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Abstract

Although it is well known that many second language (L2) learners have trouble using articles “properly,” the primary causes of their difficulties remain unclear. This study addresses this problem by examining the metalinguistic knowledge of the English article system that learners employ when selecting articles in a given situation. By doing this, the present study attempts to better understand the process of “making sense” of the English article system by learners who are at different stages in their interlanguage development. Eighty Japanese college students with varying levels of English proficiency participated in this study. Immediately after completing a fill-in-the-article test, a structured interview was conducted to investigate the reasons for their article choices. The quantitative and qualitative analyses reveal a number of conceptual differences with regard to their considerations of the hearer’s knowledge, specific reference, and countability, which may account for learners’ errors in article use across different proficiency groups.

Disciplines

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SECOND LANGUAGE LEARNERS' THEORIES ON THE USE OF ENGLISH ARTICLES

An Analysis of the Metalinguistic Knowledge Used by Japanese Students in Acquiring the English Article System

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Although it is well known that many second language (L2) learners have trouble using articles “properly,” the primary causes of their difficulties remain unclear. This study addresses this problem by examining the metalinguistic knowledge of the English article system that learners employ when selecting articles in a given situation. By doing this, the present study attempts to better understand the process of “making sense” of the English article system by learners who are at different stages in their interlanguage development. Eighty Japanese college students with varying levels of English proficiency participated in this study. Immediately after completing a fill-in-the-article test, a structured interview was conducted to investigate the reasons for their article choices. The quantitative and qualitative analyses reveal a number of conceptual differences with regard to their considerations of the hearer’s knowledge, specific reference,

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and countability, which may account for learners' errors in article use across different proficiency groups.

Articles such as *a(n)* and *the* are the most commonly used words in English, and yet their usage is in fact surprisingly complex. Part of the complexity can be attributed to the fact that the English article system does not consist of one-to-one form and meaning relationships. This complexity poses a number of challenges for L2 learners of English (Andersen, 1984). This is true even for those learners who have studied English for a number of years (e.g., Agnihotri, Khanna, & Mukherjee, 1984; Kharma, 1981; Yamada & Matsuura, 1982). Teachers of English as a second language find it difficult to understand how or why their students choose to use articles in the ways that they do; effectively teaching the article system to their students often remains an elusive goal. A teacher in Yamada and Matsuura's study, for example, stated that his students' use of articles "bears little or no resemblance to established English practice; the students seem to use articles almost randomly" (p. 50). Do L2 learners really use articles randomly, or do they develop theories of the English article system that do not readily make sense to teachers? It thus becomes very important to examine theories about the English article system by L2 learners at different developmental stages (if indeed they develop such theories) and to understand how such theories relate to L2 learners' uses of articles. This paper offers one approach to this issue by attempting to reveal and examine L2 learners' metalinguistic knowledge (i.e., linguistic knowledge accessible at the conscious level) with regard to the use of articles. In doing so, we may better understand the nature of L2 learners' problems with articles and thus lay the groundwork for addressing such problems. To place this study in context, I first briefly describe article use in different noun phrase (NP) environments in English, the expression of (in)definiteness in Japanese, and then the literature on article acquisition by both L1 and L2 learners.

CONTEXT OF STUDY

Article Use in Different Noun Phrase Environments

In comparing learners' usage of articles in different NP environments, researchers have attempted to investigate how certain underlying features that distinguish NP environments (such as the countability of NPs) are associated with certain articles during the course of article acquisition. Huebner's (1983, 1985) semantic wheel (which itself was based on Bickerton, 1981) has been one of the most widely used models for classifying NP environments in English article acquisition studies and is used as well in this study. In his model, English NPs are classified by two features of referentiality—namely, specific reference [\pm SR] and hearer's knowledge [\pm HK]. These two aspects of referen-

tiality thus give rise to four basic NP contexts that determine article use. The four basic NP contexts are herein denoted as uses of type 1 ([-SR, +HK], generics), type 2 ([+SR, +HK], referential definites), type 3 ([+SR, -HK], referential indefinites), and type 4 ([-SR, -HK], nonreferentials). In addition to these four types, idiomatic expressions and conventional uses were classified as a fifth type in this study, as in Thomas (1989). The classification system is summarized in Appendix A.

Definiteness and Indefiniteness in Japanese

As previously mentioned, Japanese does not have an article system. Definiteness and indefiniteness are conveyed by different linguistic means in Japanese, such as with particles like the topic marker *wa* and the nominative case marker *ga*. A detailed discussion of the functions of such particles is beyond the scope of this paper. However, the following observations made by Lyons (1999) illustrate to some extent how definiteness and indefiniteness are conveyed by particles:

In Japanese a noun phrase marked with *wa* can only be rendered into English as definite or generic; noun phrases marked with *ga*, on the other hand, can in principle be construed as definite or indefinite. It does not follow, of course, that *wa* is a definite article, or even that a category of definiteness exists in Japanese. Since *wa*-marked noun phrases can be generic, and generics are commonly grammatically indefinite (that is, indefinite in form) in languages that have definiteness marking, the generalization is probably that a topic in Japanese is required to be identifiable—thus pointing to a dissociation of identifiability and definiteness. (p. 233)

The last point is of particular interest with regard to the relationship between the notions of definiteness and hearer's knowledge in the present study. Moreover, the use of topic marking in Japanese is neither regular nor obligatory. Furthermore, demonstratives such as *sono* (nearer to the hearer, namely, "[of] that") and *ano* (far from both the speaker and the hearer, namely, "[of] that over there") are used anaphorically with high frequency where English would use the definite article *the*. Thus, one might expect that such structural, semantic, and pragmatic differences between English and Japanese could require Japanese learners to construct a new association between (in)definiteness and the English article system. This is one of the reasons for choosing Japanese adult learners of English for this study.

Article Acquisition by L1 and L2 Learners

The difficulties that L2 learners have in understanding articles are surprising if compared with the experience of children who are acquiring English as their L1. Children seem to acquire the article system at a relatively early age in L1

acquisition (somewhere between 2;8 and 3;8 years old), and they typically exhibit a low frequency of overall errors. It has been reported that although L1 child acquirers overuse the definite article *the* on occasions in which listeners do not have any knowledge of the reference (i.e., the [+SR, -HR] case), they do not make errors when the referents are nonspecific for both speakers and hearers (i.e., the [-SR, -HK] case; Brown, 1973; Maratsos, 1971, 1976). That is, although L1 child acquirers do not seem to be able to sufficiently detect a given listener's presumed knowledge, they do appear to be able to easily distinguish specificity from nonspecificity (as coded by articles) from a very young age. This result is particularly interesting because "specific and nonspecific references are connected in no clear way with external physical attributes or relations of perceived objects" (Maratsos, 1976, p. 94). Such results led in part to Bickerton's (1981, 1984) bioprogram hypothesis, which claims that children have an innate sensitivity to specificity and nonspecificity. Although data based on children learning English and French have yielded some supporting evidence for this hypothesis in an earlier study (Cziko, 1986), we still need more crosslinguistic empirical data before we will be able to draw any firm conclusions with regard to this matter.

What does all of this tell us about article acquisition by L2 learners? Huebner (1983, 1985) found in a longitudinal case study that his adult L2 learner (who was a native speaker of Hmong) initially overused the definite article *the* with almost all nouns in his speech. However, the amount of overuse gradually decreased in [-SR, -HK] situations, and his subject began to use *the* almost exclusively in [+SR, +HK] and [-SR, +HK] cases. Flooding of *the* was also observed in learners with low English proficiency from other L1 backgrounds such as Japanese (Chaudron & Parker, 1990) and Czech and Slovak (Young, 1996). Master (1987, 1988) also found that *the* was overused in the [+SR, +HK] and [-SR, +HK] environments but not in [-SR, -HK] environments for almost all of his learners. He also reported that among learners whose L1 did not have an article system, the appropriate use of *a* was delayed, compared with *the*. Based on these results, both Huebner and Master suggested that L2 learners initially might associate *the* with the feature of [+HK], in contrast to children learning the English article system as part of their L1. Thomas (1989), however, analyzed L2 learners' article usage in their production and presented a different claim from those of Huebner and Master. Thomas's findings included the following three observations: (a) whereas L1 children show accurate use of *a* in [-SR, -HK] contexts at an early stage, the accurate use of *a* by adult L2 learners was delayed; (b) the most common errors by L2 learners across proficiency levels were overgeneralized zero articles; and (c) both L1 child acquirers and L2 learners overgeneralized *the* in first-mention contexts ([+SR, -HK]) but not in [-SR, -HK] contexts. Thomas hypothesized that these results could be attributed to the fact that both L1 and L2 learners initially associate *the* with the feature [+SR] and suggested that her results might support Bickerton's (1981, 1984) bioprogram hypothesis.

