# EXPLORING THE SOURCE OF VARIABILITY OF L2 PERFORMANCE: THE OVERGENERATION OF *NO* IN PRENOMINAL MODIFICATION IN JAPANESE

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One of the most common types of errors that child and adult Japanese language learners produce is the use of *no* in the modification of nouns. They may use the sequence 'adjective + *no* + noun' (e.g., *takai no hon* 'expensive + *no* + book') when the correct sequence is 'adjective + noun' (e.g., *takai hon*). The element *no* has several functions, but typically it is analyzed as a genitive marker (e.g., *John no hon* 'John + *no* + book,' John's book). This paper shows that second language Japanese learners' performance varies across tasks (grammatical judgment and interview) as well as within a task (interview) with regard to the use of *no*. This variability indicates that it may not necessarily be the learners' grammatical knowledge that deviates from the target language norm. This paper suggests non-automatic (yet to be automatized) retrieval processes of syntactic information of adjectives as possible sources of the variability and presents an experimental method for the investigation of word retrieval processes, along with preliminary findings.

## Introduction

In many previous studies of first language (L1) and second language (L2) acquisition, the deviance of performance among children acquiring their L1 and among adults acquiring an L2 from the target norm has often been accounted for by a lack of certain grammatical knowledge. This paper suggests two alternative sources of learners' errors: the non-internalization of syntactic information in each lexical entry, and the non-automatic retrieval processes of such syntactic information. The importance of lexicon in its relation to grammar has recently been recognized both in theoretical and applied linguistics, but L2 acquisition data has rarely been analyzed from such a perspective. As well, only recently have researchers started to pay more attention to processing factors; they have started to recognize that performance can be constrained both by a speaker's knowledge and by his/her production mechanisms (e.g., memory load, articulation mechanism, time pressure, etc.). However, the specific mechanism in processing which is the source of errors has yet to be identified. This paper argues that, for the accurate use of certain grammatical elements (e.g., *no* in Japanese), L2 learners first need to internalize the syntactic category information of the word in each lexical entry, and then need to be able to retrieve such information automatically. Failure with either one will surface as grammatical errors in their performance.

Both in L1 and L2 acquisition of Japanese, some learners have been observed to overgenerate *no* in prenominal modification. Like other deviances, the overgeneration of *no* has been considered to be the consequence of L1 or L2 learners' lack of appropriate knowledge. This paper first discusses the importance of the role of the syntactic information

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contained in each lexical entry for the production of correct sentences. Subsequently, it explores the possibility that there exists a stage at which learners may possess the appropriate knowledge but may overgenerate *no* for processing reasons, specifically because of non-automatic retrieval of syntactic information contained in each lexical item. It should be noted that errors which could be attributed to non-internalization of syntactic information in each lexical entry *are* caused by a lack of 'knowledge.' However, in this case, it is not a lack of knowledge concerning relevant syntactic structures that causes the error; rather, it is a lack of lexical knowledge.

## Background

### Overgeneration of *no*

Examples 1-3 show prenominal modification in Japanese. Only when a noun is used in the modifying phrase does the genitive marker *no* become necessary, and the use of *no* with adjectival nouns or adjectives is incorrect. Adjectives and adjectival nouns both possess functions similar to English adjectives, but they differ morpho-syntactically.

(1) Adjective + noun

| | | |
|---|---|---|
| taka-i | kuruma | |
| expensive-NON-PAST | car | 'an expensive car/ a car that is expensive' |

(2) Adjectival noun + noun

| | | | |
|---|---|---|---|
| benri | na | kuruma | |
| convenient | copula | car | 'a convenient car/ a car that is convenient' |

(3) Noun + noun

| | | | |
|---|---|---|---|
| John | no | kuruma | |
| John | copula/genitive | car | 'John's car/ the car that is John's |

Many researchers (e.g., Clancy, 1985; Murasugi, 1991) have noted that Japanese children overgenerate *no* in prenominal modification such as in (4-6) from Emi's utterances in Murasugi's study (The capitalized NO with astrisk indicates the incorrect use of *no*).

(4) Adjective + noun

* suppa-i no zyuusu
sour *NO juice 'sour juice'
Appropriate target: suppai zyuusu

(5) Adjectival noun + noun

* kiree *NO hana
pretty *NO flower 'a pretty flower'
Appropriate target: kiree na hana

(6) verb predicate (relative clause) + noun

* odot-ter-u no sinderera
dancing is *NO Cinderella 'dancing Cinderella'
Appropriate target: odot-ter-u sinderera

Researchers do not agree as to the linguistic property of overgenerated *no*; it may not necessarily be the genitive marker *no* since the phonological form *no* can occur in any of the following linguistic environments (7-11):

(7) Genitive marker
John no pen
John GEN pen 'John's cup'

(8) Genitive marker in relative clause
John no kat-ta pen
John GEN buy-PAST pen 'a pen that John bought'

(9) Pronoun 'one'
akai no (o katta)
red one (ACC buy-past) '(he) bought a red one'

(10) Extended predicate
taka-kat-ta no?
expensive-past extended predicate '(is it that) (it) was expensive?'

