

L2 Learners' Outperformance of Native Japanese: Evidence from Nonce Verb and Real Verb Tests

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1. Introduction

Controversy has prevailed in relation to whether language productivity emerges from a rule-governed system (dual-mechanism model, Pinker 1998; Pinker & Prince 1994) or an exemplar-based, associative system (single-mechanism model, Bybee 1995; Ellis 2002, 2003; Rumelhart & McClelland 1986). The fundamental assumption of a dual mechanism model, also known as the Words and Rule model, is that two qualitatively different systems are responsible for producing regular and irregular forms: regular inflections are computed using a symbolic rule, whereas irregular ones are stored in the mental lexicon. In the words and rule model, frequency effects play a role only in irregular items, although regular items are immune to frequency because they are processed using a default rule. In contrast, a single-mechanism model includes the assumptions that both regular and irregular forms are processed by a single associative system and that type frequency is the key to productivity. In the single-mechanism view, differences between regular and irregular items are attributed to differences in type frequency.

The dichotomy approach is an extremely elegant mechanism for languages having little inflectional morphology, such as English. It is doubtful, however, whether it would work for agglutinating languages with complex inflecting-fusional systems, such as Japanese. Based on results from made-up verb tests with native Japanese (JNS), Vance (1987, 1991) argued that even morphologically regular Japanese verb forms are stored in the lexicon, counter to the assumption of a dual-mechanism model. This argument is problematic if the typological difference is expected to determine the model validity. Furthermore, a replication study of Vance by Klafehn (2003) found that L2 learners outperformed JNS. This finding is also problematic because, if a symbolic 'rule' exists, then a native 'rule' must be more solid and stable than that of learners, whose language is on the mode of developmental process. Consequently, to address these issues, this study investigates the acquisition of L2 Japanese verbal inflection.

2. Japanese conjugation system

Before examining previous studies related to Japanese verb conjugation, we briefly describe the Japanese conjugation system. As described above, Japanese is typologically classified as an agglutinative language. Its conjugation system of verbs is much more complicated than that of English. As Table 1 shows, Japanese verbs have rich inflectional forms denoting various meanings such as tense-aspect, negation, and modality. Additionally, they are not readily divisible into a stem and suffix because no bare stems exist in Japanese: e.g., the stem of *nom-u* 'drink' is *nom-*, but this form never appears in isolation; it is instead always used with some suffix such as non-past *-u* or hortative *-itai*.

Japanese verbs are classified as two regular groups (consonant-stem verbs and vowel-stem verbs), which have highly predictable paradigms and an irregular group. The irregular group has only two verbs: *ku-ru* 'come' and *su-ru* 'do'. Each shows stem vowel alternation, which does not occur with regular verbs. As Table 1 shows, the hortative form of *su-ru* 'do' is conjugated as *si-tai* 'want to do'.

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The non-past form of consonant-stem verbs is characterized by a consonant stem finale plus suffix *-u* as in *nom-u* ‘drink’ or as in *kak-u* ‘write’. The non-past form of vowel-stem verbs has shape either stem-final *i* or *e* plus suffix *-ru*, such as *mi-ru* ‘see’ and *tabe-ru* ‘eat’. However, not all verbs ending in either *-i ru* or *-e ru* are vowel-stem verbs. Some consonant-stem verbs, such as *kir-u* ‘cut’ or *kaer-u* ‘return’, resemble vowel-stem verbs, but their hortative form, *kir-itai* ‘want to cut’ and *kaer-itai* ‘want to return’, clarifies that *ir/er* is not part of the suffix. On the other hand, vowel-stem verbs *ki-ru* ‘wear’ and *kae-ru* ‘change’ are inflected as in *ki-tai* ‘want to wear’ and *kae-tai* ‘want to change’ (see Table 1 for differences in conjugation patterns between *kir-u* ‘cut’ and *ki-ru* ‘wear’). Furthermore, consonant-stem verbs have various allomorphs at the stem boundary in the past form. For example, the past form of *kir-u* ‘cut’ is not **kir-ta* but *kit-ta*, and the past form *kak-u* ‘write’ is not **kak-ta* but *kai-ta*.

In summary of the points described above, the conjugation paradigm of Japanese regular verbs is complicated because of the often-ambiguous distinction between two regular groups in terms of shape and the existence of allomorphs with consonant-stem verbs.

