Second Language Acquisition of English Psychological Adjectives by Japanese Learners

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日本語母語話者を対象とした英語の心理形容詞の第二言語習得

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本論文では、日本語を母語とする英語学習者による心理形容詞(-ed/-ing)の習得について検討する。英語の心理動詞・心理形容詞には、それぞれ「経験者主語タイプ(ES type)」と「経験者目的語タイプ(EO type)」があり、英語の学習者にとっては「経験者目的語タイプ」が難しいという報告がある(White et al. 1998, Chen 1996, Sato 2003)。英語の心理形容詞の習得に関する先行研究は比較的少ない。「日本語を母語とする英語学習者は、日英語の心理形容詞のもつ形態的な特徴の影響を受け、英語の心理形容詞の解釈に混乱を示す」というデ・シェン(1997)の主張を確かめるために、実証的な研究を行った。その結果、日本語母語話者にとって「経験者目的語タイプ」の心理形容詞の習得が難しいこと、また、英語の熟達度による習得段階があることが明らかになった。さらに、母語である日本語が第二言語である英語に与える影響についても考察する。

1 An earlier version of this paper was presented at Second Language Research Forum (SLRF) 2011 at Iowa State University, Oct., 2011. We are grateful to all the participants in our study. We would like to thank Y. Fujisaki for her help with statistical analyses and M. Ohira for drawing numerous pictures for our experiment stimuli. We also thank J. Maeda, R. Logan, K. Takeda, J. Matthews and N. Snape for insightful discussions. This research was in part supported by a grant from the Ministry of Education, Culture, Sports, Science and Technology (No. 22320109) and by a travel grant from Bunkyo University. Our thanks also go to R. Aihara, Y. Ino, E. Imai, H. Sugawara, M. Tanaka, E. Tamura, H. Nambu and T. Fujita, who were collaborators of the original paper we presented at SLRF 2011, for their assistance at various stages of this work. Any remaining errors and shortcomings are solely our own. The third author is now affiliated with the Graduate School of Education at Chiba University.
1. Introduction

It has been generally assumed that thematic information and syntactic configuration are related in systematic ways. According to the Thematic Hierarchy as shown in (1) (e.g., Grimshaw 1990), an Agent thematic role is the most prominent argument in the hierarchy, which maps to the syntactic subject position, followed by the Experiencer, then by the Goal/Source/Location, and finally by the Theme. In other words, the Thematic Hierarchy determines the position of arguments in the syntactic structure. The sentence in (2) exemplifies that the subject NP Tom bears an Agent role, while the object NP the window bears a Theme role, in accordance with the hierarchy.

\[(1) \quad \left( \text{Agent} \left( \text{Experiencer} \left( \text{Goal/Source/Location} \left( \text{Theme} \right) \right) \right) \right) \]

\[(\text{Grimshaw 1990: 8})\]

\[(2) \quad \text{Tom} \quad \text{broke the window.} \]

\[
\begin{array}{ll}
\text{Agent} & \text{Theme} \\
\end{array}
\]

Psychological verbs (henceforth, psych verbs) challenge the general assumption of a principled mapping between thematic roles and syntactic positions. They behave in a different manner as shown by the examples in (3): the subject NP in (3a) and the object NP in (3b) John bears an Experiencer role, while the object NP in (3a) and the subject NP in (3b) exams bears a Theme role.
Previous studies report that second language (L2) learners of various first language (L1) backgrounds have difficulty with psych verbs. In particular, psych verbs with a subject NP bearing a Theme role (3b) are more problematic than those with a subject NP bearing an Experiencer role (3a) (Chen 1996; White et al. 1998; Sato 2003).

Following Pesetsky (1995) and White et al. (1998), we refer to psych verbs as in (3a) as Experiencer Subject (ES) type, and those as in (3b) as Experience Object (EO) type. As for the EO type psych verbs, they regularly become participle adjectives with either the -ed or the -ing morpheme. It should be noted that -ed psych adjectives require a subject NP bearing an Experiencer role, while -ing psych adjectives require a subject NP bearing a Theme role. As we can see in the examples in (4), these two types of psych adjectives correspond to the two types of psych verbs; namely, ES type (-ed psych adjectives) and EO type (-ing psych adjectives).