In discussing article acquisition by L2 learners, one has to keep in mind two separate issues. First, the frequency of each error type differs depending on the task performed (Kharma, 1981; Mizuno, 1985; Tarone, 1985; Tarone & Parrish, 1988). In general, production tasks, such as interviews and essay writing, have produced lower error rates than objective tasks, such as cloze tests. Researchers have attributed the lower error rates in production tasks to learners' avoidance of uncertain uses of articles in these tasks (Kharma; Mizuno). Thus, it appears that collecting data from a variety of tasks, in addition to production tasks such as oral interviews and essay writing, is important for examining different types of article use by L2 learners.

A second issue that needs to be kept in mind is the difficulty surrounding the classification of the semantic environments of NPs where articles are used by L2 learners. Although some contexts may be quite straightforward to classify, others are not. Quite often researchers have to make assumptions or guesses about semantic contexts and then try to judge whether or not the articles were used correctly based on these assumptions. As a result, it would be very informative if one could verify researchers' assumptions in this regard, such as by asking learners to explain their uses of articles. Although the weaknesses of such an approach have been suggested (e.g., Cohen & Robbins, 1976), Ericsson and Simon (1984) have argued that verbal reports do account for underlying thoughts and actions. In the domain of language, it has been suggested that metalinguistic knowledge does not necessarily reflect linguistic competence (Birdsong, 1989). We can assume that this is particularly true for native speakers. However, it also has been proposed that the learned knowledge of L2 learners about certain systems of the target language is not the same as nativelike competence (see Krashen, 1981, on the distinction between unconscious acquisition and conscious learning; Schwartz, 1993, on the distinction between competence and learned linguistic knowledge). Thus, among L2 learners, and particularly among adult L2 learners, one may be able to assume that a significant amount of conscious learning takes place, at least in functions or systems that require learners to restructure or remap underlying concepts and linguistic categories. It has, in fact, become the case that "verbal reports have been generally well received as data bases in L2 acquisition studies" (Birdsong, p. 202). In particular, stimulated recall as an L2 research method has "come into greater use and greater acceptance" in recent years (Gass, 2001, p. 226).

In addition to the binary features of referentiality, it has been suggested that noun countability is also an important component in determining which articles to use. As shown in Appendix A, different articles must be used depending on the countability of the reference in type 1, 3, and 4 uses. The failure to successfully detect countability of reference also has been found to be a major problem for some L2 learners (Hiki, 1991; Master, 1987; Yoon, 1993). Hiki found that L2 learners' degrees of difficulty with countability judgments were related to various factors including noun class (e.g., individual, abstract, material, proper), countability environment (e.g., countable or uncountable),

and genericness. He also found that many of his L2 learners failed to consider the contextual meaning of nouns when they made countability judgments. Surprisingly few studies have directly investigated the relationship between learners' judgments of noun countability and their article use. Yoon asked Japanese learners of English and native speakers to make intuitive judgments on the countability of nouns that were presented in a context-free fashion. This countability judgment was compared with their performance on a cloze test for 24 obligatory indefinite articles. He reported that there seemed to be a correlation between the learners' intuitive countability judgments and the choice of *a*, whereas no apparent correlation was found for native English speakers; unfortunately, no statistical analysis was provided. Yoon suggested that his L2 learners might not know "how context is used by native English speakers to determine article use" (p. 284). However, the degree to which this countability feature accounted for L2 learners' article choices in context remains unclear.

Thus, one can summarize some of the key points relevant to the present study as follows. First, it is important to introduce tasks that cover a wide range of article use. Production data alone may not provide us with an accurate picture of learners' performance because learners tend to avoid usages of which they are unsure. Second, noun countability is another important factor in the appropriate choice of articles, as are referent specificity and hearer's knowledge. Detecting noun countability correctly in a given context can potentially be very problematic for certain L2 learners. Third, although it has been suggested that learners with different proficiencies have different kinds of problems with articles, we have not investigated in any great detail the different hypotheses on article use that learners may form at different stages of their interlanguage development. Psycholinguistic explanations of learners' misuse of articles have been suggested; for example, interference from the learners' L2 and the overuse of zero because of the frequent input of zero have been offered as just a few of the reasons (Master, 1997). Although these are highly plausible explanations of the problems L2 learners encounter, there is no guarantee that they are in fact the sources of the nontargetlike uses observed in L2 learners. Additional sources of information, such as learners' metalinguistic understanding of English article use, can be a valuable tool in better understanding learners' problems with articles (even though this is not a direct reflection of one's competence, as discussed earlier). Raising learners' consciousness regarding the English article system has also been suggested as an appropriate pedagogical tool for advanced learners (Master, 1995). It is for this reason that the present study introduces metalinguistic tasks that cover a wide range of article use in written language as a means of investigating how L2 learners attempt to make sense of the English article system.

Thus, the questions addressed in the present paper are the following:

1. What kinds of metalinguistic knowledge do L2 learners employ in selecting English articles?

2. How do learners understand the features of the English article system noted above (namely, [\pm SR], [\pm HK], and countability) at the metalinguistic level?
3. Depending on the learners' levels of proficiency in English, are there any differences in the way they use metalinguistic knowledge in selecting English articles?

METHODS

Participants

One hundred students participated in this study, composed of 80 Japanese learners of English and 20 native English speakers serving as a control group. Japanese learners were chosen because of the relative homogeneity of their English learning environment and the lack of an article system in their L1. Sixty of the 80 Japanese participants were college students living in Japan who were recruited from seven universities and colleges in Tokyo. None of them had been outside of Japan for more than 3 months, and none had extensive exposure to English or to any other languages besides Japanese. These 60 learners were divided into three proficiency groups based on an English proficiency test, with 20 learners placed in each of three groups (hereafter referred to as groups J1, J2, and J3, where J1 is the lowest proficiency group). Because the purpose of introducing a proficiency test in the present study was simply to place the Japanese learners into proficiency groups, the test prepared was composed of items selected from the Woodcock Language Proficiency Battery (Woodcock, 1980) and the Test of English as Foreign Language (TOEFL). None of the items directly measured the use of articles. The remaining 20 Japanese participants (designated as group J4) were students studying in the United States and were mainly recruited from Stanford University. All of them had achieved a score higher than 550 on the TOEFL or had an equivalent proficiency in English. To ensure that the learners in the J4 group were indeed more advanced learners of English than those in other L2 groups, the same English proficiency test was given to them as well. The results showed that the mean scores of the J4 group were significantly higher than those of the J3 group.¹ The English speakers who participated in this study as a control group were all recruited from Stanford University.

Measurements and Procedures

After completing a questionnaire that included a list of questions regarding their English language education, the participants took a fill-in-the-article test. Several passages from different English texts were chosen and selected articles were deleted. The learners were asked to insert either *a*, *an*, *the*, or the zero article (\emptyset) in the blanks. They were instructed to pick the one article that they thought was most suitable if they believed that multiple articles could be inserted in a given blank. They were also told that each paragraph was taken from the beginning of a larger text. To check the reliability of the article test items, three native speakers of English who were advanced doctoral students

in linguistics or language education had given responses to 300 potential test items. Among the items on which all three of them had agreed, 100 were selected for the final test version. The articles extracted represented the four semantic types articulated by Huebner (types 1–4), with 20 items for each article type, and 20 idiomatic and conventional usages of articles (type 5).²

Immediately after completing this fill-in-the-article test, the Japanese learners were asked to provide the author with the reason(s) for their article choice on each item (hereafter referred to as the interview phase of the study). In the event that the learners did not have any reasons for their article choices (i.e., where they had simply guessed), they were instructed to tell the author that this was the case, following Birdsong's (1989) suggestion regarding methodology for metalinguistic tasks. The students were rarely interrupted; the only exception to this was when clarification of ambiguous statements was necessary. The interview itself was conducted in Japanese and typically took 30 minutes to complete.³

Coding

Reasons for article use provided by the learners were first classified as specific (i.e., they were able to identify rules of grammar or other reasons for selecting the articles they chose) or nonspecific (i.e., the learners could not identify any specific reasons for their article choices). The latter group consisted of reasons based on any of the following three factors: plausible choice (e.g., "It sounds like it should be this article"), elimination (e.g., "Others don't work, so I think that this article is the only choice, although I don't know why this is right"), and no clue (e.g., "I have no idea, so I just picked one").

