

## 第2 言語習得における過剰生成

### Overregularization in Second Language Acquisition

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#### ABSTRACT :

The English language has two ways of creating past verb forms : regular and irregular. It is well known that children acquiring English as their first language (L1) apply regular grammatical patterns to irregular words and produce ‘overregularization errors’ such as *goed*. It is also known that this phenomenon follows a ‘U-shaped development.’ Using longitudinally-collected spontaneous speech data from four Japanese children acquiring English as their second language (L2), this study attempts to examine the L2 children’s learning mechanism for English verb morphology. The results obtained from the children were, overall, very similar to those of L1 children reported in Marcus, Pinker, Ullman, Hollander, Rosen, & Xu (1992). The hypothesis by Marcus et al. (1992) that irregular memorized items block the application of regular rules and that retrieval of items from memory is probabilistic and sensitive to frequency of exposure is also applicable in child L2 acquisition.

#### INTRODUCTION

This is a study of the overregularization which occurs in the acquisition of verb past forms by second language (L2) learners. Four Japanese children living in English-speaking countries were observed longitudinally. It has been observed that children acquiring English as their first language (L1) apply regular grammatical patterns to irregular forms and produce what we call ‘overregularization (or overgeneralization) errors’ such as *goed* or *comed* (Bowerman, 1982 ; Bybee & Slobin, 1982 ; Cox, 1989 ; Derwing & Baker, 1986 ; Fowler, Napps & Feldman, 1985 ; Ghadessy, 1989 ; Kuczaj, 1977, 1978 ; MacWhinney, 1978 ; Slobin, 1971 ; Stemberger & MacWhinney, 1986). This process of overregularization has attracted researchers, and a lot of studies, including the approach from Parallel Distributed Processing (PDP) model, have been carried out to theorize the mechanism. As a result, the study of overregularization has greatly progressed and insightful discoveries have been made (Chandler, 1993 ; Cox, 1989 ; Kim, Pinker, Prince & Prasada, 1991 ; Li, 1993 ; Maratsos, 1993 ; Marcus, Pinker, Ullman, Hollander, Rosen, & Xu, 1992 ; Morgan &

Travis, 1989 ; Pinker, 1979, 1984, 1991 ; Rumelhart & McClelland, 1986).

The *goed* type errors have also been known to be produced by L2 learners (Brown, 1987 ; Ellis, 1985, 1994 ; Richards, 1974 ; Selinker, 1972 ; Taylor, 1975 ; Yamaoka, 1997). However, beyond this mere fact, little has been studied regarding the details of the overregularization errors in L2 acquisition. People surrounding the language learners will never say *goed* to them. However, the learners (both L1 and L2) will produce the overregularization errors in the course of acquisition, and stop producing them in due time usually without having their errors corrected. How does this process occur? Overregularization in L1 acquisition has been considered paradigmatic of language development and cognitive development (Bever, 1982 ; Bowerman, 1982). Thus, the study of overregularization in L2 acquisition also has value. The present study is, then, an attempt to contribute to this area of research by collecting spontaneous speech data from four Japanese children acquiring English as their L2 and examining their overregularization errors with verb tenses.

## OVERREGULARIZATION AND L1 ACQUISITION

The English language has two ways of creating verb past forms. One way is to add the suffix *-ed* to the verb stems. The verbs belonging to this category are called regular verbs. It is said that thousands of English verbs are regular verbs. On the other hand, the past forms of about two hundred verbs are formed in idiosyncratic ways (Bybee & Slobin, 1982). These verbs are called irregular verbs. Although the number of irregular verbs is small compared with that of regular verbs, most of them are among the high-frequency English verbs.

Overregularization follows a unique pattern of development. According to L1 data, the first overregularization errors usually occur after a period of forming irregular verb past forms correctly. After the period of overregularization, the learner finally reaches the mature stage, in which he can consistently produce past tense forms correctly. This developmental process is known as 'U-shaped development' (Ervin & Miller, 1963 ; Cazden, 1968 ; Plunkett & Marchman, 1991).