(4)   a. Nancy was disappointed (with the book).  
      (Experiencer Subject (ES))

      b. The book was disappointing (to Nancy).  
      (Experiencer Object (EO))

Only a few studies have examined L2 acquisition of psych adjectives. For example, Chen (1996) and Sato (2003) report that EO
type psych adjectives as in (4b) cause more difficulty for L2 learners of English than ES type psych adjectives as in (4a).

In the present study, we investigate how the arguments of psych adjectives (namely, Experiencer and Theme) are represented in the L2 grammar of Japanese learners of English, especially when morphological properties associated with psych adjectives differ in the L1 and L2.

The rest of this paper is organized as follows: Research background is presented in section two, followed by a brief review of the two previous studies in this area. The previous experimental studies are outlined in section three. The present experimental study is given in section four, and the results of the study are presented in section five. Finally, section six includes a discussion and concluding remarks.

2. Research Background

As examples in (3) and (4) indicate, the mapping of arguments of psych verbs and psych adjectives onto syntactic positions appears to be arbitrary, and the distinction is expected to pose difficulty for learners. However, previous studies have shown that L2 learners have more problems with EO types, which has in fact been taken as evidence that the mapping of arguments to grammatical positions in L2 learners’ grammars is not arbitrary but rather observes universal principles such as the Uniformity of Theta Assignment Hypotheses.

\[\text{The UTAH states that identical thematic relationships between items are represented by identical structural relationships between those items at the level of D(deep)-structure (Baker 1988: 46).}\]
(UTAH, Baker 1988) and the Thematic Hierarchy (e.g., Grimshaw 1990). That is, according to the UTAH, L2 learners project the argument that is higher in the thematic hierarchy, i.e., Experiencer, onto the higher position in syntax, and the argument that is lower in the hierarchy, i.e., Theme, onto the lower position. Thus, it is the EO type rather than the ES type that would be problematic if psych verbs were to cause any problems.

As examples in (4) show, Nancy, the Experiencer, in the subject of -ed adjectives (4a, thus ES type) is in the prepositional object of -ing adjectives (4b, thus EO type). According to Chen (1996), psych verbs and psych adjectives of the EO type involve a zero causative morpheme, whereas psych verbs and psych adjectives of the ES type do not. On the surface, this zero causative morpheme is invisible, as it is not phonetically realized. Consequently, the zero causative morpheme of the EO type predicates is claimed to be problematic for L2 learners.

In the present study, we focus on two types of psych adjectives: one marked with -ed modifying the Experiencer NP (5a), and the other marked with -ing modifying the Theme NP (5b).

(5)  a. a bored lecturer (ES)
    b. a boring lecturer (EO)

In the example (5a), it is the lecturer who is bored; whereas in (5b), it is listeners who are bored by the lecturer. De Chene (1997) claims that some psych adjectives in Japanese are ambiguous between
the ES \((ed)\) type and the EO \((-ing)\) type. He further argues that it may be difficult for Japanese-speaking learners to interpret psych adjectives in English because some psych adjectives in Japanese encode two distinct meanings with the same form, as in (6).

\[(6) \quad \text{taikutsu-shita koshi (Japanese)} \]
\[
\text{bore-}(e)d/-ing \quad \text{lecturer}
\]

The example in (6) is ambiguous; it can mean a \textit{bored} lecturer or a \textit{boring} lecturer. In such situations, the question arises as to whether there should be any L1 effects. In English, the two types of psych adjectives are distinct, marked morphologically, with \(-ed\) or \(-ing\), whereas in Japanese there are no morphological markers distinguishing the two types.