(11) Complementizer no
pen o kat-ta no wa John da.
pen ACC buy-PAST TOP John copula 'It is John who bought the pen.'

Many L1 researchers (e.g., Clancy 1985) have assumed that *no* is the overgeneration of the genitive marker used in such environments as (7) and (8) while others have argued that it is the overuse of the pronoun *no* (e.g., Nagano 1960) or of the complementizer *no* (Murasugi 1991). However, the researchers have all attributed the overgeneration of *no* to children's lack of knowledge; that is, they all assume that children do not possess the appropriate grammatical knowledge.

In L2 literature, it has been noted that the overgeneration of *no* can be the transfer of the learners' knowledge of L1 grammar when their L1 requires the insertion of a linguistic element in prenominal modification such as *de* in Chinese (e.g., *gui de shu* 'expensive+*de*+book'). However, overgeneration has been observed among L2 learners whose L1 does not have such elements in prenominal modification such as in Korean (e.g., Shirahata, 1993). Shirahata concluded that the overgeneration of *no* is a common phenomenon in the process of acquiring Japanese regardless of the learners' L1.

We have briefly seen that *no* has been reported as a frequently overgenerated element both in L1 and L2 acquisition. Nishigauchi (1993) regards this overgenerated *no* among children as a morphological case-marker (i.e., gentive Case), which is one of the 'default' Cases according to Fukui and Nishigauchi (1992). Miyata (1993) and Nishigauchi (1993) use the linguistic analysis in Fukui and Nishigauchi to explain the errors of *ga* and genitive marker *no*. Fukui and Nishigauchi argue that the morphological case markers *ga* and *no* are both realizations of unmarked 'default' cases licensed by the functional categories, inflection and determiner, respectively.

Japanese adult native speakers occasionally erroneously overgenerate the nominative marker *ga* (Miyaji 1955; Terao 1987, 1995), and Japanese aphasic patients overuse both the nomintive *ga* and the genitive *no* (Sasanuma et al. 1990). The source of this overgeneration

is not likely to be in their knowledge of grammar; rather, it must be in processing these linguistic items. Such overgeneration of the two case markers may be accounted for by the 'default-ness' of the nominative case and genitive case in the linguistic analysis. Although the details of the link between the linguistic property of *no* and its behavior in language processing remains to be explained, the linguistic property of *no* may allow this element to be used as a default marker in sentence processing.

Some of the findings in previous literature also seem to suggest that L1 and L2 learners' overuse of *no* may not necessarily be explained by lack of grammatical knowledge. Murasugi (1991) claims that the source of the overgenerated *no* is children's innate knowledge: Children assume that the syntactic structure of relative clauses is a CP (Complementizer Phrase) while its structure in Japanese is an IP (Inflection Phrase), and because of this assumption, children generate *no* as a complementizer. In Murasugi's data, however, not all children overgenerate *no*. If children start with the assumption based on their innate knowledge that relative clauses are CP's, why do only some of the children overgenerate *no*? It does not seem reasonable to attribute such variable behavior to innate knowledge.

If a lack of grammatical knowledge is the source of errors, occurrences of the same type of errors should be invariable in a language learner's performance. If variance is found in a given learner's performance during a given time period, the source of errors should be sought elsewhere. In other words, an L1 or L2 learner may only sometimes overgenerate *no*. Indeed, stages of such inconsistency are observed both in L1 and L2 data. In Shirahata's (1993) data, there was a two-month period during which a Korean child used both the incorrect sequence 'adjective+*no*+noun' and the correct sequence 'adjective+∅+noun.' The child used only correct forms after this period. Similarly, in Yokoyama's (1990) study, two children first started using the correct sequence 'adjective+∅+noun' at the ages of one year seven months and one year and nine months, and subsequently started using the incorrect sequence 'adjective+*no*+noun' as well. While the two children used the correct sequences most of the time, they also continued to use the incorrect sequence as well for at least a year. Yokoyama hypothesized the four stages in (12).

(12) First stage: correct use based on rote mechanical learning of the sequences
Second stage: use of both correct and incorrect sequences
period of generalizing, hypothesizing rules
Third stage: self-correction
monitoring the performance based on the correct knowledge acquired
Fourth stage: correct use

The two children in Yokoyama's study may have possessed the appropriate grammatical knowledge both at the second and third stages, then the source of difficulty in producing the correct sequences would have been proceduralization. Yokoyama also found some item dependency (i.e., only a limited set of items were used in the incorrect sequence); most of the adjectives that were used in the incorrect sequences were the ones that were also used in the sequence 'adjective+pronoun *no*' (e.g., *ookii no* 'a big one'). What this may suggest is that the routinization of the sequence, (i.e., automatized use of these sequences 'adjective+pronoun *no*') might have made it easy for these children to articulate the sequences, and might have induced the incorrect sequence.