Articles that were inaccurately chosen but for which learners provided a specific reason were further classified. For the purposes of this study, investigating the reasons underlying such misuse is key to understanding how the L2 learners in this study learned the English article system and the metacognitive knowledge that may have led them astray. Four major categories of errors were found: (a) problems with referentiality, (b) misdetection of countability, (c) nongeneralizable or idiosyncratic hypotheses, and (d) other reasons. Sample responses for categories (a)–(c) are shown in Table 1.

Based on this coding system, a subset of the interview protocols from the Japanese learners (10 randomly selected protocols) was coded by two Japanese-English bilingual researchers, one of whom was the present author. The agreement on coding between the two coders was adequate: The percentage agreement attained was 88%. A Kappa coefficient was also calculated to ensure that the level of agreement was high enough even if the amount of agreement expected by chance alone was corrected for. The Kappa value for this group of randomly selected samples was .86, and this was judged to indicate a sufficient degree of agreement between the coders for the present study. Disagreements in coding were resolved through discussion, and some clarifications were made through such discussion. Based on the coding system (and

Table 1. Sample responses for coding categories (a), (b), and (c)

Article selection (passage 1)	Reasons for their selection
“Japan has <i>the</i> ₁ old culture, stretching back in time more than 2,500 years. Japanese arts have <i>the</i> ₂ long and splendid history. For example, the world’s first novel, called <i>The Tale of Genji</i> , was written almost 1,000 years ago by <i>the</i> ₃ Japanese noblewoman . . .”	(a) Errors due to referentiality (cases where learners failed to consider HK) (<i>the</i> ₁) “This is <i>the</i> , because this means <i>Japanese culture</i> , which is specific.” (<i>the</i> ₂) “This refers to a specific history, the Japanese history. That’s why I thought it would be correct to use <i>the</i> .” (<i>the</i> ₃) “This was written by Shikibu Murasaki. Because this woman is specific, it should be <i>the</i> .”
“Japan has \emptyset ₄ old culture, stretching back in time more than 2,500 years. Japanese arts have \emptyset ₅ long and splendid history. For example, the world’s first novel, called <i>The Tale of Genji</i> , was written almost 1,000 years ago by <i>the</i> ₆ Japanese noblewoman . . .”	(b) Errors due to countability (\emptyset ₄) “I did not insert anything here because I thought <i>culture</i> is not countable.” (\emptyset ₅) “I was not sure whether or not <i>history</i> is countable . . . Can it be countable?” (c) Errors due to nongeneralizable hypotheses (nongeneralizable collocations) (<i>the</i> ₆) “Because it is followed by the proposition <i>by</i> .”

Note. The articles indicated above were inserted by the subjects. A subscript number corresponding to each article choice indicates learners’ discussions of the reasons for their article choices.

incorporating clarifications), the remaining protocols were coded by the author.

RESULTS AND DISCUSSION

The data gathered for this study were both qualitative and quantitative in nature. The specific quantitative analyses focus on differences in performance on the fill-in-the-article test by the various proficiency groups and the reasons for article choices by group. The qualitative analyses focus on the learners’ metalinguistic knowledge with regard to article selection. Specifically, they were undertaken to better understand how the learners’ metalinguistic hypotheses on English article use might differ depending on their overall level of English proficiency.

Differences in Performance on the Fill-in-the-Article Test

The performance results for the fill-in-the-article test are shown in Figure 1. The horizontal lines in the middle of the boxplot show the median scores of the sample, the hinges (edges of each box) indicate the 25th and 75th percentiles, and the whiskers (vertical lines) show the smallest and largest observed scores that are not outliers; the small circle for J3 indicates that there was an outlier. The average test scores increased with each proficiency level. How-

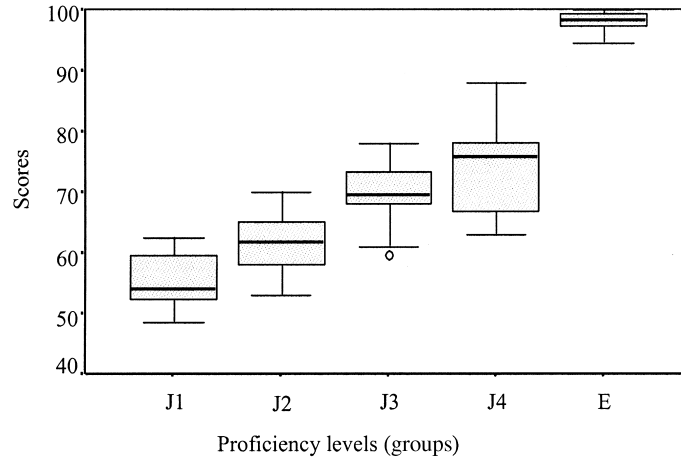


Figure 1. Average scores for the fill-in-the-article test by group.

ever, there was a substantial gap in the mean scores of the native English speakers and those of the Japanese L2 learners. The highest score among the L2 groups was still substantially lower than the lowest score among the native English speakers (group E); there was no overlap. Not surprisingly, group E seemed to exhibit a ceiling effect. The results of a one-way ANOVA (Group) confirmed that there were differences in the scores among groups, $F(4, 95) = 162.35$, $p < .001$.⁴ Tukey's HSD test further revealed that the mean scores of all five groups were different from each other at the alpha .05 level. As expected, the more proficient the learners were, the more accurate were their article choices.

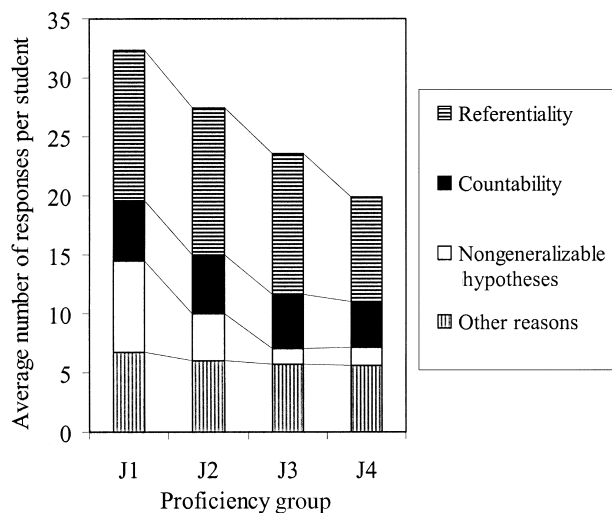
Reasons for Article Choice by Group

The learners' reasons for their nontargetlike article selections were examined using the classification scheme described in the section entitled "Coding." There were five notable observations that emerged from this analysis. First, as Table 2 shows, the frequency of responses in which specific reasons were provided differed across groups, $F(3, 76) = 6.57$, $p < .001$: The learners at higher proficiency levels more frequently expressed specific reasons for their choices of articles (65% of the time) than did learners at lower proficiency levels (44% of the time). Second, the average number (across groups) of items for which learners could not provide a specific reason was approximately 10 (targetlike uses) and 8 (nontargetlike uses) out of a total of 100 items. The average frequency for targetlike uses that were based on plausible choices (e.g., "It sounds right") was only 4.5 items for even the most advanced learn-

Table 2. Article choices and the explanations for these choices by proficiency group

Explanations	Groups				Average
	J1	J2	J3	J4	
Targetlike article use					
Reason unclear	12.05	10.15	9.30	9.40	10.23
Plausible choice ^a	2.90	3.95	3.60	4.50	
Reason identified	44.15	52.40	60.95	65.00	55.63
Nontargetlike article use					
Reason unclear	11.40	9.60	6.10	5.60	8.18
Plausible choice	2.30	2.45	1.50	2.15	
Reason identified	32.40	27.85	23.65	20.00	25.98

^aPlausible choice is a subcategory of "Reason unclear" (and includes responses in which learners commented, "It sounds right").