It has been claimed that morphology plays a role in L2 acquisition, especially when zero morphology is involved, including the intransitive/transitive alternation in L2 English; e.g., ‘\textit{John broke the window.}’ vs. ‘\textit{The window broke.}’ (e.g., Montrul 2000; Shomura 2002). Thus, it can be predicted that Japanese learners of English may have difficulty in acquiring the distinction between these two types of psych adjectives in English. In addition, as noted by Chen (1996), there is another issue that needs to be considered. That is, when psych adjectives take two animate arguments, e.g., ‘\textit{Susan is disappointed with Bill}’ this may create potential confusions for learners. First, they may not know which argument to choose as the Experiencer since both are animate. These issues are also explored in the present study.
3. Previous Studies


Chen (1996) conducted an experimental study with L1 Chinese and L1 French learners of English. The L1 Chinese group included 101 university students in China, consisting of three proficiency groups (low, intermediate, and high). The L1 French group had 35 learners in two proficiency levels (low and intermediate); they were enrolled in the English summer school at a university in Canada. A multiple choice task and a grammaticality judgment task were designed to test L2 learners’ judgments on grammaticality of psych predicates including -ing and -ed adjectives derived from six EO verbs: *amuse, annoy, fascinate, frustrate, please, and terrify.*

Results of the multiple choice task showed that the learners were generally quite accurate and that only the intermediate-level Chinese learners performed significantly better on -ed adjectives than on -ing adjectives. It was also found that the low- and intermediate-level Chinese learners had more difficulty with adjectives taking an animate subject than with those taking an inanimate subject. Results of the grammatically judgment task revealed that the -ed adjectives were not problematic for learners, as predicted, and that only the low-level Chinese and the low-level French learners were significantly less accurate than the native speakers. Along with the results of test

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3 These two tasks included a number of other structures with psych verbs and psych adjectives, but we only discuss the results of sentence types with psych adjectives exemplified in (4a) and (4b).
sentences with \textit{ing} adjectives, Chen argued that the learners overall had more difficulty with \textit{ing} adjectives than with \textit{ed} adjectives.

3.2 Sato (2003)

Sato (2003) administered a grammaticality judgment task with psych adjectives to five different proficiency levels of Japanese-speaking learners, from low to advanced, each including ten students, and ten native speakers of English.\footnote{Sato (2003) also administered a sentence completion task, which only included SE (\textit{ed}) type psych adjectives. We will not discuss its results here.} She used both \textit{ing} and \textit{ed} psych adjectives derived from five EO verbs: \textit{disappoint}, \textit{excite}, \textit{frighten}, \textit{interest}, and \textit{surprise}. Learners were presented with an introductory sentence providing a context then a set of eight sentences with psych adjectives and verbs; then they were asked to judge grammaticality of each sentence in the set using three-point scale: $-1$, $0$, and $+1$. There were four sentence types in the set of 8 sentences including psych adjectives, as shown in (7).

(7) Mary took an examination.

a. She was disappointed with the result.

b. The result was disappointing.

c. *The result was disappointed her.

d. *She was disappointing with the result.

(Sato 2003: 143)

Based on the results she obtained, Sato claimed that \textit{ed}
adjectives were easiest to judge as grammatical (7a) while the -ing adjectives were most difficult to accept (7b) for the learners. Except the high-level learners, the learners failed to accept the sentences such as (7b), the mean scores falling below zero. The learners were also inaccurate in rejecting the ungrammatical sentences (7c, 7d); in particular, low and low-intermediate learners failed to reject them.

It should be noted that the issue of animacy was not considered in Sato (2003) and that the Experiencer was always animate whereas the Theme was always inanimate in her test sentences. In addition, the design of the task needs to be improved. Given a set of eight sentences that look quite similar on surface, as shown in (7), it is possible that learners only look at the structure of the sentences, comparing each other, and make their judgment without thinking about the meaning of each sentence. We thus decided to improve the methodology of tasks and designed our experiments.

4. Experimental Study

4.1. Research Questions and Hypotheses

Our research questions are as follows:

I. Which type of psych adjectives, i.e., EO type (-ing) or ES type (-ed), is more difficult for Japanese learners of English?