Moreover, a puzzling finding in Kaplan's (1993) study may indicate the 'ease' of articulating 'adjective+*no*+noun' sequences. When subjects were instructed to repeat ungrammatical sentences, they occasionally unconsciously corrected ungrammatical sentences and produced grammatical sentences. This subconscious grammatical repetition of ungrammatical sentences increased for some sentence types as subjects acquired structural knowledge. However, Kaplan found it puzzling that the students did not appear to correct the ungrammatical 'adjective+*no*+noun' sequences even in the advanced stage. They repeated the ungrammatical sentences without correcting them by omitting the ungrammatical use of *no*. This may indicate an ease of articulation in this sequence. Although further research is required, it appears that L2 learners have a tendency or preference to connect Japanese target words using a 'default' connector.

**Variation in L2 Performance**

As noted earlier, L1 learners are not always consistent in the use of *no*; they sometimes overgenerate it and sometimes correctly use 'adjective + noun' without overgenerating *no*, at the same stage. Variability of use of certain grammatical elements has often been noted in L2 research. There exist three types of variation in L2 performance: across speakers, across time for a given speaker, and across tasks for a given speaker. The first two types of variation can readily be accounted for by individual differences and by development over time, but the third type of variation has not been sufficiently accounted for. A number of researchers have attempted to explain the reason why there exists such variability (Bialystok, 1994; Bialystok & Sharwood Smith, 1985; Ellis, 1985; Hulstijn & Hulstijn, 1984; Tarone, 1983). Such researchers as Bialystok (1994) and Hulstijn (1990) attribute the variability to psychological processes (e.g., attention to form, analysis of forms) although the processes they discuss are general. Tarone (1988), however, claims that it is problematic to seek to explain interlanguage variation as the result of inner psycholinguistic processes because it is virtually impossible to obtain empirical evidence concerning such processes. While it is certainly the case that we cannot directly observe mental processes, we can seek valid ways in which to indirectly tap into the mental processes involved in producing language. Study Two below is such an attempt.

**Syntactic Information in the Lexical Entry**

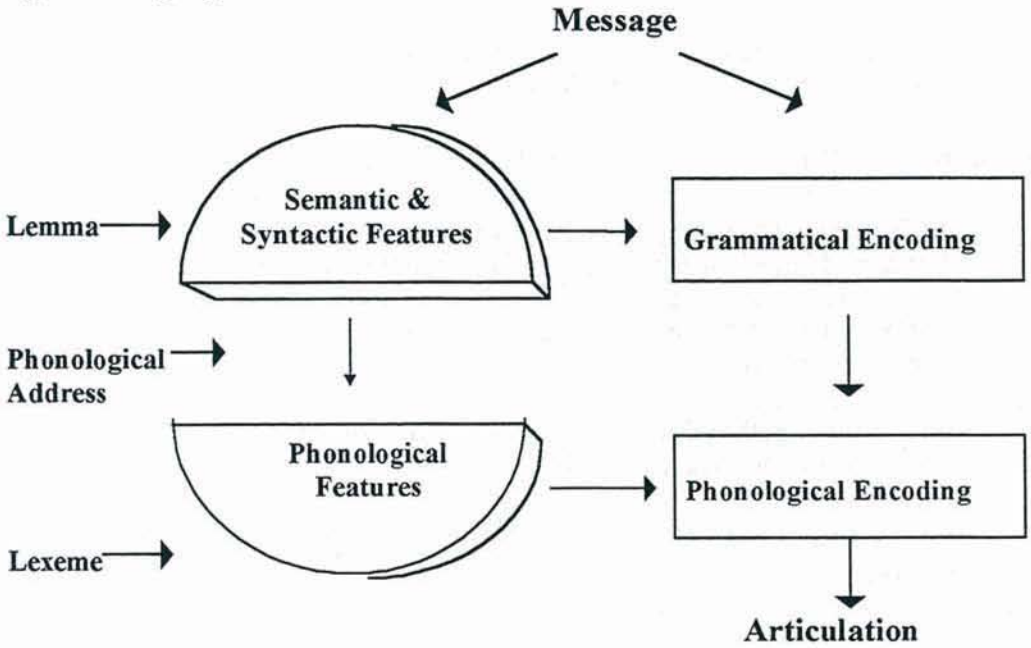
For accurate production of some syntactic structures, the identification of syntactic categories that are being used is crucial. In the Japanese language, it is especially important for formation of such structures as negation and prenominal modification. The following examples illustrate the importance of identification of syntactic categories of head of phrases.