**Figure 2.** Reasons for nontargetlike article choices.

ers. As such, it seems that instances in which Japanese learners failed to articulate any metalinguistic explanation were relatively few in number. Of course, it is always possible that a learner could have chosen an article in a given context based on implicit knowledge and later could have provided some metalinguistic explanation for his or her choice. As a result, one could say that, given sufficient time, these Japanese learners at least could articulate their metalinguistic knowledge.

Third, as Figure 2 indicates, on those items for which learners could iden-

tify specific reasons for their article choices, it is notable that nontargetlike article choices due to problems with referentiality constituted the largest percentage of errors. This subcategory comprised nearly half of the reasons for which learners made mistakes. The subjects' problems with referentiality can, in turn, be further subdivided into two separate types of errors: (a) misdetection of referentiality, in which the learners failed to detect at least one of the two features of referentiality, SR and HK, even though they considered referentiality to some extent; and (b) failure to consider referentiality altogether. Although the frequency of the failure to consider referentiality (the latter type) differed significantly across groups, $F(3, 76) = 3.19, p < .05$, the frequency of misdetection of referentiality (the former type) did not, $F(3, 76) = 1.80, p = .15$. It can therefore be concluded that the successful detection of referentiality was problematic across groups and remained a major obstacle for learners in determining the appropriate article regardless of proficiency level.

The fourth noticeable observation is that misdetection of noun countability also constituted a major obstacle to correctly choosing articles. The number of such errors, moreover, did not differ across groups, $F(3, 76) = .86, p = .45$; noun countability remained problematic even for advanced learners in this study. The fifth and final notable point that Figure 2 illustrates is a substantial decrease in the number of nongeneralizable or idiosyncratic hypotheses employed by the subjects as we move from low proficiency to high proficiency learners, $F(3, 76) = 10.89, p < .001$. The frequency of nontargetlike article choices due to such factors was considerably lower at the J3 and J4 levels.

Referentiality presented the greatest number of problems for the Japanese learners in this study. To understand this major source of error better, referentiality was examined in more detail. Referentiality is determined by two features in Huebner's model: SR and HK; Figure 3 shows the relative composition of errors associated with these two features as well as those instances in which subjects failed to consider referentiality altogether. An ANOVA with repeated measures indicated main effects in both the Group, $F(3, 76) = 4.03, p < .01$, and Referentiality categories, $F(3, 228) = 44.73, p < .001$. The ANOVA also indicated an interaction between the Group and Referentiality categories, $F(3, 228) = 3.09, p < .005$. As Figure 3 shows, the misdetection of HK represented the largest percentage of problems with referentiality across groups, followed by both the misdetection of SR and HK together and the misdetection of SR alone. There were differences in the occurrence of misdetection of SR by Group, $F(3, 76) = 6.34, p < .001$; the number of misdetections of SR declined gradually from lower proficiency groups to higher proficiency groups (a Tukey's HSD indicated that there were differences between groups J1 and J3 and between groups J1 and J4). There also were differences in the occurrence of misdetection of HK by Group, $F(3, 76) = 3.75, p < .05$. However, a Tukey's HSD further indicated that differences existed only between groups J1 and J2. Based on these results, one can conclude that HK appeared to be more problematic than SR across groups. The higher the learners' proficiency levels

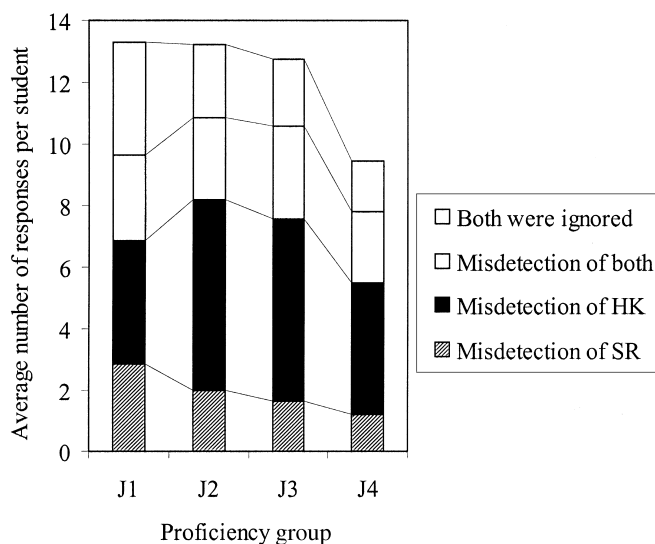


Figure 3. Inaccurate responses on referentiality.

were, the fewer the number of observed problems with SR. However, problems with HK increased from groups J1 to J2 and remained problematic thereafter, even among the most advanced learners.

Results of Qualitative Analyses of the Interview Data

Consistent with the quantitative results, qualitative analyses of the interview data revealed that the learners themselves acknowledged that detecting the referentiality and countability of NPs presented a number of hurdles for them in accurately using English articles. However, it is possible to observe systematic differences in the learners' metalinguistic knowledge of English articles. The learners in this study developed various hypotheses about the English article system, tending to hold one of three types of hypotheses based on the treatment of the NP context: (a) context-insensitive hypotheses, (b) hypotheses that show sensitivity to the wrong contexts, and (c) hypotheses that show sensitivity to a range of relevant contexts. The first type of hypothesis was typically observed in lower proficiency learners (mainly in the J1 and occasionally in the J2 groups). The second type of hypothesis was frequently observed in learners with lower to middle level proficiency (mainly in the J1 and J2 groups and occasionally in the more advanced groups). The third type of hypothesis was primarily observed in higher proficiency learners (mainly in the J4 and to some extent in the J3 groups). Although such differences in the types of hypotheses held by learners at different proficiency levels were clearly observed, it is important to note that it is unclear whether or not such

patterns were necessarily sequential. As I shall discuss, such hypothesis patterns were not always clear-cut. For instance, a learner with low proficiency who depended mainly on the first hypothesis used other hypotheses for certain items. Although it is possible to speculate that these hypotheses could occur sequentially, it is important to be aware that this study's cross-sectional design limits one's ability to make this inference.

Approach 1: Context-Insensitive Hypotheses (Learners with Low Proficiency). Among the learners at lower proficiency levels, article choice was strongly influenced by a few rules that they believed had been taught by their teachers, through textbooks, and by other means. It is not clear from the data gathered whether these rules were indeed the pedagogical grammar that the students had been initially taught. Three such rules that were frequently cited by participants in this study included the following:

1. When an object or event is specific, *the* is used.
2. When an object or event is introduced for the first time, *a* should be used, but when the same object or event is mentioned for the second time, *the* should be used.
3. When a noun or noun phrase is countable, *a* is used; if it is uncountable, *a* cannot be used.

These rules were stored and exercised independently without the learners having a clear understanding of how SR, HK, and countability were related to each other in the English article system. (Note that rule 2 does not exactly represent the notion of HK.) Such rules led the learners to believe that there were strong associations between the notions that a specific reference requires *the* and that a singular countable NP requires *a*. As a result, as with the sample responses to referentiality related errors in Table 1 (*the*₁ to *the*₃), learners at lower proficiency levels often considered only SR and failed to consider the HK factor, or they expressed confusion because the two notions ([+SR] = *the* and [+count] = *a*) yielded contradictory results. An example of this can be seen in one learner's answer and her explanation (i.e., quote) for selecting *a*:

(1) a. Answer: Japan has *the* old culture, stretching back in time more than 2,500 years. Japanese arts have *the* long and splendid history. For example, the world's first novel, called *The Tale of Genji*, was written almost 1,000 years ago by *a* Japanese noblewoman.

b. Quote: I was wondering whether it should be *a* or *the*. This is a specific woman who wrote *The Tale of Genji*, so I thought it could be *the*. But I decided to put *a* in the end, because there is only one woman who wrote *The Tale of Genji*, but . . . I'm not sure. If it were *noblewoman*, I think that it might be *the*. (J1-2)⁵

Although some learners acknowledged that the reference was not identifiable by the hearer, they still failed to understand that a specific reference could not be used with *the* if it were not already a part of the hearer's knowl-

edge. We can see an example of this in (2) regarding the second instance of *the*.