II. Is there any effect of L1 morphological properties on the acquisition of English psych adjectives?

As explained above, previous studies have shown that EO type (-ing) psych adjectives cause more trouble than ES type (-ed) adjectives
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(Chen 1996; Sato 2003). If the learners were guided by universal principles, we predict that L2 learners would have more difficulty with EO type than ES type psych adjectives. Furthermore, if morphological properties in the L1 may affect L2 acquisition, we predict that learners would have problems in both types of adjectives. In the present experiment, we focus on the psych adjectives whose corresponding adjectives in Japanese are ambiguous between -ing and -ed types. Even though L1 Japanese does not differentiate the two meanings morphologically, L2 English does so with overt morphology.

4.2 Participants

We had three groups of participants: two experimental groups, Low-Intermediate and High-Intermediate level learners, and a control group of native English speakers. The L2 learners were students studying English at a university in Japan. The control group consisted of ten English native speakers who were also university students in Canada, at the time of testing.

Table 1 gives background information of the two groups of learners: their mean age, mean age of exposure, mean length of study and their proficiency scores. We divided the learners into two groups, based on their scores on the CASEC (Computerized Assessment System for English Communication) proficiency test, which had been previously administered in the university they attended. There were 14 Low-Intermediate learners (CASEC score < 630; mean 573.4) and 20 High-Intermediate learners (CASEC score > 640; mean 667.4).
4.3. Tasks and Materials

There were three tasks: a Production Task, a Picture Matching Task and an Acceptability Judgment Task. In all three tasks, all arguments were animate. The tasks included five pairs (-ed and -ing) of psych adjectives based on five EO psych verbs: disappoint, frighten, interest, puzzle, and satisfy.\(^5\)

First, in the Production Task, participants were presented with one picture and one blank line beneath the picture where only the subject of the sentence was provided, as shown in the example in Figure 1. They were asked to describe the picture by completing the sentence with the appropriate form of the word given. The same

\(^5\) Originally, there were 3 more pairs based on the following psych verbs: annoy, bore, and embarrass, but they were removed from the analyses as a translation task administered before the experiment revealed that a number of participants did not know the meanings of these verbs.
picture appeared twice, starting with either one of the two people in the picture, so that only one of the two psych adjectives would be appropriate for each time; e.g., ‘The passenger was boring.’ and ‘The tour guide was bored.’

One of the two anonymous reviewers correctly points out that the response may differ between -ed and -ing, depending on the participant’s viewpoint. We admit that this is a potential problem. We consider it when analyzing the results of Task 1.

Figure 1: Samples of the Production Task

<table>
<thead>
<tr>
<th>(bore)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
</tr>
</tbody>
</table>

i. The passenger

ii. The tour guide

Second, in the Picture Matching Task, participants were presented with a phrase including a psych adjective and a picture beneath the phrase. They were asked to indicate whether the phrase given matches the situation described in the picture, by circling “True” or “False.” A choice of “don’t know (DK)” was also given and they
were told to circle “DK” only when they were unable to judge. Figure 2 shows examples of the Picture Matching Task with a pair of psych adjective: frightened and frightening. For the examples (i) and (ii) in Figure 2, the expected answer was “True,” and for (iii) and (iv), the expected answer was “False.” It should be noted that these pictures were also used for inappropriate combinations; i.e., ‘a frightened dog’ for (i) and (iii), and ‘a frightening dog’ for (ii) and (iv). The task had 16 items based on four pairs of psych adjectives: disappoint, frighten, puzzle and satisfy, and a half of the items were “True” matching whereas the other half were “False” matching.

Figure 2: Samples of the Picture Matching Task

(i) True-ed: a frightened dog
(ii) True-ing : a frightening dog
(iii) False-ed: a frightened dog
(iv) False-ing : a frightening dog
Lastly, the Acceptability Judgment Task included 12 dialogues including four pairs of psych adjectives: *disappoint, frighten, interest* and *satisfy*. Learners were asked to judge whether or not the underlined sentence in each dialogue was natural or unnatural. Again, a choice of “don’t know (DK)” was included. Samples from the Acceptability Judgment Task are given in Table 2.

