice-bundling languages (e.g., English)

\[ \text{[Voice, Cause]} \]

(Pylkkänen, 2008: 84 (10b))

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

\[ \text{Voice} \]

\[ \text{Cause} \]

(Pylkkänen, 2008: 84 (10a))

It should be noted that previous studies have examined transitivity alternations (e.g., Montrul, 1997; Montrul, 2000), unaccusativity in L2 English (e.g., Hirakawa, 2003), and typical over-passivized unaccusative errors in L2 English (e.g., Oshita, 1997), but 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? (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, L2 learners may allow unaccusative causatives. And we thus predicted that Japanese-speaking learners of English would incorrectly accept the following: (i) unaccusative verbs with by-phrases naming a causing event; (ii) unaccusative verbs with instrumental modifiers. We also predicted that learners’ English proficiency level would affect the accuracy rates of their judgement 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 doesn’t.

(6) Unaccusative causative

\[ \text{CauseP} \]

(Pylkkänen, 2008: 99 (40b))
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, who major in English. Native speakers of English 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), learners were classified into three proficiency levels: Lower-Intermediate (L-Int.), Higher-Intermediate (H-Int.), and Advanced (Adv.). Each group consists of 10 participants.\(^4\) Table 1 gives background information of the participants: number of participants, mean score of English proficiency, mean age, and mean length of study.

<table>
<thead>
<tr>
<th>Group</th>
<th>L-Int.</th>
<th>H-Int.</th>
<th>Adv.</th>
<th>NSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>English proficiency (points)</td>
<td>Test CASEC</td>
<td>CASEC</td>
<td>TOEIC</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>530.1</td>
<td>587.0</td>
<td>651.1</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>8.3</td>
<td>7.3</td>
<td>110.2</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>517—540</td>
<td>577—596</td>
<td>535—795</td>
</tr>
<tr>
<td>Age (yrs; mos)</td>
<td>Mean</td>
<td>19;2</td>
<td>19;3</td>
<td>21;4</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>0.6</td>
<td>0.5</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>18;9—20;3</td>
<td>18;8—19;11</td>
<td>20;6—24;3</td>
</tr>
<tr>
<td>Length of study (yrs)</td>
<td>Mean</td>
<td>8.1</td>
<td>7.9</td>
<td>9.3</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>3.6</td>
<td>2.5</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>2.1—13.3</td>
<td>5.8—13.3</td>
<td>8.8—11.5</td>
</tr>
</tbody>
</table>

4.2. Task

We administered a scaled acceptability judgment task with various types of structure, which 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), each with 5 tokens. Participants were asked to judge whether the sentence underlined is natural or unnatural, by circling one of the numbers given. For example, if they think the sentence given is natural, they are supposed to circle “5”, “6”, or “7”. On the other hand, if they are circular on the number “1” or “2”. The participants in L-Int. group and H-Int. group were first-year students and they all took CASEC. And the participants in Adv. group were second-/third-year students and they took TOEIC.

\(^3\) CASEC is a standard test for evaluating English proficiency, which is short for Computerized Assessment System for English Communication. Based upon the fundamental research done by The Society for Testing English Proficiency Inc., CASEC has been developed as the first CAT (Computer Adaptive Test) applying IRT (Item Response Theory). By adjusting the difficulty of the questions in accordance with the correct or incorrect answer to preceding questions, this test can accurately evaluate ability in a short amount of time. In addition, since it is an online test, the test location and scoring flexibility allows individual users as well as institutions to ascertain results speedily and effectively from any location at any time.

\(^4\) The participants in L-Int. group and H-Int. group were first-year students and they all took CASEC. And the participants in Adv. group were second-/third-year students and they took TOEIC.
think the sentence given is unnatural, they will circle “1”, “2”, or “3”. An “in-between” choice (i.e., “4”) was included in case the participants think that the sentence looks neutral. A choice of “don’t know” was also given in case that the participants can’t understand the situation or don’t know vocabularies. An example of the task is shown in (7), testing the unaccusative verb (i.e., break) with an instrumental modifier (i.e., with a ball).

(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)

4.3. Materials of the Task

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 stimulus. Each test stimuli type consists 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 Syntax Test item consists of 5 tokens. Structures in Type E are all natural/grammatical sentences whereas structures in Type F are all unnatural/ungrammatical sentences.