Table 1. Japanese verbal inflection

	Regular verb		Irregular verb
	Consonant stem	Vowel stem	
Non-past form	<i>kir-u</i> ‘cut’	<i>ki-ru</i> ‘wear’	<i>su-ru</i> ‘do’
Hortative form	<i>kir-itai</i> ‘want to cut’	<i>ki-tai</i> ‘want to wear’	<i>si-tai</i> ‘want to do’
Conditional form	<i>kir-eba</i> ‘if cut’	<i>ki-reba</i> ‘if wear’	<i>su-reba</i> ‘if do’
Volitional form	<i>kir-oo</i> ‘let’s cut’	<i>ki-yoo</i> ‘let’s wear’	<i>si-yoo</i> ‘let’s do’
Negative form	<i>kir-anai</i> ‘not cut’	<i>ki-nai</i> ‘not wear’	<i>si-nai</i> ‘not do’
Past form	<i>kit-ta</i> ‘cut’	<i>ki-ta</i> ‘wore’	<i>si-ta</i> ‘did’

3. Previous studies

Results of earlier studies using nonce verb tests with native speakers of Japanese suggest the nonexistence of a rigid ‘rule’ representation for the Japanese verb conjugation paradigm, which is much more complicated than the English equivalent, as described above. De Chene (1982) and Bachelder & Ohta (2000) administered oral sentence-completion tasks. Although they used different target items and research designs, they reported similar results: JNS had great difficulty producing appropriately inflected nonce verbs. Vance (1987, 1991) used a written multiple-choice format and reported considerable difficulty for JNS in recognizing analogically correct verb forms. As Vance (1987, 1991) concluded, results from JNS suggest that even morphologically regular Japanese verb forms are stored in the lexicon, which is incongruent with the assumption of a dual-mechanism model.

Regarding L2 learners of Japanese (JNNS), it is noteworthy that learners of Japanese outperformed JNS in Klafehn’s (2003) nonce tests, as described above: although JNS showed only 53% accuracy, the learners’ scores showed 76% accuracy. Klafehn also reported a discrepancy between JNS and JNNS in response to each nonce item. In fact, JNS showed great difference in accuracy scores among nonce verbs (36–70%), although learners showed a much less disparate performance (69–84%). It was for *kap-u* that JNS attained the worst score of 36%. Different from other nonce items such as *hom-u* or *hok-u*, no real verb exists with a stem-final *p*. Therefore, a verb ending in *-pu* can be assumed to have zero-type frequency. The lowest accuracy with *kap-u* is congruent with the single-mechanism model in that the language productivity is affected by the type frequency. As Klafehn pointed out, learners’ outperformance might be attributable to explicit rule instruction and inflection training: Japanese textbooks for beginners such as *Minna no nihongo* ‘Japanese for Everyone’ emphasize the importance of paradigmatic organization of verbal inflection. Learners experience the conjugation practice of newly introduced verbs in the classroom, which contrasts to JNS, who are seldom aware of the inflection rule. Succinctly put, JNS might rely more on rote learning and might handle verb inflection in a bottom-up fashion, whereas JNNS rely more on rule learning and handle it through a top-down approach.

Klafehn presented interesting findings, but he tested neither real verbs nor the effects of learners’ L2 proficiency. Consequently, the mechanism of L2 development remains unclear. Further consideration is necessary of whether all learners of Japanese with different L2 proficiency can accommodate nonce verb conjugation better than JNS can. Do advanced learners, who are assumed to have native-like competence, show native-like performance? That is to say, do they have low accuracy in nonce tests?

Are there any interactions among performance of made-up verbs, performance of real verbs, and the learners' level? Is there a difference in accuracy among verbs? Examination of the effects of L2 level and real/nonce verbs will elucidate the acquisition processes of verb inflection in L2 Japanese comprehensively.

Therefore, using nonce verb and real verb tests, this study seeks answers to these research questions:

1. Do the distinction between nonce and real verbs and learners' proficiency level affect the accuracy rate of the Japanese conjugation system?
2. Do the type of nonce verb and the learners' proficiency level affect the accuracy rate of the Japanese nonce verb?
3. Do the type of real verb and the learners' proficiency level affect the accuracy rate of the Japanese real verb?