(2) a. Answer: Yesterday when I was sitting up in *a* bed looking at *the* rain and feeling bored with \emptyset life, *the*₂ woman appeared with \emptyset long white box addressed to me, filled with lovely pink roses.

b. Quote: I don't know who showed up, but I suppose that it must be somebody specific in this scene. That's why I chose *the* here. (J1-12)

As both of these examples indicate, these learners failed to accurately detect and apply both SR and HK in order to decide which article to use. In particular, they had difficulty with accurately detecting HK. Part of the problem in identifying HK was that lower proficiency learners often brought too much extralinguistic knowledge into their readings of the test items, and introducing their own private knowledge interfered with their attempts to accurately detect HK, as seen in (3).

(3) a. Answer: *The*₃ computer languages may use *the* different commands to perform particular operations. However, once you know that *an* operation exists, it is only *a* matter of time before you learn how to perform it in *the* given language.

b. Quote (explanation for *The*₃ computer languages): I just assume that the readers of this essay must be computer scientists or something. So if you are a computer scientist, you know what the computer languages are. It must be common sense for them. That's why I use *the* here. (J2-3)

This student understood that the choice of articles is tailored according to the context and the presumed audience. However, in this case, there was no particular reason to believe that the readers of this paragraph were computer scientists.

Related to this problem, some learners failed to correctly evaluate what information was already introduced based on the information provided in the test items. In a number of cases, if what was referred to was similar to or semantically related in some way with an object, event, or notion that had been mentioned previously in the text, then the reference itself was often treated as though it had already been referred to; the result was that *the* was thought to be required. This type of mistake seemed to occur most often when the learners did not fully grasp a given context, for example:

(4) a. Answer: Japan has *an* old culture, stretching back in time more than 2,500 years. Japanese arts have *the*₄ long and splendid history. For example, the world's first novel, called *The Tale of Genji*, was written almost 1,000 years ago by *the* Japanese noblewoman.

b. Quote (explanation for *the*₄ long and splendid history): Because *history* and *culture* are related, I feel like *history* was already mentioned in the previous sentence. I thought . . . that this *long and splendid history* was the *old culture*, wasn't it? (J1-8)

Another noticeable feature was that learners tended to rely heavily on syntactic (or structural) cues without considering more dynamic contexts. For example, to determine whether a reference was specific, they often simply looked at whether there was a modifier attached to the reference. In conjunction with the confusion in detecting SR and HK separately, the existence of modifiers often resulted in an automatic insertion of the definite article *the* (i.e., the learners relied on static notions of the determinants of referentiality). The next example serves to illustrate this type of error (once again, note that the learners were told that each paragraph was the beginning of a longer text):

(5) a. Answer: School has just begun and I have already made *the_{5a} terrible mistake*. *Somebody spoke about the_{5b} famous writer*, and I asked if she was a freshman.

b. Quote (explanation for *the₁ terrible mistake* and *the_{5b} famous writer*): I think that this *mistake* and *writer* are both specific, because they are modified by *terrible* and *famous*. If a noun is preceded by adjectives like these, I cannot help inserting *the* instead of *a*. (J1-1)

However, the presence of a modifier does not necessarily mean that the reference is identifiable.

In addition to their relatively static notions of the determinants of referentiality, learners also had relatively fixed notions of the determinants of countability. Those with lower proficiency tended to think that noun countability was a fixed or static entity. From the data gathered via both the tests and interviews, it appeared as though the learners had assembled and memorized a list of countable and uncountable nouns; every time they came across an NP they seemed to refer back to this list to determine the group to which the noun (or the lexical head of the NP) belonged. If the noun or lexical head was not on the list, they were confused—leading many of the learners to consult bilingual dictionaries, as (6) shows. One has to remember, however, that aids such as bilingual dictionaries usually do not indicate noun countability within a given context.

(6) Quote: I really don't know which are countable nouns and which are not. In daily life, I know there are some mass words that are countable. I really don't know how to tell which ones are countable. I look through a dictionary, but it is difficult. (J1-2)

The difficulty comes from the fact that most English nouns can be used in either countable or uncountable ways depending on the context. Wierzbicka (1988) noted that “the fact that many words can be used as either countable or uncountable, depending on the meaning intended, shows that the grammatical characteristics in question are sensitive to changes in the conceptualization” (p. 507). Thus, it is neither realistic nor practical to make lists of countable and uncountable nouns and to consult such lists to detect count-

ability. Countability judgments based on “the conceptualization intended by the speakers” (Wierzbicka, p. 507) become more important if one extends the countability argument beyond the lexical-head level to the whole NP, given that the countability detection required for the proper usage of articles is often found at the whole-NP level. In sum, the learners with lower proficiency levels relied heavily on a few mistaken rules that they believed had been taught and that, in turn, showed a clear lack of understanding of the dynamic ways in which SR, HK, and countability influence the proper selection of articles.

Approach 2: Hypotheses That Show Sensitivity to the Wrong Contexts.

The second type of hypothesis of article selection that participants in this study appeared to have formed began with recognition of their errors. The immediate effect of this recognition was confusion and an attempt to reconcile their article selection process with their newly acquired awareness of the mistakes they were making. This held true with regard to HK, SR, and countability, and it led the learners to adopt a number of temporary, ad hoc hypotheses for choosing articles.

Those learners who realized that the existence of modifiers did not necessarily guarantee that NPs would take *the* expressed more confusion with respect to its use. The learner in (7), although still having a static notion of noun countability, began to question his sole reliance on static structural cues to determine referentiality.

(7) Quote: I have a strong image that *the* should be inserted when [a reference] is specified. Thus, I believe that if a sentence has *who*, for example, and is modified, I think I need to use *the*. But in reading, I noticed that *the* is not always used even when the sentence is modified by *who*, and I wonder why. I wonder if there are some words which only take *the*. I really don't think that I understand the use of *the*. As for *a*, I can look up a dictionary and check the countability of a word, so it's O.K. But as for *the*, I always wonder when I should use *the* and when I should not. (J1-18)

(8) Quote: *The* is used when a reference is modified by a *that*-clause, but when it is modified by a *wh*-clause, the article does not have to be *the*. (J1-13)

(9) Quote: For nouns related to *thinking* such as *idea* and *thought*, if they are modified by a *that*-clause and an *of*-clause and so on, I think that they will take *the*. (J2-6)

As can be seen in (7)–(9), learners with lower to middle level proficiency developed a number of hypotheses to capture the actual uses of articles as much as possible. It seems likely that the amount and type of English that each one was exposed to varied, and the focus of their attention to and observations of the use of articles (e.g., with regard to subjective frequencies) thus

varied as well. For more examples of these discovered rules, refer to Appendix B.

To make sense of what they observed in terms of actual English article usage, some learners tried to find a solution by hypothesizing word-article collocational rules. As can be seen in Appendix B, words that belonged to different word classes (e.g., prepositions, nouns, verbs, adjectives, and adverbs) were reported by the learners to have certain collocational relationships with articles. Among them, the most frequently mentioned pseudo collocational rules were those involving prepositions, though it is not entirely clear why this was so. One possibility might be the relatively high frequency with which prepositions appear with articles in English discourse. A similar frequency might also explain why *have* and *make* were the most commonly mentioned verbs for which learners claimed collocations with articles. Both are general-purpose verbs and are frequently used in English. Again, which words and articles were thought to obey such rules varied among learners. One can assume that the collocational hypotheses formed by various learners differed in accordance with the types and amount of input that they had received as well as with what they had paid attention to, for example:

(10) Quote: You don't need any articles after *of*, right? Also, I think that no articles come after *by*. I don't know why I got this idea. Maybe because some phrases that I had learned such as *by bus* were stuck in my head. (J1-2)

(11) Quote: I use *the* after *of*, *by*, *from*, and so on. I believe that prepositions are followed by *the*. But, as for *by*, . . . if a noun referring to a person comes after *by*, like in this case [she pointed to her answer *by* \emptyset *listener*], then you can't put *the* after *by*. You know, just like the expression *by him*. (J1-15)