Table 2: Samples of Acceptability Judgment Task

<table>
<thead>
<tr>
<th>Type</th>
<th>Sample</th>
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</thead>
<tbody>
<tr>
<td>(i) N-ed</td>
<td>A: I have to go… I should help a frightened friend. B: What’s wrong? A: I heard that she saw cockroaches in her room.</td>
</tr>
<tr>
<td>(iii) U-ed</td>
<td>A: I saw a frightened man last night. B: Really? Where did you see him? A: He was carrying a knife and chasing people.</td>
</tr>
<tr>
<td>(iv) U-ing</td>
<td>A: I have to go… I should help a frightening friend. B: What’s wrong? A: I heard that she saw cockroaches in her room.</td>
</tr>
</tbody>
</table>

There were six “Natural” and six “Unnatural” sentences. For example, for a pair of *frightened* and *frightening*, each form was tested twice, one time as “Natural” and the other as “Unnatural.” For example, ‘a frightened friend’ in (i) is “Natural” but ‘a frightened man’
in (iii) is "Unnatural." Similarly, ‘a frightening man’ in (ii) is “Natural” but ‘a frightening friend’ in (iv) is “Unnatural.” There were twelve sentences to judge, including six -ed adjectives and six -ing adjectives, and there were equal numbers of “Natural” and “Unnatural” sentences.

5. Results

5.1. Results of the Production Task (Task 1)

We examined the sentences that the learners have produced and classified them into four categories: ‘-ed,’ ‘-ing,’ and ‘others’ including grammatically correct sentences with psych verbs or psych nouns, and ‘errors’ containing grammatically ill-formed sentences including the incorrect use of psych adjectives. Table 3 presents the distributions of the responses in these four categories by three groups: Low-I(termediate), High-I(termediate), and NS (Native Speaker) groups. As the table shows, on -ed psych adjectives, all groups behaved in a similar manner; they generally used -ed psych adjectives (67.9%~75.0%). In contrast, on -ing psych adjectives, -ing adjectives were rarely used (3.3~5.0%). There were more variations in their responses, and more errors were found, especially among the High-I learners (40%). This may reflect different viewpoints involved depending on the participant. The native speakers mostly produced sentences with psych verbs (93.3%) rather than psych adjectives (e.g., the American puzzles Ken, instead of the American is puzzling).
5.2 Results of Picture Matching Task (Task 2)

Figure 3 presents mean acceptance rates (i.e., circling “True”) and standard deviations on the 4 types of test sentences, T(rue)-ing, T(rue)-ed, F(alse)-ing and F(alse)-ed, for each group. The ‘don’t know’ choices were scored as inaccurate. Native Speaker controls responded as was expected, accepting T-ing more than 87% and T-ed 100% of the time and rejecting both F-ing and F-ed more than 95% of the time. As for the two learner groups, they behaved in a similar manner on -ed psych adjectives; i.e., they accepted T-ed about 73 ~ 79% and F-ed about 18 ~ 23% of the time, differentiating the two types. The two groups, however, behaved differently on -ing psych adjectives; the Low-I group accepted T-ing around 54% and F-ing 48% of the time, failing to reject F-ing, and only the High-I group were able to differentiate the two types, accepting T-ing 78% but accepting F-ing only around 28% of the time.

A two-way repeated measures ANOVA revealed that there were statistically significant effects for Sentence Type \( F(3, 41) = 66.587, p < .0001 \) and for Interaction \( F(6, 41) = 6.039, p < .001 \) but there was no significant effect for Group \( F(2, 41) = 0.022, p = .978 \). A post-hoc Tukey-
Kramer HSD tests revealed that, like native speakers, the High-I learners differentiated between the true and false sentence types \((p<.0001)\) but that no significant differences were found between \(F{-}\text{ing}\) and \(F{-}\text{ed}\), or \(T{-}\text{ing}\) and \(T{-}\text{ed}\), which suggests that these High-I learners generally performed accurately on both the \(-\text{ed}\) and \(-\text{ing}\) psych adjectives. For the Low-I learners, only the difference between \(T{-}\text{ed}\) and \(F{-}\text{ed}\) was found significant \((p=.0003)\) and the difference between \(T{-}\text{ing}\) and \(F{-}\text{ed}\) was close to significance \((p=.0506)\). In other words, the Low-I learners failed to differentiate between \(T{-}\text{ing}\) and \(F{-}\text{ing}\), and between \(T{-}\text{ed}\) and \(F{-}\text{ing}\). In sum, the Low-I learners tended to accept the \(-\text{ing}\) psych adjectives regardless of its grammaticality, suggesting that the \(-\text{ing}\) psych adjective was more problematic than the \(-\text{ed}\) psych adjective for the Low-I learners.