The development of overregularization was traditionally explained as follows (Kuczaj, 1977, 1978 ; Slobin, 1971). The process is dependent on a dissociation between two psychological processes : rote memory and rule deployment. A child uses rote memory to memorize verb forms one by one. The child can use rote memory from the start of his language development. Later, as he accumulates language data from caretakers, the child abstracts the rule for forming regular past tense verbs. Until the child abstracts this rule, he cannot overregularize, because he has no machinery for it. Once he has acquired the rule, he does begin to overregularize.

According to Marcus et al. (1992), however, this traditional explanation is not correct. The first problem is that the explanation does not say anything about differences between the rule-possessing child and the rule-possessing adult. These two groups are

obviously different. That is, the child says *comed*, but the adult does not. If a child who has acquired the regular affixation rule says *comed*, why doesn't an adult who has also acquired the rule say it? Secondly, the traditional explanation does not predict why a child who first utters a given irregular verb correctly by rote memory will apply the regular verb tense rule to it, resulting in an overregularization error (Cazden, 1968; Ervin & Miller, 1963). Once a child has developed the rule and is overapplying it, how and why does he restrict its use only to correct cases?

Marcus et al. (1992) investigated L1 children's overregularization using the 1990 version of the CHILDES data base and documentation (MacWhinney, 1990). They report that overregularization errors are relatively rare: 2.5% of irregular past tense forms are overregularized. Overregularization occurs at a roughly constant low rate in children from two years of age and into the school-age years, and involves a lot of irregular verbs. Although overregularization errors do not predominate, U-shaped development is confirmed quantitatively. That is to say, an extended period of correct performance precedes the first overregularization error.

Overregularization does not correlate with increases in the number or proportion of regular verbs in parental speech, children's own speech, or children's own vocabularies. Thus, the traditional account in which memory operates before rules cannot be replaced by a connectionist alternative in which a single network displays rote-like or rule-like behavior in response to changes in input statistics (Rumelhart & McClelland, 1986, 1987). Overregularization first appears when children begin to mark regular verbs for tense reliably (i.e. when they stop saying *Yesterday I walk*). The more often a parent uses an irregular form, the less often the child overregularizes it. Verbs are protected from overregularization by similar-sounding irregulars, but they are not overregularized because of similar-sounding regulars, suggesting that irregular patterns are stored in an associative memory with connectionist properties, but that regulars are not.

Based on these findings, Marcus et al. (1992) hypothesize the acquisition mechanism of verb past morphology. Their hypothesis is that irregular memorized lexicons block the application of regular rules and that retrieval of items from memory is probabilistic and sensitive to frequency of exposure. Children's language systems, like that of adults, are designed so that retrieval of an irregular form suppresses overregularization, but retrieval is imperfect, and when it fails, the regular rule applies as a default, leading to overregularization errors. This blocking-and-retrieval-failure hypothesis will predict that, at all ages, the child's linguistic system is designed to suppress regularization of verbs remembered to be irregular.

Marcus et al. (1992) proposes that like adults, children mark tense using memory for irregulars, and an affixation rule that can generate a regular past tense form for any verb. Retrieval of an irregular form blocks the rule, but children's memory traces are not strong enough to guarantee perfect retrieval. When retrieval fails, the rule is applied, and overregularization results.

## OVERREGULARIZATION AND L2 ACQUISITION

The fact that L2 learners produce overregularization errors with verb past morphology has been known for years (Selinker, 1972 ; Taylor, 1975 ; Brown, 1987 ; Ellis, 1985, 1994). Overregularization errors are also called 'developmental errors,' 'intralingual errors,' or 'overextension errors' in L2 acquisition scholarship. Selinker (1972) suggests that five principal processes operate in interlanguage, one of which is overregularization of target language rules. Richards (1974) also points out developmental or, as he calls them, 'intralingual' errors as one of the learner's strategies. Brown (1987) notes that both L1 and L2 learners have been observed to produce errors like *comed*.

As a concrete example, Takashima (1992 : 109) cited that his Japanese subject, Yuuki made overregularization errors, as in (1).

(1) I breaked (= broke) the circus tent.