(12) Quote: I feel that they don't use articles right after prepositions. Like . . . I think that . . . people usually don't say something like . . . *by a man*, *by a woman* . . . so that's why I didn't use articles after *by* . . . I think that if you have an article after a preposition, I feel like it is too much. (J1-4)

(13) Quote: Every time I see that no article is used after a preposition, I wonder which preposition is allowed to take an article and which one isn't. I always wonder about this, and I end up guessing. (J2-9)

Furthermore, it appears that it was not easy for learners to discard such collocational rules once they became accustomed to using them, especially when they thought that there were no other evident rules to rely on. Even some of the advanced learners expressed their belief in certain nongeneralizable word-article collocations:

(14) Quote: I know there are some words that take *the*, *garden*, for example. Wait, *garden* might not take *the*. I'm not confident about *garden*. But I learned that *park* takes *the*. To be honest with you, I don't know whether this is really true or not. But I use *the* anyway. Also, my teacher told me

water takes *the*, and I always use *the* with *water*. In any case, there are not many cues, I mean, I don't have much knowledge regarding when and how to use articles. So, when I encounter a case where I can't place it into any of the suitable categories in my mind, I have to guess. (J4-2)

The quote in (14) shows that learners were often aware of cases in which their hypotheses were in fact violated. They wondered about the feasibility of their rules even though they often continued to use such hypotheses, and such a dilemma made them lose their confidence with regard to their use of articles.

The confusion and lack of confidence expressed with respect to collocational rules was also found to exist with regard to the detection of HK. As discussed earlier, the lower proficiency learners tended to focus on structural cues in determining whether *the* should be used. Specifically, they looked at whether the reference had already appeared in the text, a tendency that presumably originated with a rule initially introduced at school or in textbooks. The problem was, however, that whereas this rule (i.e., rule 2) might be a convenient proxy that works to some degree, it does not quite capture the notion of HK. It is possible that some objects, events, or notions might be part of the hearer's knowledge even though they were not previously mentioned. Thus, those learners who realized that this rule was often violated expressed their confusion. Again, even the most advanced learners sometimes expressed such confusion, as (15) illustrates.

(15) Quote: I'm often troubled by articles. First, I will see whether [a noun] is singular or plural. I consider the countability first. And if it is plural, *a* cannot be used, so, I will see whether or not I can use *the*. If it is singular . . . well . . . , I learned that I should see whether or not [the word] is already mentioned or if it is appearing for the first time . . . in order to decide whether or not to insert *the*. . . But, after I came here [to the United States] and lived here, I noticed that *the* cannot be used solely based on the superficial fact of whether or not it has already appeared. So, except for conventional usages, I really have a hard time deciding when I should use *the*. (J4-18)

Similar confusion was also expressed with regard to detecting the countability of NPs; some learners realized that some nouns were used both in countable and uncountable ways, as (16) shows.

(16) Quote: I don't know whether or not you can count something that you cannot see, such as *feelings* and *time*. I don't think they can be counted, but I sometimes see them used with *a*. So I don't know what to do. (J1-6)

In summary, then, we can see how an awareness of the fact that their original hypotheses (which they believed they had been instructed to follow) did not always work and led the learners through a process of confusion and attempts to reconcile their knowledge with what they saw in actual English us-

age. This confusion held for HK, SR, and countability, and it led them to form both temporary, ad hoc collocational rules as well as to search for more accurate, qualified rules for article selection.

Approach 3: Hypotheses That Show Sensitivity to a Range of Relevant Contexts. As we have seen in the results of the quantitative analysis (summarized in Figure 2), the reliance on idiosyncratic or nongeneralizable rule-based hypotheses decreased from the lower proficiency groups (J1 and J2) to the higher proficiency groups (J3 and J4). The higher proficiency learners were less constrained by rules; most realized that they could not rely solely on structural cues or static, local contexts in choosing articles. They realized that they had to consider the context in which a given article was used more seriously and dynamically.

To begin with, an increasingly large number of learners at the J3 and J4 levels realized that, to use *the*, references should be identifiable not only by the speaker but also by the hearer: HK became more evidently conceived of as an important entity in determining articles. One of the conditions needed to make the reference identifiable to the hearer ([+HK]) is to eliminate all possible instances except the one available to the hearer at the time of discourse (Langacker, 1991). In the statements given by the advanced learners, one can find increasing concern about the degree of exclusiveness of references in the determination of whether *the* could be used, as shown in (17)–(20) (emphasis added).

(17) Quote: I think that *the* is used for something that has a *stronger degree of exclusion*. If *the degree is not strong*, then *a* is used. (J4–2)

(18) Quote: If [a reference] is *narrowly limited*, *the* should be used. (J4–7)

(19) Quote: When I use *the*, I think about *how limited* [a reference] is. (J4–13)

(20) Quote: I always wonder. . . . I don't know very well whether or not I should use *the* when a noun is followed by a modifier. Personally, I try to use *the* when *a noun is narrowly limited*, and I use *a* or *an* when a noun is *not so narrowly limited*. (J4–6)

In addition to the more accurate consideration of context in applying both HK and SR in selecting articles, the notion of countability also changed from a static to a nonstatic one. An increasing number of higher proficiency learners realized that some nouns can be used in both countable and uncountable ways depending on the context, as in (21).

(21) Quote: I judge whether [a reference] is countable or not based on the context. When it refers to something as a whole, then it should be uncountable. If I can think of an individual case, then I take it as countable. (J3–20)

Namely, there were two conceptual differences that emerged between lower proficiency learners and higher proficiency learners: (a) There was a switch in the determination of context from considering only one factor (often

SR alone), based solely on static syntactic or structural cues, to a broader consideration of context in which learners considered identifying and applying both SR and HK to select articles; and (b) there was a switch from a static to a nonstatic notion of countability. The learners' judgments regarding articles were much more context based in the higher proficiency groups. However, although the advanced learners were able to recognize HK as an important factor and consider it separately from SR, this does not necessarily mean that they could correctly detect whether a reference was identifiable by the hearer (HK). This detection turned out to be difficult for all learners regardless of proficiency level. (As you may recall from the quantitative analysis, the misdetection of HK remained problematic for even the most advanced learners.) The same holds for the detection of countability: Proper detection of countability was problematic for even those advanced learners who showed solid metalinguistic knowledge of the nonstatic nature of noun countability. With regard to countability, one particularly important observation is that the Japanese learners participating in this study often cited the difficulty of detecting countability for indivisible entities. It was particularly problematic when a reference denoted a kind of indivisible entity or a kind of temporal notion. Some entities that are usually conceived of as indivisible can be conceptually divided (and thus made countable) if one can view them as being a collection of different kinds and conceptually select one as a reference. For example, *environment* is often perceived as being a mass noun by Japanese students, yet it can be considered countable if one thinks that there are different kinds of environments, such as *a warm environment*, *a cold environment*, and so on. However, many of the learners in this study did not recognize the possibility of drawing boundaries around certain conceptual items by introducing this notion of different kinds. Even for those who recognized this mechanism, a further complication was the fact that it was not necessarily easy for them to draw boundaries as native speakers do, as (22) illustrates.

(22) Quote: You don't need to have an article if you don't intend to count. If you take *water*, for example, I suppose that no one would count just plain water, but if you have *a warm water*, and *a cold water*, . . . I mean if you have something specific attached to water, then I suppose that we need an article. But in such a case, I wonder if *the* should be used? (J4-20)

Learners must learn which entities can be conceptualized as divisible within a given context. This might take substantial practice, especially for those whose L1 does not require explicit indication of the numerical values of objects with such frequency.

In summary, higher proficiency learners clearly relied on more dynamic, context-based conceptions of how the elements of HK, SR, and countability should be incorporated into article selection. As indicated in the preceding quotes, however, recognizing that HK is a separate entity from SR in article detection did not remove the difficulties that learners had in correctly detecting whether or not a reference was identifiable by the hearer (HK). The finer

complexities of English article usage continue to challenge learners' abilities to correctly use articles.