4. Method

4.1. Participants

Participants were 44 learners of Japanese studying at a university in Niigata prefecture, Japan. Three learners were not retained for analysis because they had more than four items in blanks on the nonce verb test. Consequently, we used a sample of 41 participants: 39 Mongolian and 2 Korean (17 male, 24 female). Their mean age was 22.7 (range = 19–27). Their mean duration of stay in Japan was 8.1 months (range = 2–33 months). Mongolian students came from Nei Mongol, Chinese, and Mongolian bilingual environments. According to responses given to background questionnaires, 35 of the 39 Mongolian participants had better command of Mongolian language, three were better at Chinese, and one was a balanced bilingual of Mongolian and Chinese.

Additionally, we briefly describe Klafehn's (2003) participants because we replicate his study and compare the results. Klafehn analyzed nonce verb data from 50 native speakers of Japanese and 50 learners of Japanese. Native Japanese were university students at Tsukuba University in Japan (average age = 19 years). Learners were college students enrolled in either second or third year Japanese language classes at the University of Hawaii (average age = 20 years, average years of Japanese study = 5 years). Their respective first languages were 40 English, 6 Cantonese, 2 Chinese, 1 Polish, and 1 Korean.

4.2. Materials

4.2.1. Nonce verb test

Klafehn's (2003) questionnaire was used to test nonce verbs. This enabled the comparison of Klafehn's results with those obtained in this study. In addition, the questionnaire has already been modified several times in terms of target items and distractors. It has achieved satisfactory results. It originated from Vance (1987); it was subsequently modified by Vance (1991) and replicated by Klafehn (2003) with slight revisions.

The test was designed to assess learners' knowledge of conjugations of four nonce regular verbs (*hom-u*, *hok-u*, *mur-u*, *kap-u*) tested in four forms (the conditional form *-eba*, the volitional *-oo*, the negative *-anai*, and the past *-ta*). This process produced 16 items in all. The first page of the nonce tests explains the ostensible purpose of the study—to examine usage of trendy words—and presents model responses. For each nonce verb, which was introduced as a trendy word, both the meaning and two model sentences (one in a non-past form and another in a hortative form) are indicated clearly. Each test item follows, consisting of a short sentence with the verb deleted. The first page of the explanation instructed learners to circle an appropriate response from among the three answer choices, as presented in Appendix A.

As shown in Table 2, all four made-up verbs are consonant-stem verbs because they end in neither *-iru* nor *-eru*. Each item has one correct answer and two distractors: One distractor has the shape of non-past form plus an inflectional ending. The other has a shape resembling that of a vowel-stem verb. For example, for the negative form of the nonce verb *hom-u* the questionnaire provides two alternatives '*homu-nai*' and '*home-nai*' along with the correct answer '*hom-anai*'. The former was motivated by the acknowledgement that a semi-productive process exists in Japanese newly coined words (Klafehn

2003). Taking the coined word *yahur-u* ‘look on the internet site yahoo’ as an example, *yahur-u* is made up of ‘yahu’, shortened from ‘yahoo’. It has a stem-final *r* consonant conjugation, such as *yahur-anai*, *yahur-oo*. However, the sole exception is a past form of *kap-u* in that it has two possible correct responses for three different inflected forms because no actual verb ends in *-pu*. Furthermore, it can not be determined how it should be inflected in the past form, which involves various allomorphs for the consonant-stem verbs according to the stem-final consonants.

Table 2. Target verbs in the nonce verb test and the real verb test

	Nonce verb test	Real verb test
Regular verb		
Consonant-stem	<i>hom-u</i>	<i>nom-u</i> ‘drink’
	<i>hok-u</i>	<i>kak-u</i> ‘write’
	<i>mur-u</i>	<i>nor-u</i> ‘ride’
	<i>kap-u</i>	<i>ka-u</i> ‘keep animals’
Vowel-stem		<i>ki-ru</i> ‘cut’
Irregular verb		<i>su-ru</i> ‘do’

4.2.2. Real verb test

On the real verb test, participants were asked to produce appropriate forms in the blanks of short sentences using verbs provided in non-past forms. The reason for the preference of a production test for the real verbs rather than multiple-choice tests is that a multiple-choice test would have been too easy for the participants in this study and might have caused a ceiling effect.