| | | | |
|---|---|---|---|
| (13) | a. adjective: | akai ∅ kuruma | |
| | | red car | 'red car' |
| | b. adjectival noun: | kiree na kuruma | |
| | | pretty *na* car | 'pretty car' |
| | c. noun: | midori no kuruma | |
| | | green *no* car | 'green car' |

d. sentence (IP): kat-ta kuruma
buy-PAST car 'car (I) bought'

In order to generate the noun phrases in (13) appropriately, L2 learners first need to have internalized the syntactic category of each lexical item, *akai*, *kiree*, and *midori*. Furthermore, such information has to be available to the speaker early enough to utilize in on-line sentence generation. In psycholinguistics, it is assumed that each lexical item has two components: A semantic and syntactic component (called 'lemma') and its morpho-phonological component (Figure 1). Iwasaki et al. (in press) found evidence that native speakers retrieve adjectives and adjectival nouns in two stages. That is, native speakers first retrieve semantic and syntactic components of lexical items ('lemma') before their sound form ('lexeme') becomes available. This early availability of syntactic information should be crucial in building up target sentences appropriately. More specifically, Levelt (1989) assumes that the syntactic information of a lemma calls for appropriate structure-building procedures.

Figure 1. Language Production Model




## Purpose of the Current Studies

The first study examines whether there is variability of overgeneration and correct non-use of *no* across tasks (i.e., grammatical judgment and interview), and whether such *no*-insertion errors are dependent on lexical items. Although anecdotal statements with regard to such variability among adult L2 learners are common, a systematic observation has not been conducted. Thus, we examine and describe the variability among L2 adult speakers, and then examine the possibilities of two sources of variability of the overgeneration of *no* in L2 performance : (1) non-internalization of syntactic information in lexical items and (2) failure to apply appropriate procedures during sentence processing.

In Study One, Japanese L2 learners' performance on grammatical judgment tasks and their use and non-use of *no* in prenominal modification are examined. Study Two attempts to identify the specific area of the processing mechanisms that creates the mismatch between L2 learners' performance on grammatical judgment and their speech performance. It is hypothesized that L2 learners' retrieval of syntactic information may not be automatic. Study Two is a preliminary attempt to examine L2 learners' retrieval processes of lexical items, and only data from advanced level learners is currently available.

## Hypotheses

We hypothesize that the source of the variability occurs during a stage (among some learners) at which procedures to build up premodifying phrases may be a problem rather than the knowledge of structures of premodifying phrases. If this is the case some learners (who may be at this stage) exhibit the following types of variability:

(14) a) a mismatch between the learners' performance on written grammatical judgment tasks and their performance in speaking;

b) an inconsistency in the use and non-use of overgenerated *no* (especially across multiple use of the same lexical items).

If the hypotheses (a) and (b) seem to hold, the following may be predicted:

c) L2 learners at the beginning stage who occasionally overgenerate *no* lack either an internalized knowledge of the syntactic category in each lexical entry or automaticity in retrieval processes of such syntactic information. That is, syntactic information of premodifying phrases may not become available early (i.e., before the phonological information becomes available);

d) L2 learners at the advanced level who usually correctly produce premodifying phrases should retrieve the syntactic information early.

This paper presents the examination of hypotheses (a), (b), and (d); (c) is currently under investigation.

## Study One

### Purpose

This study investigates hypotheses (a) and (b) above.

### Subjects

Twelve students enrolled in a beginning Japanese course participated in this study.

### Procedures

At the end of the semester, the students were interviewed individually. The interview included elicitation of premodifying phrases using adjectives and nouns (mostly color terms). The students were instructed to do a role-play in which they had to buy items on a shopping list (paper of various colors, pens of different colors, and clips of different sizes). The

interviewer asked what items the student was going to buy before the shopping task, and, afterwards, asked what exactly she/he bought. Thus, students had to use some lexical items more than once. Immediately after the interviews, students were given a list of sentences and were asked to choose 'good' or 'bad' for each sentence. There were twelve test items: Nine included pronominal modifiers containing nouns, adjectives and adjectival nouns; three were negations of either adjective or adjectival noun predicates (see Appendix I for a complete list of test items).

**Results**

Among twelve students, four students (S3, S4, S5, and S7) correctly judged the grammaticality of all twelve sentences (Appendix II). Among these four students, one (S5) made an error of overgeneration of *no* in the 'adjective + noun' environment, while correctly producing 'adjective+noun' other times (Appendix III). Student 3 and Student 5 made no errors of overgenerated *no*; instead, they undergenerated *no* when it was required (e.g., *tyairo ∅ kami)*; in particular, Student 3 never produced *no* even in required environments. His performance is inconsistent with his judgment on grammatical judgment tasks (e.g., Items 1 and 11). Of the remaining eight students, three students (S6, S8, and S10) made correct judgments with all four sentences containing adjectival modifiers (two sentences with 'adjective+*no*+noun', and two with 'adjective+∅+noun'). Yet, all three of the students made errors of overgenerated *no* (S6 twice; S8 four times; S10 twice respectively) while correctly applying non-use of *no* in other instances (four times, once, four times respectively).