CONCLUSIONS AND IMPLICATIONS

This study examined the metalinguistic knowledge that Japanese learners employ in understanding the English article system. Learners' performance on the fill-in-the-article test showed that the higher their proficiency levels were, the more targetlike usage they could achieve, though there remained a large gap in the use of articles between the native English speakers and the most advanced Japanese learners. The interview data revealed that the learners, depending on their proficiency levels, had different hypotheses that they employed to make sense of the complicated English article system. Such differences in approaches to understanding the use of articles were characterized by: (a) context-insensitive hypotheses, (b) hypotheses that showed sensitivity to inappropriate contextual cues, and (c) hypotheses that showed sensitivity to a range of relevant contexts. Lower proficiency learners were strongly influenced by a set of rules that they believed were given by teachers, textbooks, and so on. Those who realized that such rules did not work in all contexts formed various ad hoc hypotheses as a result of their efforts to grasp the article system. The learners who took approaches (a) and (b) failed to consider context in detecting SR and HK and often exhibited particular difficulties in accurately detecting HK as a result. A number of learners also had a fixed notion of noun countability (i.e., they dealt with countability as if they had a static list of countable nouns and uncountable nouns and could retrieve a word from either list regardless of context). However, one could see a clear difference in metalinguistic knowledge of the English article system by higher proficiency learners in their detection of both SR and HK in dynamic contexts and their nonstatic notions of noun countability. Importantly, however, even among the higher proficiency learners, the proper detection of HK and noun countability was problematic, as with those who took approaches (a) and (b).

It is not clear why HK was difficult to detect for the Japanese learners in this study. One might hypothesize that structural, semantic, and pragmatic differences between English and Japanese may make it difficult for the Japanese learners to figure out the associations between the notions of HK and definiteness. The data gathered herein also might provide us with some possible explanations for this difficulty. As we have seen among lower proficiency learners, it could be partially due to their excessive introduction of extralinguistic knowledge into their readings of the text or some similar misinterpretation of the text. However, even those advanced learners who did not show such problems and had a solid understanding of what HK means in relation to article use still had difficulties accurately detecting HK. They found it hard to determine which circumstances or conditions would make a reference identifiable to the hearer. It should be noted that this determination also requires

the accurate detection of noun countability, which was found to be very problematic for the learners across proficiency groups. (Recall that error rates due to misdetection of countability were high even among the most advanced learners, as shown in Figure 2.) As the interview data indicated, this misdetection of countability could potentially be a major cause of the problems with HK.

For the hearer to identify the speaker's intended reference, the hearer should be able to sufficiently eliminate all referable entities (objects, states of affairs, etc.) that were available to the hearer at the time of discourse and to ensure that he or she can identify the speaker's intended reference. What, then, are the conditions needed to sufficiently eliminate all referable entities except one and make the reference identifiable to the hearer? How is countability involved in this process? If the speaker's intended reference is countable, then the reference denotes a set that is composed of more than two members (or subsets). The hearer thus cannot identify which member (or subset) the reference denotes by itself. For the hearer to identify which member (or subset) the reference denotes, at least one of the following four conditions has to be met: (a) only one of its kind must exist in the universe, (b) the reference must have already been introduced by the speaker, (c) a previously introduced nominal must evoke a mental association with the reference based on some world knowledge, or (d) extralinguistic knowledge must make it possible for the hearer to identify the reference (e.g., by pointing to an object). If the speaker's intended reference is not countable, then there are no discrete members in the set; in this case, the reference denotes the entire set, and the hearer can identify it. However, should the context permit the entity referred to to have a boundary (or boundaries) and should this entity be conceptualized as a collection of discrete instances, then if the speaker refers to one of them, the reference cannot be identified by the hearer without first being introduced. In sum, considering the number of the reference is a prerequisite for understanding the relationship between a member (or a subset) and the whole set.

However, the learners who participated in this study had a difficult time detecting noun countability properly. One common mistake occurred in test items containing a reference denoting only a single member (or a single subset) of a set known to the hearer at the time of discourse. The learners in this case tended to treat the reference as if the hearer could identify the specific member (or subset). This also explains the observation made earlier that, although the errors due to SR decreased among learners at higher proficiency levels, the correct detection of HK remained problematic even for advanced learners. As long as they could not properly detect the countability of a given reference, they were less likely to properly detect HK for the reference. An example illustrating this pattern is given in (23). After successfully using indefinite articles for both blanks, this learner expressed concerns with his choice of articles as follows:

(23) a. Answer: Japan has *an*₂₃ old culture, stretching back in time more than 2,500 years. Japanese arts have *a* long and splendid history.

b. Quote (explanation for *an*₂₃ *old culture*): I really had a hard time deciding which article to use. On the one hand, I felt that *old culture* could be limited to mean Japanese culture specifically. But on the other hand, I thought that *culture* might be countable. So I felt that it couldn't be limited to one culture because there are many old cultures. I still don't know.
(J3-2)

The first step in answering this question properly is to understand that, as this learner mentions, there are multiple old cultures. A prior reference is therefore necessary for the hearer to identify the specific old culture to which the speaker is referring. However, in this particular example, nearly 25% of the learners thought that *old culture* was not countable in this context. They already excluded the option that *old culture* in this context might be a member of a set of *old culture*, which in turn might not yet be identifiable to the hearer. Based on these results, I suggest that the problems with countability that the L2 learners in this study faced could be one of the most significant hurdles for them to overcome in properly detecting HK and using articles appropriately. This is consistent with Master's (1987) claim that countability is the most persistent problem for accurate article use by L2 learners whose L1 does not contain an article system.

The learners' different hypotheses about the English article system also suggest that it is important to be cautious in interpreting data based on research methods in which one compares performance in article use in different NP environments to determine which referentiality features (SR or HK) are first associated with definite and indefinite articles. Even if learners understood the relationship between referentiality features and the English article system, they might not be able to properly use this knowledge. Also, as already discussed, learners' use of articles might be influenced by various ad hoc hypotheses that might have little to do with referentiality features. Moreover, with respect to the free-production data, the literature on L2 acquisition clearly indicates that learners tend to avoid article uses of which they are unsure. Thus, one might need to more carefully consider the error rates for NP contexts in L2 learners' production data in order to make claims about which referentiality features can be associated with definite and indefinite articles. At least at the metalinguistic level, the interview data gathered for this study suggests that the L2 learners connected the notion of [+SR] with definite article usage first, consistent with Thomas's (1989) hypothesis, although further research is necessary to determine which referential feature is acquired first. It is also unclear whether or not one has innate sensitivity to SR as Bickerton (1981, 1984) has claimed.

Although this study aims to provide a clearer picture of the ways in which L2 learners acquire the English article system, it clearly has some limitations. The first is to what extent the findings of this study are generalizable to other populations. The present study examined only Japanese learners who were

selected because of the relative homogeneity of their L2 English learning environment and the lack of an article system in their L1. The effect of learners' L1 on article acquisition needs to be more thoroughly investigated. A second limitation stems from the measurements relied on in this study. The distinction among semantic types sometimes can be very difficult, and the decision as to appropriate article use has to be made based on the speakers' intentions and the surrounding context. In practice, interpreting the NP contexts where articles are used can vary even among native speakers. Although substantial efforts were made to choose appropriate test cases using authentic materials, it is possible that some classifications of NP environments in the tests administered might potentially allow for alternative interpretations. A third limitation is that it is not clear to what extent the learners actually access metalinguistic knowledge for article use when they engage in regular production activities, such as free speaking and free writing. It seems probable that the accessibility of metalinguistic knowledge might vary depending on the nature of the production activities in question, the time available for conducting a given task, and the proficiency level of the learners. Although the Japanese learners of English who participated in the present study articulated their metalinguistic reasoning (namely, their explicit knowledge) relatively well in general, this does not mean that one can disregard the value of their implicit knowledge of English article use.

The present study only examined learners' explicit knowledge of the English article system; the role of implicit knowledge and its relation to explicit knowledge is still an open question. It would be interesting to know to what extent native speakers of English might articulate their metalinguistic knowledge of the English article system and to compare this to that of adult L2 learners in a given production activity. Related to this, it also was not clear how firmly ingrained all these hypotheses were in the learners' minds when it came to determining articles. How consistently did the learners rely on these hypotheses (or rules) when they chose articles? This seems likely to depend on the hypotheses themselves; some hypotheses may be more influential and more strongly grounded than others. Alternatively, some hypotheses might only be one-shot strategies, or they might better be treated as perceived tendencies of article use rather than rules. Accordingly, it would be useful to examine what rules are most commonly created by learners, how such rules are created, the role of instruction in creating such rules, how consistently learners use these rules, and finally, how these results compare to those for learners with different L1s.