Table 2 shows six target real verbs, which consist of four regular consonant-stem verbs (*nom-u* ‘drink’, *kak-u* ‘write’, *nor-u* ‘ride’, *ka-u*¹ ‘have animals’), a regular vowel-stem verb (*ki-ru* ‘wear’), and an irregular verb (*su-ru* ‘do’). Along with the nonce verb task, the real verb task examined the four forms (the conditional form *-eba*, the volitional *-oo*, the negative *-anai*, and the past *-ta*). Therefore, a total of 24 question items were used. In addition, model responses exist with two real verbs (a regular vowel-stem verb *tabe-ru* ‘eat’ and an irregular *ku-ru* ‘come’). These eight real verbs involved in target verbs and model responses were selected from two popular Japanese textbooks for beginners, *Minna no nihongo* “Japanese for everyone” and *Hyozyun nihongo* “Standard Japanese”, which most participants from Nei Mongol in this study had used when they learned Japanese in their home country. The sentences were given in Japanese orthography with readings printed in *kana* (phonograms) and *kanji* (Chinese characters). Both the *kana* version and the Romanized version of a test question are presented in the Appendix.

The real verb test was used first with four native speakers of Japanese in a pilot exercise. Based on the native responses, we modified the test format and reworded unclear expressions.

4.3. Procedure

The tasks were administered collectively during a class for first-year students at a university in Niigata. The participants took a Simple Performance Oriented Test (SPOT). Then they completed the nonce verb test and the real verb tests. Developed at the University of Tsukuba in Japan, SPOT assesses L2 Japanese proficiency quickly (Kobayashi et al. 1996). It is well known as an efficient and reliable test method. The format of SPOT is similar to a cloze test in that, on SPOT, each short sentence has a blank with a *hiragana* character, a Japanese phonogram. An important difference between SPOT and a cloze test is that on SPOT, learners are asked to listen to a tape and fill in each blank. Involving several tasks such as listening, reading or writing on real time, SPOT presumably assesses integrated proficiency rather than a discrete point. In fact, SPOT has several versions with different targeted levels. This study used SPOT ver. A, which includes 65 grammar items mixed with beginning and intermediate level items. It is assumed to have a high degree of difficulty.

Each test took about 10 min. Collectively, data collection processes took about 30 min.

¹ Even though *ka-u* ‘keep animals’ has a vowel at the stem boundary in the non-past form, it has allomorphs *w* such as *kaw-anai* ‘not keep animals’. It is also classified as a consonant verb, which is considered to reflect the diachronic change *w > φ*. In addition, *ka-u* takes the same suffixes as other consonant verbs.

5. Results

5.1. Grouping

Participants were divided into lower, intermediate, or higher levels according to their SPOT scores. Table 3 presents the number of participants, the means, the standard deviations and the range of scores for each of the groups (maximum SPOT score is 65).

Table 3. SPOT scores

Group	<i>M</i>	<i>SD</i>	Range
Higher (<i>n</i> = 15)	52.1	3.09	49–58
Intermediate (<i>n</i> = 14)	44.9	2.70	41–48
Lower (<i>n</i> = 12)	35.3	4.63	25–40

5.2. Comparison between scores of real verb test and scores of nonce verb test

After the data collection procedure, a typographical error was found in an answer choice for the past form of the nonce verb *hom-u*. Therefore, only 15 question items of the nonce verb test were retained for analysis. Table 4 presents the mean of the accuracy scores in the nonce verb and the real verb tests. In addition, the scores of 15 nonce items from Klafehn's (2003) data with native Japanese (K–JNS) and learners of Japanese (K–JNNS) were recalculated. They are provided in the table.

Table 4. Accuracy scores of the real verb test and nonce verb test (%)

Group	Real verb		Nonce verb	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Higher (<i>n</i> = 15)	94	5.2	77	20.5
Intermediate (<i>n</i> = 14)	88	11.8	73	19.5
Lower (<i>n</i> = 12)	80	17.4	59	26.9
K–JNS (<i>n</i> = 50)	--	--	56	--
K–JNNS (<i>n</i> = 50)	--	--	76	--

As the table shows, all groups have higher accuracy scores in the real verb test than in the nonce verb. Even the higher-proficiency learners attained only 77% accuracy in the nonce test, although they scored 94% in the real verb test. Regarding Klafehn's nonce-verb data, his learners' score (K–JNNS, 76%) is almost equal to that of the higher group (77%). It is particularly interesting that it is the lower-level learners that had the score that was nearest to the native Japanese (lower group, 59%; K–JNS, 56%), although they showed the largest deviation from the native conjugation norm in the real verb test (lower 80%, intermediate 88%, higher 94%).