With regard to items that are used in such sequences as 'adjective+∅+noun', 'adjective+*no*+noun' and 'noun+noun', some inconsistent use of the same lexical items was observed (Appendix IV). For example, Student 5 produced both grammatical 'tyairo+*no*+kami' (brown paper) and ungrammatical 'tyairo+∅+kami' (once each); Student 10 produced both the grammatical sequence 'tiisai+∅+nooto' (small notebook) and the ungrammatical *'tiisai+no+nooto.'

## Discussion of Study One

There was variability between grammatical judgment tasks and interviews. Many of the students, however, did make errors of overgeneration of *no* despite their correct judgment on relevant sequences (i.e., 'adjective+∅+noun' and *'adjective+*no*+noun'). This shows that despite their explicit knowledge, students still make errors in speech, suggesting that the source of such errors is not grammatical knowledge with regard to adjective modifiers and noun modifiers. This leaves two other possible sources of errors. Students may not have internalized syntactic category information in some lexical items correctly, and thus make errors for certain words but not other words. If this is the case, two things can happen. One is that students would apply the same 'default' process whenever they are not sure of the syntactic category of a word they are about to use. In other words, they either always insert *no* between modifiers and modified nouns when the syntactic type of a modifier is not identified, or always directly modify a noun without any intervening elements (i.e., modifier+∅+noun) when the syntactic information of the modifier is unavailable. Or, students may randomly use either the '*no*-insertion' or 'direct modification.'

In the current study, there are some inconsistencies of the use of '*no*-insertion' and 'direct modification' involving the same adjectives or nouns. There were eight cases of such

inconsistencies in performance of S5, S6, S8, S9, S10, S11, and S12 (See Appendix III). These inconsistencies can be explained by one of the two situations below:

(15) a) The students are not sure of the syntactic categories of words that are involved in inconsistency; thus they randomly use '*no*-insertion' or 'direct modification'.

b) The students 'know' the syntactic categories of the words, but sometimes fail to retrieve the knowledge while producing sentences.

In the current study, we cannot conclude which is more plausible. What needs to be investigated and identified are strategies that students would employ when they need to use a word whose syntactic category they are not sure of. If it is found that L2 learners' strategies are not the random use of '*no*-insertion' or 'direct modification,' then it will lead to the conclusion that inconsistency involving the same items can be attributed to processing factors.

Only a limited number of adjectives and nouns were used because of the time limitation and the nature of the tasks, but there is some indication that the students' difficulties lie in the processes of generating phrases, not in grammatical knowledge. There were three instances of self-correction (e.g., *tyairo kami* → *tyairo no kami*; *tiisai no nooto* → *tiisai nooto*). Apparently, this requires further investigation.

Some variability may be accounted for by the difficulty with the internal processes of generating phrases. This has also been suggested by some researchers, but a specific mechanism or a specific locus of difficulty in processing has not been identified. This paper proposes that retrieval of syntactic information is one place where learners encounter difficulty in processing. Errors occur when learners have not automatized this process. Study Two is a preliminary investigation of L2 learners' lexical retrieval processes.

While overgeneration of *no* has been observed, its occurrence is infrequent in the above data; on the other hand there are many cases in which students did not use *no* when it was required. This may be explained either by the nature of items which were used in the study or by the order in which such sequences as 'adjective+nouns' or 'nouns+no+nouns' were introduced to students. In the above study, many color terms are used, and the findings that many of these occur without *no* cannot readily be generalized to other types of lexical items. There was also one instance of an error *'nihongo kurasu' (Japanese class); this may be a transfer of the lexical knowledge that the English word *Japanese* can function either as a noun or adjective. Thus, it will be extremely important to have varied lexical items for future studies.

## Study Two

### Purpose

This study attempts to shed light on the advanced-level nonnative speakers' lexical retrieval process to examine Hypothesis (14d).

### Subjects

Seven advanced level speakers of Japanese participated in this study: two professors of Japanese; two graduate students (Japanese history, Japanese literature); three high school teachers of Japanese.

**Procedures**

A list of 50 English words (26 adjectives and 24 adjectival nouns) was constructed. The subjects were asked to give the Japanese equivalents of the English words. Whenever subjects did not retrieve the words, they were asked to provide information to fill out an information sheet. For instance, subjects provided their guess on the number of *moras* (the number of hiragana characters) of the target word, and any partial information on orthographical and phonological shape of the target words. The most important part of the data sheet for the current discussion is the fill-in-the-blank type syntactic questions as follows:

(12) I. (a) _____ kute ii to omoimasita. 'Being ____, (I) thought it was good.'
(b) _____ de ii to omoimasita.