Despite such limitations, it is hoped that the information gained from this study may provide teachers with a new means of identifying and understanding learners' problems as well as indicate areas where language instruction can be made more effective. This study indicates that learners' errors stem from a number of sources and that learners form different approaches to understanding the use of articles. Unfortunately, articles do not appear to have been the focus of very much attention in many L2 classrooms to date. How-

ever, the results of this study indicate the importance of considering a more suitable way of teaching the article system. Specifically, this might entail helping students overcome specific types of difficulties they commonly experience at different proficiency levels. For example, successive and systematic instruction could be most effective for those learners who exhibit confusion and struggle to capture the workings of the article system (e.g., for those with lower to middle level proficiency). Considering the substantial difficulties in detecting noun countability by the Japanese learners in this study, article instruction would be more effective if it were incorporated into various exercises in countability detection wherein the students experience how native speakers change their perception of an entity depending on the context. In this way, it is hoped that the identification of learners' sources of errors, as well as the three different types of approaches presented to describe their analyzed knowledge, may provide a basis for improving instruction of the English article system in the future.

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Notes

1. The mean scores on the proficiency test for each group were as follows (out of a total score of 35): 13.0 for J1; 20.1 for J2; 24.8 for J3; and 29.5 for J4. A one-way ANOVA indicated that there were significant differences in mean scores across groups, $F(3, 79) = 162.5, p < .0001$. Tukey HSD indicated that the mean scores of all four groups were significantly different from each other.

2. Based on the discussion with these three English speakers whose responses were used to select the test items, I decided to accept two articles as answers for 7 of the 100 items tested; these consisted of six type 1 uses (generic uses) and one type 5 use (conventional expressions).

3. Although think-aloud procedures have been widely used in studies investigating cognitive processes, this type of procedure was not employed in this study for three basic reasons. First, such a procedure would place a heavy cognitive load on the Japanese subjects, as they would be required to read and understand texts in English as well as to consider which articles should be inserted in each blank in the texts, and then simultaneously articulate their thinking processes in another language (namely, Japanese). Second, one has to worry about the possible distortion of information retrieved from a subject's short-term and long-term memories due to the translation process or other unknown factors caused by the simultaneous engagement of the subjects in two separate languages. Third and finally, think-aloud procedures usually require some practice on the part of the subjects, and one has to expect large individual variations in the extent to which a subject can articulate his or her thoughts while engaging in a highly cognitive task. Of course, one has to be aware that alternative procedures (such as asking the subjects to provide a reason for their answer choices) are not free from criticism on theoretical grounds. The criticism could be made, for instance, that articulating reason(s) would alter a subject's thinking and performance because it would require retrieving information from long-term memory. However, empirical data shows no evidence to support the argument that articulating a reason for an answer choice would change either the subjects' "quality of thinking" or their "patterns of reasoning acts" (Norris, 1990, p. 51).

4. Although ANOVA requires that error terms have constant variance for all factor levels, no transformation was introduced in this study for the following two reasons. First, there is a nonmonotonic relationship between the group means and the group variances, and therefore there are no straightforward transformation techniques that would remedy the unequal error variances. Second, as has been noted in the literature, "when the error variances are unequal, the F test for the equality of means with the fixed ANOVA model is only slightly affected if all factor level sample sizes are equal or do not differ greatly" (Neter, Wasserman, & Kutner, 1990, p. 624).

5. The numbers in the parentheses indicate the learners' proficiency groups (J1, J2, J3, and J4) and their identification numbers.

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APPENDIX A

ENGLISH ARTICLES IN DIFFERENT NP ENVIRONMENTS

Type 1: [–SR, +HK], generics and unspecifiable: [*a(n)*], [*the*], [∅]

[<i>a(n)</i> [+count] [+sg]] _{NP}	<i>A</i> cat likes mice.
[<i>the</i> [+count] [+sg]] _{NP}	<i>The</i> whale is a mammal.
The generic form of [<i>the</i> [+count] [–sg]] _{NP} is possible if the NP is followed by a postpositional modifier (Kuno, 1973).	
[∅ [+count] [–sg]] _{NP} or [∅ [–count]] _{NP}	∅ Language is a great invention of humankind.

Type 2: [+SR, +HK], referential definites: [*the*]

[<i>the</i>] _{NP} Exophora, homophora	Pass me <i>the</i> pen.
[<i>the</i>] _{NP} Cataphora	<i>The</i> idea of coming to the U.S. was . . .
[<i>the</i>] _{NP} Anaphoric reference	When I found a red box in front of my house, it was too late. <i>The</i> box blew up with a terrific explosion.
[<i>the</i>] _{NP} Connotative reference	This book did not sell well even though <i>the</i> author was a famous writer.
[<i>the</i>] _{NP} Extended reference	I won a million-dollar lottery. <i>The</i> news quickly spread all over town.
[<i>the</i>] _{NP} Unexplanatory modifiers	<i>The</i> first person to jump into the cold water was my brother.
[<i>the</i>] _{NP} Unique in all contexts	There are nine planets traveling around <i>the</i> sun.

Type 3: [+SR, –HK], referential indefinites, first mention: [*a(n)*], [∅]

[<i>a(n)</i> [+count] [+sg]] _{NP}	I saw <i>a</i> strange man standing at the gate.
[∅ [+count] [–sg]] _{NP} or [∅ [–count]] _{NP}	I keep sending ∅ messages to him.

Type 4: [-SR, -HK], nonreferentials: [a(n)], [Ø]

[a(n) [+count] [+sg]] _{NP}	<i>I'm going to buy a new bicycle; He used to be a lawyer.</i>
[Ø [+count] [-sg]] _{NP}	<i>Ø Foreigners would come up with a better solution for this matter.</i>

Type 5: Idioms and other conventional uses (including uses with pronouns): [a(n)], [the], [Ø]

[a(n) [idiom or other use]]	<i>All of a sudden, he woke up from his coma.</i>
[the [idiom or other use]]	<i>In the 1960s, there were lots of protests against the Vietnam War.</i>
[Ø [idiom or other use]]	<i>He has been thrown out of work, and his family is now living Ø hand to mouth.</i>

APPENDIX B

EXAMPLES OF LEARNERS' NONGENERALIZABLE OR IDIOSYNCRATIC HYPOTHESES

Pseudo or Nongeneralizable Collocation Knowledge

- Prepositions + certain articles (e.g., *of + Ø, by + Ø, of + the*)
- Certain articles + certain nouns (e.g., *the + matter, the + world, Ø + water*)
- Certain verbs + certain articles (e.g., *have + a, make + a, believe + the*)
- Certain adjectives + certain articles (e.g., *such + a, the + former*)
- Certain articles + certain adverbs (e.g., *Ø + very*)
- A part of a phrase (e.g., *in the garden*)
- Certain articles + certain nouns denoting persons (e.g., *a + man, a + female, the + man*)
- Certain articles + certain directional words (e.g., *Ø + west*)

Other Nongeneralizable or Idiosyncratic Hypotheses

- Comparative forms + certain articles (e.g., *the + a comparative form, Ø + a comparative form, a(n) or Ø + a comparative form*).
- The beginning of a sentence should start with *the*.
- If a certain noun appears once before, it takes *the* (regardless of the context).
- A* should be used for nouns that appear later in sentences.

One should avoid using the same article successively in one sentence.

In a sentence structure NP_1 of NP_2 , *the* cannot be inserted before both NP_1 and NP_2 (i.e., *the* NP_1 of *the* NP_2 is impossible).

Proper names take \emptyset . Proper names take *the*.

Abstract nouns take \emptyset . Abstract nouns take *the*.

Plural forms of countable nouns take *the*. Mass nouns take *the*.

Participle forms should not take *the*.

Words of Latin or Greek origin do not take any articles.

If a noun has an adjective as a modifier, it has to take *the*.

The subject of a topic sentence should always take *the*.

The first mention of a noun requires *the*, and the second mention of the same noun requires *a*.

Nonspecific *the*.