A two-way repeated-measures ANOVA revealed the main effect of level (lower, intermediate and higher), ($F(2, 38) = 4.356, p < .05$) and verb type (real verbs vs. nonce verbs), ($F(1, 38) = 24.044, p < .01$). No interaction was found. Multiple comparisons of level were performed using LSD, revealing significant differences between higher and lower groups, but not in other pairwise comparisons².

In summary of the points presented above, both the accuracy scores of real verbs and those of nonce verbs increased as learners became more proficient. The former is significantly higher than the latter.

5.3. Scores of each nonce verb

The second analysis compared the accuracy scores of four nonce verbs. As described earlier, past form items had two correct answers for *kap-u* and a typographical error in *hok-u*. Therefore, we examined only the responses for the conditional, volitional, and negative forms: the maximum points were three for each nonce verb.

² An anonymous reviewer pointed that one comprehensive analysis rather than separate analyses for subsets of data would have produced a more powerful statistical design. However, the latter analyses were conducted in this study because of the asymmetric constitution of the nonce verb test: *kap-u* had two correct answers for the past form and there was a typographical error in *hok-u*.

Table 5 portrays data of the mean scores of each group, including Klafehn's native and nonnative data. The higher-proficiency group shows similar results with each nonce verb (*hom-u* 2.3, *hok-u* 2.3, *mur-u* 2.5, *kap-u* 2.2), which is consistent with Klafehn's JNNS data (*hom-u* 2.3, *hok-u* 2.3, *mur-u* 2.5, *kap-u* 2.0). In contrast, similarly to Klafehn's JNS (*hom-u* 1.8, *hok-u* 1.8, *mur-u* 2.4, *kap-u* 0.9) the scores of lower and intermediate groups show wider ranges in verbs and especially low scores of *kap-u* (lower group—*hom-u* 2.1, *hok-u* 1.8, *mur-u* 1.5, *kap-u* 1.3; intermediate—*hom-u* 2.4, *hok-u* 2.5, *mur-u* 2.4, *kap-u* 1.6).

Table 5. Nonce verb test: Accuracy scores of each verb

Group	<i>hom-u</i>		<i>hok-u</i>		<i>mur-u</i>		<i>kap-u</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Higher (<i>n</i> = 15)	2.3	.98	2.3	.90	2.5	.92	2.2	.94
Intermediate (<i>n</i> = 14)	2.4	.84	2.5	.65	2.4	.85	1.6	1.08
Lower (<i>n</i> = 12)	2.1	1.24	1.8	1.12	1.5	1.17	1.3	1.07
K-JNS (<i>n</i> = 50)	1.8	--	1.8	--	2.4	--	0.9	--
K-JNNS (<i>n</i> = 50)	2.3	--	2.3	--	2.5	--	2.0	--

A two-way repeated-measures ANOVA revealed the main effect of the verb (*hom-u*, *hok-u*, *mur-u*, *kap-u*), ($F(3, 114) = 3.905, p < .05$) and marginal significance of the level (lower, intermediate and higher), ($F(2, 38) = 3.135, p < .10$). No interaction was found. Multiple comparisons of nonce verbs were performed using LSD, revealing significant differences between *kap-u* and the other three verbs, but not in other pairwise comparisons.

5.4. Scores of each real verb

The third analysis compared the accuracy scores of six real verbs for four different inflected forms (conditional, volitional, negative, and past forms). Table 6 portrays the mean scores of each group.

A two-way repeated-measures ANOVA revealed the main effect of the verb (*nom-u* 'drink', *kak-u* 'write', *nor-u* 'ride', *ka-u* 'keep animals', *ki-ru* 'wear', *su-ru* 'do'), ($F(5, 190) = 6.737, p < .01$) and of the level (lower, intermediate, and higher), ($F(2, 38) = 4.282, p < .05$), but no significant interaction. Post hoc analysis of multiple comparisons with LSD revealed significant differences between *su-ru* and the three verbs *nom-u*, *ka-u*, and *ki-ru*, and that *ka-u* and *ki-ru* were significantly lower than the other four verbs. Other pairwise comparisons were not significant.