II. (a) Amari _____ zya nai desu. '(It) isn't very _____.'
(b) Amari _____ ku nai desu.

III. (a) Zuibun _____ ni narimasita. '(It) became quite _____.'
(b) Zuibun _____ ku narimasita.

VI. (a) _____ datta to omoimasu. '(I) thought (it) was _____.'
(b) _____ katta to omoimasu.

The underlying assumption is that if a subject does not retrieve the word but has some feel as to whether she/he knows the word, she/he is in the process of retrieving it. This process may reflect the normal lexical retrieval process that is slow. During this process, syntactic information may become available without sound forms becoming available if the subjects' retrieval processes are similar to native speakers' processes.

**Results**

Seven subjects retrieved Japanese target words or near synonyms of target words for an average of 29.4 out of 50 stimuli (total of 207 instances). Among the remaining 143 instances, subjects had no idea about Japanese equivalents of presented English words for 86 instances. Only in 13 instances did subjects agree that they were searching for the target words that the experimenter intended. The percentage of syntactically correct responses was very high (84.6%); however, subjects did have partial phonological knowledge of sound most of the time. There were also 21 instances in which subjects either retrieved their own target words which were different from the words that the experimenter intended, or agreed that their target words were other words that the experimenter provided (after the subjects disagreed with the intended target words that the experimenter initially provided). In these 21 instances as well, the percentage of the subjects' correct responses was very high (90.5%), but again they did have partial phonological information most of the time. In some instances, the subjects had a good feel that their target was a word consisting of two Chinese characters. Since there are many Sino-Japanese compounds that consist of two Chinese characters and they are all used as adjectival nouns, the orthographic information apparently helped subjects guess the syntactic categories correctly.

## Discussion of Study Two

In this study, when the subjects' targets of word search were identified, the subjects had partial sound or orthographic information available. Hence, we cannot conclude at which point in the process syntactic information became available among nonnative speakers of Japanese. In other words, we do not know whether advanced-level nonnative speakers of Japanese retrieved information on syntactic categories before the sound information of the target words became available. However, we can perhaps conclude that nonnative speakers could retrieve the syntactic category information before the whole phonological forms of the words became available.

## Conclusion

Although we could not obtain conclusive findings in these studies, there is sufficient indication to conclude that speaking performance does not necessarily match knowledge of grammar. Several alternative accounts are provided to explain the data:

(16) a. L2 learners may possess grammatical knowledge of prenominal modification but lack syntactic specification in some lexical entries. When L2 learners are not sure of the syntactic categories of words: They may randomly use '*no*-insertion' or 'direct modification;' or they may use a 'default process' (either '*no*-insertion' or 'direct modification').

b. L2 learners may 'know' the syntactic categories of the words, but sometimes fail to utilize the knowledge in the process of producing sentences. When they fail to use the syntactic information that they have, they may use a 'default' process that may or may not vary among individuals ('*no*-insertion' or 'direct modification'). With the predominant findings in observation in other studies, '*no*-insertion' seems to be the default process.

Due to the limited quantity of data; the findings of these studies are not conclusive. However, this paper suggests the following directions for future studies:

- the importance of examining the relation between lexical and syntactic development;
- the importance of analysis of lexical items in the data (related to the above);
- the need to examine the specific mechanism in processes of sentence generation.

This paper suggests one specific area of processes that can be the source of '*no*-insertion' errors, and demonstrates a method which indirectly taps into the psychological processes of lexical retrieval. It is believed that such a direction will provide fruitful and useful information to uncover L1 and L2 development of language processing mechanisms.

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## Appendix I

A list of sentences for grammatical judgment

| | | | |
|---|---|---|---|
| 1. | Midori no kuruma desu ka. | "Is that a green car?" | good / bad |
| 2. | Benri na denwa desu ne. | "It is a convenient telephone, isn't it?" | good / bad |
| 3. | Akai no kami desu yo. | "It is red paper." | good / bad |
| 4. | Omosiroku nai desu. | "(It) isn't interesting." | good / bad |
| 5. | Atarasii no konpyuutaa desu ne. | "(It) is a new computer, isn't it?" | good / bad |
| 6. | Dame zya nai desu. | "(It) isn't bad." | good / bad |
| 7. | Oisii koohii desu ne. | "(It) is a tasty coffee, isn't it?" | good / bad |
| 8. | Huben no konpyuutaa desu ne. | "(It) is an inconvenient computer, isn't it?" | good / bad |
| 9. | Hurui zassi desu yo. | "(It) is an old magazine." | good / bad |
| 10. | Guree tatemono desu ka. | "(Is it) a grey building?" | good / bad |
| 11. | Kiree tatemono desu ne. | "(It)is a pretty building, isn't it?" | good / bad |
| 12. | Ookii zya nai desu. | "(It) is not big." | good / bad |