![Figure 3: Acceptance Rates (%) of the Picture Matching Task](image)
Individual analyses were further conducted on each learner’s consistent performance on the two types: *-ing* and *-ed* psych adjectives. Consistency was determined as being accurate on 6 or more of the 8 items with each type. That is, accepting T-*ing* and rejecting F-*ing*, or/and accepting T-*ed* and rejecting F-*ed* (i.e., 75% accuracy for each type).

Table 4 summarizes the individual results; that is, the number of participants who were accurate consistently on the Picture Matching Task. Column (i) presents the number and percentages of participants who consistently gave correct responses to the *-ed* psych adjectives; column (ii) shows the number and percentages of participants who consistently responded accurately on the *-ing* psych adjectives; and column (iii) shows the number and percentages of participants who were accurate consistently on both the *-ed* and *-ing* psych adjectives.

As can be seen in Table 4, there were more learners who were accurate on the *-ed* adjectives than on the *-ing* adjectives in each group, supporting the group results reported above. It is important to notice the high percentage of individuals in the High-I (80.0%) and the
Low-I (78.6%) groups who have acquired the -ed psych adjectives, but the less percentage of individuals in the High-I (65.0%) and the Low-I (28.6%) who have acquired the -ing psych adjectives. Nevertheless, in the High-I group, more than half of the learners were accurate in both types of adjectives, and in the Low-I group, 4 learners have acquired the two types of psych adjectives. Thus, although the overall results indicate that the Low-I group failed to observe the false vs. true contrast on the -ing psych adjectives, 28.6% of the learners in the group in fact observed the contrast on both types of psych adjectives. In sum, individual results as well as group results show that the learners had more difficulty with the -ing psych adjectives (EO) than with the -ed psych adjectives (ES) but that it is possible for these learners to acquire both types of psych adjectives.

5.3 Results of Acceptability Judgment Task (Task 3)

Figure 4 presents the mean accuracy rates and standard deviations on “Natural (N)” and “Unnatural (U)” sentences for each group. The “don’t know” choices were scored as inaccurate. All groups responded in a similar manner on natural sentences; they accepted N(atural)-ed around 83% and N-ing around 64 ~ 73% of the time. However, they behaved differently on unnatural sentences; the Low-I group accepted U(nnatural)-ed about 28% and U-ing about 54% of the time, and the High-I group accepted U-ed about 26% and U-ing about 40% of the time. Both learner groups incorrectly accepted U-ing more than U-ed, suggesting again that the learners had difficulty with the U-ing type. Native Speaker controls did not accept them (-ed about
6%, -ing 0% of the time).

A two-way repeated measures ANOVA reveals that there were statistically significant effects for Group ($F(2, 41) = 7.324$, $p = .0009$), for Sentence Type ($F(3, 41) = 54.888$, $p < .0001$), and for Interaction ($F(6, 41) = 3.272$, $p = .046$). A post-hoc Tukey-Kramer HSD tests further revealed that all three groups behaved very similarly on N-ing, N-ed, and U-ed, and no significant differences were found on these three sentence types. The two learner groups however differed significantly from the native controls on U-ing ($p < .001$), but they did not differ from each other. Thus, both learner groups were less accurate than native speakers in rejecting U-ing. The results of Task 3 also suggest that U-ing was most problematic for the learners.