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

      (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

tom-e-ta.)
      Luke-NOM suddenly break-by car-ACC stop-CAUSE-PAST

   b. *The car stopped by breaking suddenly.
      (cf., ‘Kuruma-ga kuu-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
   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

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Natural/Unnatural</th>
<th>L-Int.</th>
<th>H-Int.</th>
<th>Adv.</th>
<th>NSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type E</td>
<td>Natural</td>
<td>5.70</td>
<td>5.64</td>
<td>5.48</td>
<td>6.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.69)</td>
<td>(0.68)</td>
<td>(0.61)</td>
<td>(0.54)</td>
</tr>
<tr>
<td>Type F</td>
<td>Unnatural</td>
<td>2.30</td>
<td>2.40</td>
<td>2.12</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.81)</td>
<td>(0.79)</td>
<td>(0.89)</td>
<td>(0.28)</td>
</tr>
</tbody>
</table>

Figure 1. Mean scores of the Syntax Test

As can be seen in Table 2 and Figure 1, NSE responded as we had expected, and they accepted sentences in Type E that is natural/grammatical use of unaccusative verbs (mean: 6.18), and rejected sentences in Type F that is unnatural/ungrammatical use of unergative verbs (mean: 1.26). Learners also responded as expected, and they accepted sentences in Type E (mean: L-Int.: 5.70; H-Int.: 5.64; Adv.: 5.48), and rejected sentences in 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 intransitive structures with unaccusative and unergative verbs. Therefore, all learner groups responded as NSE did.

Table 3 and Figure 2 present overall results of the experimental test items in terms of mean scores for each participant group.

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5 Figures in the brackets indicate standard deviations (SD).
<table>
<thead>
<tr>
<th>Type</th>
<th>Natural/Unnatural</th>
<th>L-Int.</th>
<th>H-Int.</th>
<th>Adv.</th>
<th>NSE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural</td>
<td>5.21</td>
<td>4.00</td>
<td>4.15</td>
<td>4.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.89)</td>
<td>(1.08)</td>
<td>(0.89)</td>
<td>(0.64)</td>
</tr>
<tr>
<td></td>
<td>Unnatural</td>
<td>5.10</td>
<td>5.02</td>
<td>4.22</td>
<td>2.92</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.24)</td>
<td>(1.27)</td>
<td>(0.77)</td>
<td>(1.04)</td>
</tr>
<tr>
<td></td>
<td>Natural</td>
<td>4.64</td>
<td>5.12</td>
<td>5.38</td>
<td>6.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.33)</td>
<td>(0.98)</td>
<td>(0.91)</td>
<td>(0.54)</td>
</tr>
<tr>
<td></td>
<td>Unnatural</td>
<td>4.60</td>
<td>4.08</td>
<td>4.72</td>
<td>3.66</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.32)</td>
<td>(0.98)</td>
<td>(0.91)</td>
<td>(0.51)</td>
</tr>
<tr>
<td></td>
<td>Natural</td>
<td>5.88</td>
<td>5.40</td>
<td>5.66</td>
<td>6.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.17)</td>
<td>(1.19)</td>
<td>(0.84)</td>
<td>(0.58)</td>
</tr>
<tr>
<td></td>
<td>Unnatural</td>
<td>3.60</td>
<td>3.14</td>
<td>3.62</td>
<td>2.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.98)</td>
<td>(1.14)</td>
<td>(1.12)</td>
<td>(0.90)</td>
</tr>
<tr>
<td></td>
<td>Natural</td>
<td>4.80</td>
<td>5.44</td>
<td>5.18</td>
<td>6.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.43)</td>
<td>(0.92)</td>
<td>(1.63)</td>
<td>(0.42)</td>
</tr>
<tr>
<td></td>
<td>Unnatural</td>
<td>4.38</td>
<td>2.84</td>
<td>2.76</td>
<td>1.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.51)</td>
<td>(0.92)</td>
<td>(1.50)</td>
<td>(0.34)</td>
</tr>
</tbody>
</table>

**Figure 2. Mean scores of the experiment**

NSE responded as follows: Type A-Natural at 4.96, Type B-Natural at 6.20, Type C-Natural at 6.48, Type D-Natural at 6.46 of the time, and Type A-Unnatural at 2.92, Type B-Unnatural at 3.66, Type C-Unnatural at 2.12, Type D-Unnatural at 1.36 of the time. Thus, NSE responded as we had expected. As for the three learner groups, they behaved in a similar manner to NSE on Type C, i.e., they accepted natural sentences (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, H-Int. and Adv. groups responded like NSE, i.e., they accepted natural sentences.