Table 6. Real verb test: Accuracy scores of each verb

Group	<i>nom-u</i>		<i>kak-u</i>		<i>nor-u</i>		<i>ka-u</i>		<i>ki-ru</i>		<i>su-ru</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Higher (<i>n</i> = 15)	3.9	0.26	4.0	0.00	3.7	0.59	3.5	0.64	3.5	0.64	3.9	0.35
Intermediate (<i>n</i> = 14)	3.6	0.63	3.7	0.61	3.8	0.43	3.3	0.83	2.8	1.37	3.9	0.36
Lower (<i>n</i> = 12)	3.3	0.75	3.2	0.94	3.2	1.12	3.1	0.79	2.9	1.51	3.7	0.65

6. Discussion

6.1. Answers to Research questions

The two tasks described in this article were used to find answers to three research questions. (1) Do the distinction between nonce and real verbs and learners' proficiency level affect the accuracy rate of the Japanese conjugation system? (2) Do the type of nonce verb and learners' proficiency level affect the accuracy rate of the Japanese nonce verb? (3) Do the type of real verb and learners' proficiency level affect the accuracy rate of the Japanese real verb?

In answer to the first research question, the results showed effects of verb types and learners' proficiency. First, the accuracy scores of both nonce and real verbs correlated with the L2 level. That is to say, learners who are more proficient were able to conjugate real verbs correctly. They also adapted

the inflection rule successfully to the nonce verbs, which they had never encountered. Second, results show that scores for real verbs were significantly higher than those for nonce verbs. These high scores are noteworthy because the test format of the latter three-answer choice task should have more easily yielded higher marks than the former elicitation task. In fact, such was not the case. The results imply that L2 Japanese development in verb inflection is affected both by exemplar-based learning and by rule learning.

In answer to the second research question, the nonce verb *kap-u* showed a significantly lower score than any of the other three items. In fact, *kap-u* is the most distant verb from real verbs in that no real verb ends in *pu*, although the other three items (*hom-u*, *hok-u*, *mur-u*) share endings with real verbs (e.g., *nom-u* ‘drink’, *kak-u* ‘write’, *nor-u* ‘ride’). The single-mechanism model predicts that high type frequency engenders high productivity and that low type frequency engenders low productivity (Bybee 2003; Ellis 2002, 2003). Therefore, the lowest score with *kap-u* indicates the similarity effect, i.e., exemplar-based associative learning.

Regarding the third research question, the results indicated *su-ru* ‘do’ as the highest and two regular verbs *ka-u* ‘buy’ and *ki-ru* ‘wear’ as significantly lower than the other four verbs. The high accuracy of *su-ru* might be attributable to the frequency effect and instruction. Although *su-ru* is attributed to an irregular group, it is used productively to create new verbal expressions such as *copii-suru* ‘make a photocopy’ or *ocha-suru* ‘have tea’, which can be linked with its high frequency. Additionally, *su-ru* is introduced earlier in Japanese textbooks for beginners (e.g., lesson 6 in *Minna no nihongo* ‘Japanese for everyone’ and lesson 7 in *Hyozyun nihongo* ‘Standard Japanese’), whereas *ka-u* and *ki-ru* are introduced later in the same textbooks (e.g., lesson 27 and 22 in *Minna no nihongo* and lesson 33 and 21 in *Hyozyun nihongo*). Furthermore, closer examination of learners’ erroneous responses revealed confusion of consonant-stem with vowel-stem paradigms. For example, instead of *ki-nai* ‘not wear’ nine learners answered as **kira-nai*, just as in *kir-anai* ‘not to cut’ (see Table 1). Additionally, for *ka-ou* ‘let’s buy’, nine learners produced a vowel-verb suffix *-you*. Six **ka-you*, 2 **kae-you*, and 1 **kao-you* were included among learners’ responses, which suggests that the low accuracy of *ka-u* and *ki-ru* is related to the difficulty of distinguishing consonant-verbs from vowel-verbs.