Figure 4: Acceptance Rates (%) of Acceptability Judgment Task
Individual analyses were again conducted on each learner’s performance on *-ing* and *-ed* psych adjectives respectively. Consistency was defined as being accurate on 5 or more of the 6 sentences across the two sentence types for each psych adjective (i.e., 83% accuracy); i.e., accepting N-*ing* and rejecting U-*ing*, and/or accepting N-*ed* and rejecting U-*ed*.

Table 5 summarizes the individual results: the number of participants who were accurate consistently on the Acceptability Judgment Task. Column (iv) presents the number and percentages of participants who consistently responded on the *-ed* psych adjectives; column (v) shows the number and percentages of participants who consistently made the correct judgments on the *-ing* psych adjectives; column (vi) shows the number and percentages of participants who were consistently accurate on the two types of psych adjectives.

<table>
<thead>
<tr>
<th>Group</th>
<th>(iv) <em>-ed</em></th>
<th>(v) <em>-ing</em></th>
<th>(vi) both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-I (n=14)</td>
<td>4 (28.6%)</td>
<td>3 (21.4%)</td>
<td>1 (7.1%)</td>
</tr>
<tr>
<td>High-I (n=20)</td>
<td>11 (55.0%)</td>
<td>11 (55.0%)</td>
<td>8 (40.0%)</td>
</tr>
<tr>
<td>NS (n=10)</td>
<td>6 (60.0%)</td>
<td>9 (90.0%)</td>
<td>6 (60.0%)</td>
</tr>
</tbody>
</table>

As can be seen in Table 5, there were about the same number of learners in the two learner groups who have acquired the *-ing* type and the *-ed* type respectively. In the Low-I group, four individuals on the *-ed* type (29%) and three individuals on the *-ing*
type (21%) gave consistent responses, but only one of them (7%) was accurate on both types of psych adjectives. In the High-I group, 11 learners (55%) were consistently accurate on each type of the psych adjectives, and 8 learners (40%) were accurate on both types. These figures still suggest that the -ing type is more difficult, but that the acquisition of the -ing as well as the -ed type is possible, as their proficiency goes up. Individual results further support the development pattern observed among the learners in the group results.

6. Discussion and Conclusion

The main purpose of our study was to investigate which of the two types of psych adjectives, i.e., the -ed type (ES) or the -ing type (EO), would be more difficult for Japanese-speaking learners of English to acquire. The study was also designed to examine if there should be any effects of morphological properties in the L1 (Japanese) on L2 (English) acquisition.

We found that all the learners were generally more accurate on the -ed type (ES) psych adjectives with an Experiencer subject than the -ing type (EO) psych adjectives with a Theme subject. Thus, the first hypothesis was confirmed. Even though the Low-I and the High-I groups had difficulty with the -ing type (EO), some development in their performance was observed. That is, individual analyses of the Picture Matching Tasks and the Acceptability Judgment Task revealed that there were more individuals in the High-I group than the Low-I group who were assumed to have acquired the properties of the two types of psych adjectives. These results were consistent with
the previous findings, and it can be argued that learners are guided by universal principles so that more marked, derived structure, i.e., the -\textit{ing} type (EO) psych adjectives, would be more difficult for L2 learners but it can be acquired.

We also expected some L1 (Japanese) effects of morphology on L2 (English) acquisition of psych adjectives. Recall that Japanese psych adjectives are ambiguous between the two types of psych adjectives, as there are no morphological markers distinguishing the two types (e.g., \textit{taikutsu-shita}, \textit{bored/boring}). It should be noted that we did not observe any clear evidence for L1 transfer in this respect. It may be argued that L2 acquisition of English psych adjectives should be easier than L2 acquisition of Japanese psych adjectives as the contrast is marked morphologically in English (-\textit{ed} vs. -\textit{ing}) but not in Japanese (-\textit{shita}). Once Japanese-speaking learners of English notice morphological properties in the L2 (English), they should be able to acquire the two types of psych adjectives overcoming the possible L1 (Japanese) transfer effects. Future studies including L2 acquisition of Japanese psych adjectives by English speakers are necessary in order to determine the effects of morphological properties in L2 acquisition.

References