## Appendix II

Students' Grammatical Judgment Responses on Each Item

| | Color N+no+N | *Color N+N | AN+na+N | *AN+no+N | *AN+N | A+N | *A+no+N | A+ku nai | *A+zya nai | AN+zya nai | Correct responses |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | midori no kuruma | guree tatemono | benri na denwa | huben no konpyuutaa | kiree tatemono | oisii koohii hurui zassi | akai no kami atarasii no konpyuuta | omosiroku | ookii zya | dame zya | Percentage |
| S1 | **bad** | bad | good | **good** | **good** | good, - | **good**, bad | **bad** | **good** | **bad** | 36% |
| S2 | good | **good** | good | **good** | **good** | good, - | bad, **good** | good | **good** | good | 55% |
| S3 | good | bad | good | bad | bad | good, good | bad, bad | good | bad | good | 100% |
| S4 | good | bad | good | bad | bad | good, - | bad, bad | good | bad | good | 100% |
| S5 | good | bad | good | bad | bad | good, good | bad, bad | good | bad | good | 100% |
| S6 | good | bad | good | bad | **good** | good, good | bad, bad | good | bad | good | 92% |
| S7 | good | bad | good | bad | bad | good, good | bad, bad | good | bad | good | 100% |
| S8 | good | bad | **bad** | bad | **good** | good, good | bad, bad | good | **good** | good | 75% |
| S9 | good | **good** | good | **good** | **good** | good, good | bad, bad | good | **good** | good | 67% |
| S10 | good | bad | good | bad | bad | good, good | bad, bad | good | **good** | good | 67% |
| S11 | good | bad | **bad** | **good** | **good** | **bad**, good | bad, bad | **bad** | **good** | good | 92% |
| S12 | good | **good** | **bad** | **good** | **good** | good, good | bad, **good** | good | **good** | **bad** | 42% |
| | 11 | 9 | 9 | 7 | 5 | 21/22 | 21 | 10 | 5 | 10 | |
| | 92% | 75% | 75% | 58% | 42% | 95% | 88% | 83% | 42% | 83% | |

The * symbol indicates that the sequences in the sentences were ungrammatical (i.e., the judgment 'bad' is the correct responses for these items.

- '-' indicates missing data due to an error on the questionnaire sheets.
- Responses in bold face are incorrect responses.

## Appendix III

Students Performance in Grammaticality Judgment Tasks and Interviews

| | Grammatical judgment Correct responses | | | Speaking | | | |
|---|---|---|---|---|---|---|---|
| | A+∅+N oisii koohii hurui zassi (2 items) | *A+no+N akai no kami atarasii no kompyuutaa (2 items) | Overall (12 items) | N+no+ N Color Noun, other Noun | *N+∅+N color Noun, other Noun | A+∅+N | *A+no+N |
| S1 | 1/1[1] | ½ | 4.4 (36%) | 3, 2 | 0, 0 | 5 | 0 |
| S2 | 1/1[1] | ½ | 6.5 (55%) | 1, 2 | 1, 0 | 4 | 0 |
| S3 | 2/2 | 2/2 | 12 (100%) | 3, 1 | 3, 0 | 3 | 0 |
| S4 | 1/1[1] | 2/2 | 12 (100%) | 2, 1 | 0, 1 | 4 | 1 |
| S5 | 2/2 | 2/2 | 12 (100%) | 2, 6 | 1, 0 | 8 | 0 |
| S6 | 2/2 | 2/2 | 11 (92%) | 0, 0 | 4, 3 | 11 | 2[2] |
| S7 | 2/2 | 2/2 | 12 (100%) | 2, 0 | 0, 0 | 5 | 0 |
| S8 | 2/2 | 2/2 | 9 (75%) | 5, 1 | 0, 4 | 2 | 6 |
| S9 | 2/2 | 2/2 | 8 (67%) | 2, 1 | 2, 0 | 6 | 0 |
| S10 | 2/2 | 2/2 | 8 (67%) | 5, 0 | 0, 0 | 9 | 2 |
| S11 | 1/2 | 2/2 | 11 (92%) | 2, 0 | 2, 0 | 8 | 1 |
| S12 | 2/2 | 1/2 | 5 (42%) | 0, 0 | 3, 0 | 8 | 2 |

1. These are missing data due to a typing error on the data sheet.
2. This number includes one instance of incomplete error "kiiroi, kiiroi, kiiroi no, kiiroi kami."