6.2. Difference between JNS and JNNS

It is noteworthy that the higher-level group showed native-like performance in real verb tests (94%), but showed a discrepancy from Klafehn’s native Japanese in nonce tests. They considerably outperformed them (77% vs. 56%). The lower-level group attained the closest score to JNS in nonce items (59%), although they gained worse scores in real verb tests (80%) than the other groups did (intermediate, 88%; higher, 94%). The lower-level learners often made mistakes such as **nome-you* for *nom-ou* ‘let’s drink’ or **kit-ta* for *ki-ta* ‘wore’, which never occur in adult native usage. The important point here is that the L2 verb inflection system might be different from that of JNS.

Moreover, the distribution of alternative responses in nonce verb tests revealed differences between L2 learners and native Japanese. Figure 1 portrays that JNS preferred the non-past plus ending to resemblances of vowel-stem (3.7:2.9), but all L2 learners groups preferred resemblances of vowel-stem verbs (for lower 2.1:4.0, for intermediate 1.6:2.4, for higher 1.1:2.3, and for K–JNNS 1.1:2.8). The native speakers’ preference for the former alternative suggests the influence of the existence of the semi-productive *r* consonant stem ending. They tend to treat an unfamiliar item erroneously as a root. In contrast, it is not surprising that the learners were more reluctant to make this choice because they must be familiar with the fact that no verb paradigm exists in Japanese that allows an already inflected form (e.g. *mur-u*) to serve as a stem (e.g. **mur-u-nai*): classroom instruction and Japanese textbooks emphasize the importance of the verb conjugation paradigm. The learners’ preference of the latter distractors suggests that they have difficulty distinguishing consonant-stem paradigms from the vowel-stem paradigms.

The L2 learners and JNS share some common points: All groups showed difficulty with *kap-u*, a made-up verb with stem ending in non-occurring *p*. That result suggests that both learner and native speakers were affected by the similarity effect during Japanese verb inflection. Furthermore, although Klafehn claimed that the L2 learner demonstrated much more even performance on the nonce verb test (range: 2.0–2.5) than JNS did (range: 0.9–2.4). This might be true because his JNNS participants had sufficient competence to apply the rule even to the most distant verb from real verbs. The higher-proficiency group showed similar results to those of K–JNNS (higher, 2.2–2.5), although the

lower and intermediate groups showed much wider ranges (lower, 1.3–2.1; intermediate, 1.6–2.5) similarly to Klafehn's native data. It might be true that the type frequency influences native speakers more strongly than it influences L2 learners, but learners' proficiency might determine the degree of similarity effect as well.

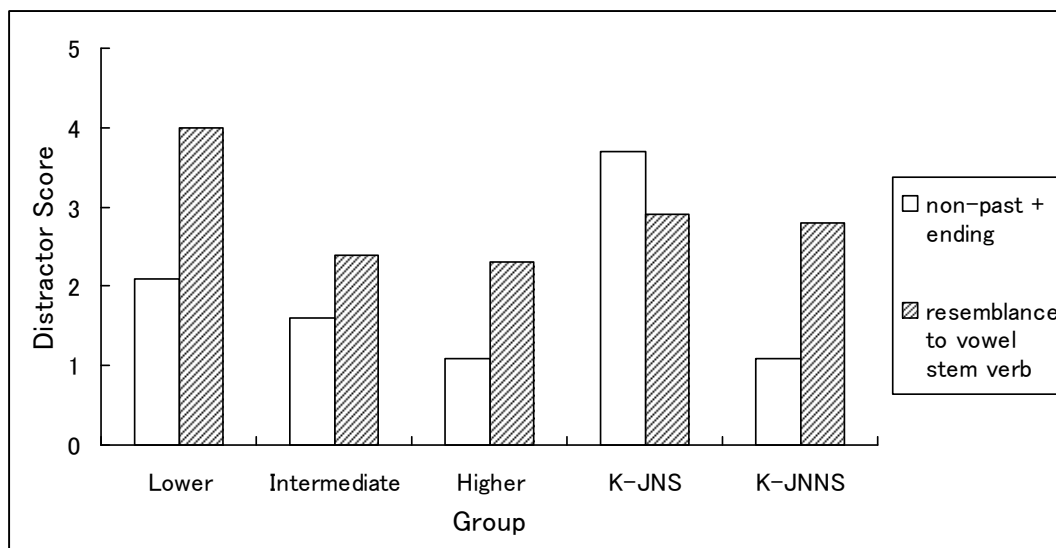


Figure 1. Nonce verb test: Distractor score.