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6 Figures in the brackets indicate standard deviations (SD).
(H-Int. 5.44, Adv. 5.18), and rejected unnatural sentences (H-Int. 2.84, Adv. 2.76), but L-Int. didn’t make a distinction between natural and unnatural sentences. It is interesting that three learner groups responded in a dissimilar manner to NSE for unnatural sentences on Types A and B, i.e., they accepted 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 had difficulties rejecting 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 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 NSE but also three learner groups were able to distinguish the natural vs. unnatural sentences ($p < .05$). Post-hoc tests also showed that H-Int. and Adv. groups established a distinction between natural and unnatural sentences in terms of Type D ($p < .05$) but L-Int. didn’t differentiate between natural and unnatural sentences. 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, learners had problems rejecting incorrect unaccusative causatives.

5.2. Individual Results

Individual analyses were further conducted on each performance. Consistency was determined as being accurate on 7 or more out of the 10 items with each type, i.e., being accurate more than 70%.

7 The results of the Syntax Test (i.e., Types E and F) are not analyzed for the individual analyses.
Table 4. Percentages of the participants who were accurate consistently

<table>
<thead>
<tr>
<th>Type</th>
<th>L-Int.</th>
<th>H-Int.</th>
<th>Adv.</th>
<th>NSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>10%</td>
<td>0%</td>
<td>10%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(1/10)</td>
<td>(0/10)</td>
<td>(1/10)</td>
<td>(5/10)</td>
</tr>
<tr>
<td>Type B</td>
<td>0%</td>
<td>30%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(0/10)</td>
<td>(3/10)</td>
<td>(2/10)</td>
<td>(5/10)</td>
</tr>
<tr>
<td>Type C</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>100%</td>
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<tr>
<td></td>
<td>(5/10)</td>
<td>(5/10)</td>
<td>(5/10)</td>
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<tr>
<td>Type D</td>
<td>20%</td>
<td>60%</td>
<td>60%</td>
<td>100%</td>
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<tr>
<td></td>
<td>(2/10)</td>
<td>(6/10)</td>
<td>(6/10)</td>
<td>(10/10)</td>
</tr>
</tbody>
</table>

Individual results showed that NSE didn’t respond as expected in Types A and B, i.e., 5 out of 10 were indicated them as natural whereas the rest was indicated them as unnatural. Learners had difficulty with Types A and B specifically, i.e., unaccusative verbs with by-phrases naming a causing event. Some developmental progress was observed between Groups, i.e., H-Int. and Adv. groups were more accurate than 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%) rather than in Types A (L-Int. 10%, H-Int. 0%, Adv. 10%) and B (L-Int. 0%, H-Int. 30%, Adv. 20%).

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 causatives 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. Based on 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, because of the cross-linguistic variations of causative construction. Also, we predicted that learners’ English proficiency level would affect the accuracy rates.

Overall results from the scaled acceptability judgment task indicated that Japanese-speaking 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)) as shown in Figure 2, which confirmed the first prediction. Learners’ English proficiency level affected the accuracy rates to some extent, so that some developmental progress was observed between L-Int. vs. H-Int. and Adv. learner groups. Hence, the second prediction was also confirmed.

8 Figures in the brackets indicate the number of the participants who were consistently accurate.
Individual analyses indicate that H-Int. and Adv. groups were more accurate than L-Int. And learners were less accurate on unaccusative verbs with by-phrases naming a causing event rather than unaccusative verbs with instrumental modifiers and passives or lexical causatives based on transitive verbs. Thus, the second prediction, existence of some developmental progress, was confirmed.

We firstly predicted that learners would have difficulty with unaccusative verbs with instrumental modifiers (i.e., Type C) but the overall results and the individual results indicate that it is possible for learners to acquire the structure (i.e., unaccusative causatives). 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 didn’t have difficulty with those in Type C (i.e., unaccusative verbs with instrumental modifiers).

To conclude, it may be possible for Japanese-speaking learners of English to acquire the properties of Voice-bundling causatives 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.

References