## Appendix IV

Modified Noun Phrases Involving Adjectives and Color Nouns

| | Color N+no+N | *Color N+N | A+N | A+no, etc | *A+no+N |
|---|---|---|---|---|---|
| S1 | midori no, midori no kami | | ookii kurippu (big clip) | | |
| | midori no kami | | akai boorupen (red ballpen) | | |
| | midori no kami | | ookii kurippu | | |
| | (green paper) | | ookii kurippu | | |
| | | | akai boorupen | | |
| S2 | midori no kami | midori kami | ookii kurippu | | |
| | | (green paper) | ookii kurippu | | |
| | | | akai boorupen | | |
| | | | akai boorupen | | |
| S3 | | tyairo kami | tiisai kurippu (small clip) | tiisai no | |
| | | tyairo kami | aoi borupen (blue ballpen) | (small one) | |
| | | tyairo kami | aoi borupen | | |
| | | (brown paper) | | | |
| S4 | | tyairo no kami | tiisai kurippu | | kiiroi, kiiroi no kuruma |
| | | tyairo no wa, kami | tiisai kurippu | | (yellow car) |
| | | (brown paper?) | aoi boorupen | | |
| | | | aoi boorupen | | |
| S5 | tyairo no kami | | kiiroi kami (yellow paper) | atarasii no | |
| | tyairo no kami | tyairo kami (sc) | tiisai nooto (small notebook) | (new one) | |
| | (brown paper) | (brown paper) | akai pen (red pen) | hurui no | |
| | | | aoi pen (blue pen) | (old one) | |
| | | | kiiroi kami | | |
| | | | tiisai nooto | | |
| | | | aoi pen | | |
| | | | ookii tatemono (big building) | | |
| S6 | | guree kompyuutaa | tiisai kompyuutaa (small computer) | | |
| | | tyairo kami | muzukasii nihongo (difficult Japanese) | | |
| | | tyairo kami | tiisai huutoo (small envelope) | | |
| | | tyairo kami | kiiroi kami | | aoi no pen |
| | | | aoi pen | | (blue pen) |
| | | | aoi pen | | |
| | | | kiiroi, kiiroi, uh, kiiroi kami | | |
| | | | kiiroi, kiiroi no , kiiroi kami | | |
| | | | tiisai huutoo | | |
| | | | ookii huutoo (big envelope) | | |
| | | | kiiroi iro (yellow color) | | |
| S7 | guree no peepaa | | ookii kurippu | | |
| | guree no peepaa | | akai boorupen | | |
| | (grey paper) | | kuroi boorupen (black ballpen) | | |
| | | | akai boorupen | | |
| | | | kuroi boorupen | | |
| S8 | guree no, guree no kami | | kuroi boorupen | donna no | aoi no kuruma (blue car) |
| | guren no kami | | ookii kurippu | (what kind of one) | aoi no kuruma |
| | tyairo no kami | | | aoi no | aoi no boorupen (blue ballpen) |
| | guren no kami | | | (blue one) | akai no boorupen (red ballpen) |
| | tyairo no kami | | | | akai no boorupen |
| | | | | | kuroi no boorupen (black ballpen) |
| S9 | guree no kami | guree, guree kami | tiisai nooto | | |
| | guree no kami | tyairo kami | akai boorupen | | |
| | | | kuroi boorupen | | |
| | | | akai boorupen | | |
| | | | kuroi boorupen | | |
| | | | tiisai nooto | | |
| S10 | guree, guree no kami | | atarasii kuruma (new car) | | |
| | guree no kami | | hurui kuruma (old car) | | |
| | tyairo no kami | | tiisai nooto | | tiisai no nooto (sc) |
| | guree no kami | | tiisai nooto | | tiisai no nooto |
| | tyairo no kami | | akai boorupen | | |
| | | | kuroi boorupen | | |
| | | | akai boorupen | | |
| | | | kuroi boorupen | | |
| | | | tiisai nooto | | |
| S11 | | | akai pen | | ookii no nooto |
| | tyairo no kami | tyairo kami | aoi pen | | |
| | tyairo no kami | tyairo kami (sc) | kiiroi kami | | |
| | | | aoi pen | | |
| | | | ookii nooto (big notebook) | | |
| | | | kiiroi kami | | |
| | | | aoi boorupen | | |
| | | | tiisai nooto | | |
| S12 | | tyairo kami | siroi kami (white paper) | | akai no pen |
| | | tyairo kami | ookii nooto | | aoi no pen |
| | | tyairo kami | siroi kami | | |
| | | | ookii nooto | | |
| | | | tiisai nooto | | |
| | | | aoi pen | | |
| | | | ookii nooto | | |
| | | | siroi kami | | |

- Only the first occurrence of each sequence has its English equivalent.
- '*' indicates ungrammatical sequences (i.e., the second and the fifth columns are ungrammatical).
- 'sc' indicates instances in which the students gave an ungrammatical sequence followed by a self-corrected grammatical sequence.
- Bold face indicates inconsistent use of *no* using the same lexical items.