7. Conclusion

This study examined the effect of L2 proficiency and distinction of nonce/real verbs and yielded an important contribution to the understanding of acquisition on L2 verb inflection. Our findings suggest that the learning of complex inflecting-fusional systems involves both exemplar-based learning and rule learning. More advanced learners, who were able to conjugate familiar verbs correctly, adapted the inflection rule successfully to new verbs that they had never encountered. A similarity effect was found: among nonce items, the verb that was most dissimilar to real verbs showed the lowest accuracy. Moreover, results suggest that learners of Japanese and native Japanese treat verb inflection differently. It is noteworthy that learners outperformed native Japanese in nonce verb tests. Although both associative and analytical mechanisms might play a role in the conjugation process, learners are apparently more rule-oriented than native speakers are. The distribution of alternative responses also displayed differences between learners and native Japanese speakers. Learners' difficulty in verb inflection is apparently attributable to the difficulty in distinguishing consonant-stem paradigms from vowel-stem paradigms.

An important limitation of this study is that accuracy was examined using only tasks with a few nonce items without time pressure. Moreover, it remains unclear how learners actually process various Japanese verb conjugation. This last point merits further research using methods such as reaction time experimentation.

Appendices

Appendix A: Nonce verb test

(1) Original *Kana* version of model responses given to the participants.

流行語	はつ	意味	(はじめる)
例	すぐ はつ なんだってさ。 はちたい なあ。		(はじめる) (はじめたい)
(1)きのう _____	よかったのに。		(はじめれば)
はつれば	はてば	はてれば	
(2)さあ、_____ か。			(はじめよう)
はつよう	はつろう	はとう	
(3) _____ してくれよ。			(はじめない)
はたない	はつない	はてない	
(4)もう _____ のか。			(はじめた)
はた	はつた	はった	

(2) Romanized version and English translation.

Ryuukou-go	hatu	imi	(hajimeru)
'Trendy word'	'hatu'	'meaning'	'(start)'
Rei	Sugu hatu-nda tte-sa.		(hajimeru)
'Example'	'Says he'll start soon.'		'(start)'
	Hatitai naa.		(hajimetai)
	'I wanna start already.'		'(want to start)'
(1) Kinou _____	yokatta-noni.		(hajimereba)
	'If only you'd started yesterday.'		'(if start)'
hatureba	hateba	hatereba	
(2) Saa, _____	ka.		(hajimeyou)
	'Shall we start?'		'(Let's start)'
hatuyou	haturou	hatou	
(3) _____	de kure-yo.		(hajimenai)
	'Don't start.'		'(not start)'
hatanai	hatunai	hatenai	
(4) Mou _____	no-ka.		(hajimeta)
	'He already started.'		'(started)'
hata	hatuta	hatta	

Appendix B: Real verb test

(1) Original *Kana* version of model responses given to the participants.

例 1. たべる (食べる)

- [1] 朝ごはんをもっとたくさん たべれば よかったのに。 【^{けい}ば形】
あさ
 [2] おいしいものをたくさん たべよう と思っています。 【^{い し けい}意志形】
おも
 [3] 彼は具合が悪いので、何も たべない と思います。 【^{けい}ない形】
かれ ぐあい わる なに おも
 [4] タイ料理を たべた ことがありますか。 【^{けい}た形】
りょうり

(2) Romanized version and English translation.

Rei 1. taberu (taberu)

‘Example 1. eat (eat)’

- [1] Asagohan-o motto takusan tabereba yokatta-noni. [ba-kei]
 ‘If only you’d eat breakfast more.’ [conditional form]
- [2] Oisii mono-o takusan tabeyou to omotteiasu. [isi-kei]
 ‘I have it in mind to eat delicious food a lot.’ [volitional form]
- [3] Kare-wa guai-ga warui-node, nani-mo tabenai to omoimasu. [nai-kei]
 ‘I assume that he will not eat a lot because he is sick.’ [negative form]
- [4] Tairyouri-o tabeta koto-ga arimasu-ka. [ta-kei]
 ‘Have you ever eaten Tai food?’ [past form]

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