Koike's (1983) three Japanese learners of English as an L2 also overregularized verb morphology. According to Koike (1983), all three subjects at Stage IV in his own classification (10-12 months) began to produce overregularization errors, for example, as in (2).

(2) He bringed (=brought) it. (Sachiko : IV Stage) (Koike, 1983 : 272)

However, these previous studies only list the examples of overregularization or explain it as an extension of some general rule to items not covered by the rule in the target language. They have not investigate deeply how or why the errors occur.

Just like L1 children, the L2 children examined in this present study have had little exposure to *goed*-type forms in their surroundings. Then, if overregularization errors occur in the subjects' utterances, how do they come about?

The research questions discussed in this paper are the following :

- (a) Do the L2 children in this study overregularize verb morphology?
- (b) If the answer to question (a) is yes, how often do they overregularize?
- (c) When do they start overregularization?
- (d) How long do they continue to overregularize?
- (e) When do they stop overregularization?
- (f) Does the process follow U-shaped development?
- (g) Are all verbs overregularized?
- (h) Does Marcus et al.'s hypothesis properly account for the data in this study?

## METHOD

### Participants

The participants' backgrounds are briefly shown in Table 1. There are four children, all of whom are native Japanese speakers acquiring English as their L2 in an English-speaking environment. The subjects' names are Kentaro, Risa, Ryota, and Miho. Kentaro and Risa, who are brother and sister, lived in Vancouver, Canada for three years. They had had no knowledge of English before they arrived in Canada. Kentaro was 6 years and 8 months

old (6;8) and Risa was 9 years and 4 months old (9;4) when they arrived in Vancouver. They went to local elementary school just after they moved to the city. The other two subjects, Ryota and Miho, also brother and sister, lived in Australia for nine months. Ryota and Miho also had no knowledge of English when they arrived in Australia. They entered a local primary school just when they began their new life in Australia.

Table 1. Children Studied

Child	native language	Age observed	Country stayed	Total Samples	Sampling Frequency
Kentaro	Japanese	6 ; 8 – 9 ; 8	Canada	955	1 – 2 /month
Risa	Japanese	9 ; 4 – 12 ; 4	Canada	1014	1 – 2 /month
Miho	Japanese	6 ; 2 – 6 ; 10	Australia	126	2 – 3 /month
Ryota	Japanese	9 ; 10 – 10 ; 6	Australia	124	2 – 3 /month

### Data collection

In the case of Kentaro and Risa, their mother video-taped their speech production, on the average, once or twice per month while they were talking with friends and/or neighbors. Kentaro and Risa were observed from April 1990 (the 1st month of their arrival in Canada) to March 1993 (the 37th month). Ryota and Miho's mother, too, was the data-collector. The mother video-taped her son's and daughter's English performances. The tape-recording was conducted on an average of two or three times a month. Ryota and Miho were observed from April 1992 (the 1st month of their arrival in Australia) to December 1992 (the 9th month). With the help of native English speakers, the subjects' speech samples were later transcribed into written English.

### Calculation of overregularization rates

The Suppliance in Obligatory Contexts (SOC) computation method, which counts the occurrences of a particular linguistic item that are required in a given linguistic context in standard English, has been used for sampling the number of verb past forms. Subjects sometimes repeat expressions or correct them. In this study, only the final expression that a subject settled on was counted.

Following Marcus et al's (1992) criteria of calculating overregularization rates, the present study has adopted the formula below. The calculation criteria must be the same as Marcus et al's, so that the results can be compared. Overregularization tokens include both *stem* + *-ed* (e.g. *comed*) and *past* + *-ed* (e.g. *came*) forms in the obligatory contexts. Thus, just as with Marcus et al's measure of the overregularization rates, this study does not include 'no-marking errors' such as *I go to the zoo yesterday* in the obligatory contexts. The point discussed here is not whether the learner decides to mark tense but how tense is marked. These two issues logically belong to different categories (for further discussion, see Marcus et al., 1992 : 29–33).

$$\text{rates (\%)} = \frac{\text{No. of overregularization tokens}}{\text{No. of overregularization tokens} + \text{No. of correct irregular past tokens}} \times 100$$

## RESULTS

The results of the present longitudinal observation of the four Japanese children acquiring English as an L2 are shown in Table 2 through 7 and Figure 1 through 4. Overall, the results obtained from this L2 study are very similar to those of Marcus et al. (1992). Children's errors in the column 'other irregular/regular errors,' in Tables 2 to 6, include such errors as *I buying book* or *I was buy book* (=I bought a book. ). These errors were all put into the 'other errors' category. Let us discuss the results as they apply to the eight research questions raised above.

(a) Do the L2 children in this study overregularize verb morphology?

All the children overregularized the verb past morphology. Kentaro produced 12 overregularization errors in total ; Risa, 19 ; Miho, 4 ; Ryota, 4 (Table 2). The total results from other L2 studies such as Koike (1983) and Takashima (1992) and the present study suggest that probably almost every L2 child will overregularize during the course of L2 acquisition. At least it can be said that Japanese children acquiring English as an L2 will overregularize verb morphology.

(b) If the answer to question (a) is *yes*, how often do the children overregularize?

The results show that overregularization errors were infrequent, and thus, the rates of errors for all four subjects were low (see Figures 1-4): Kentaro, 1.26%, Risa, 1.68%, Miho, 3.17%, Ryota, 3.23%. Even in months when errors were most frequently observed, rates were relatively low : Kentaro, 11% (10th month), Risa, 13% (10th month), Miho, 10% (8th month), Ryota, 12% (7th month). Miho and Ryota's overall overregularization rates were higher than Kentaro and Risa's. The reason is probably that the length of the observation periods were quite different : 9 months vs. 37 months. Kentaro and Risa did not overregularize the irregular verbs for the last two years during the observation hours. Another finding is that overregularization errors did not always occur every month, at least not during the observation hour.

Figure 1. Kentaro's Overregularization Rate

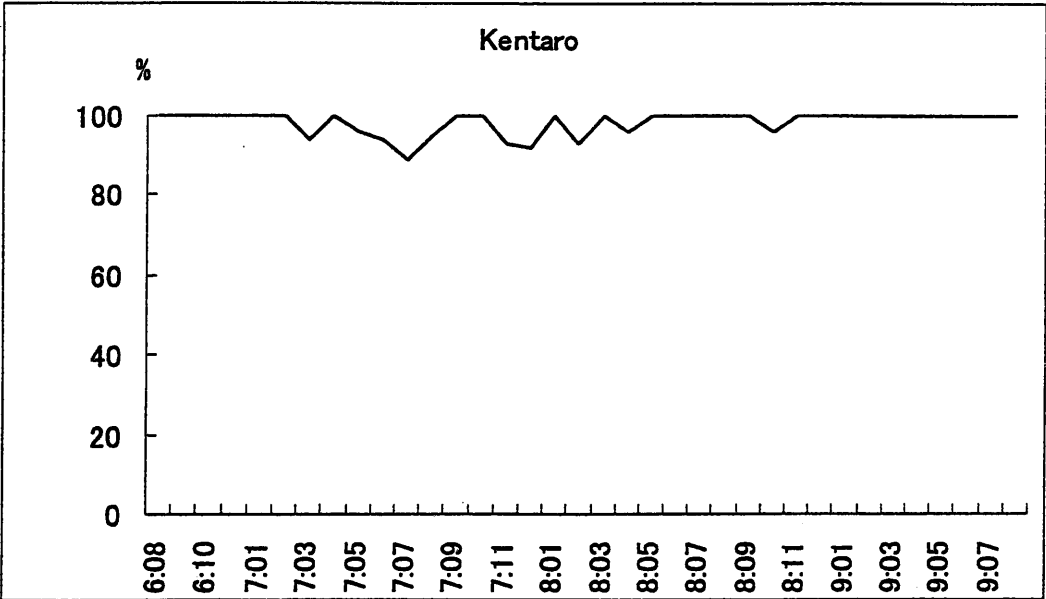


Figure 2. Risa's Overregularization Rate

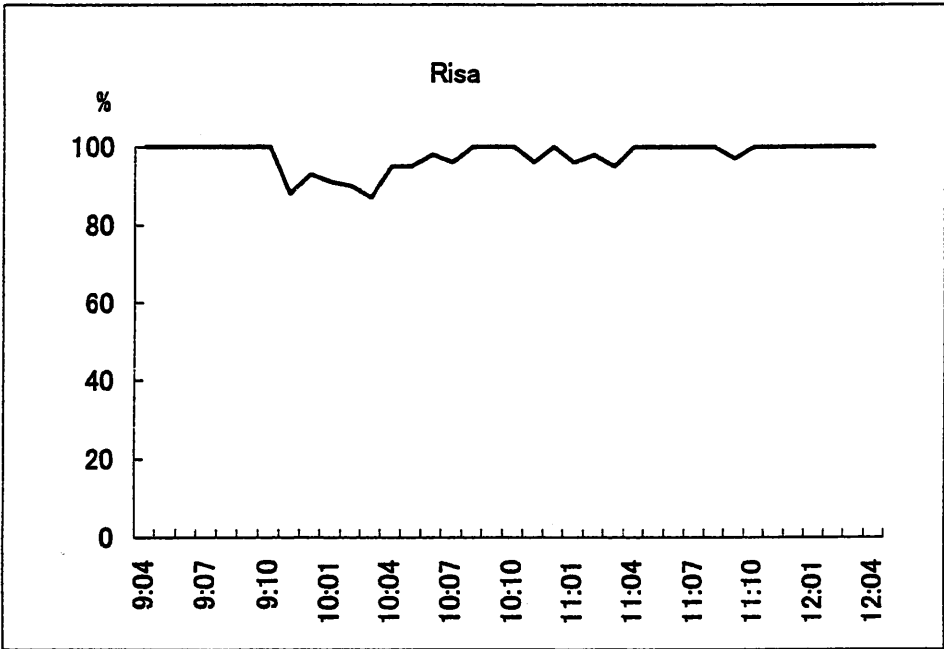


Figure 3. Miho's Overregularization Rate

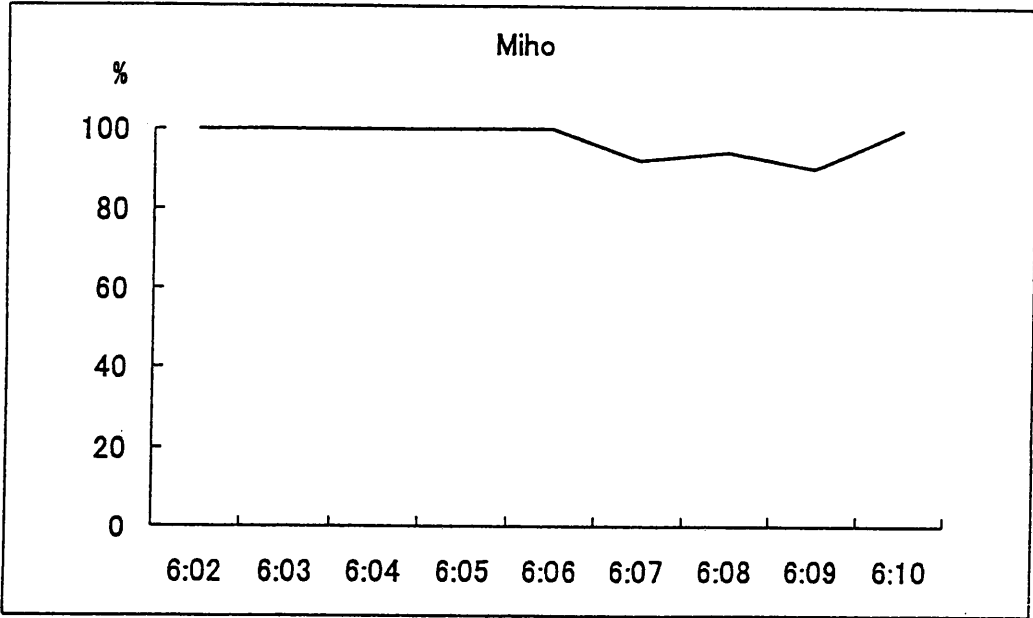
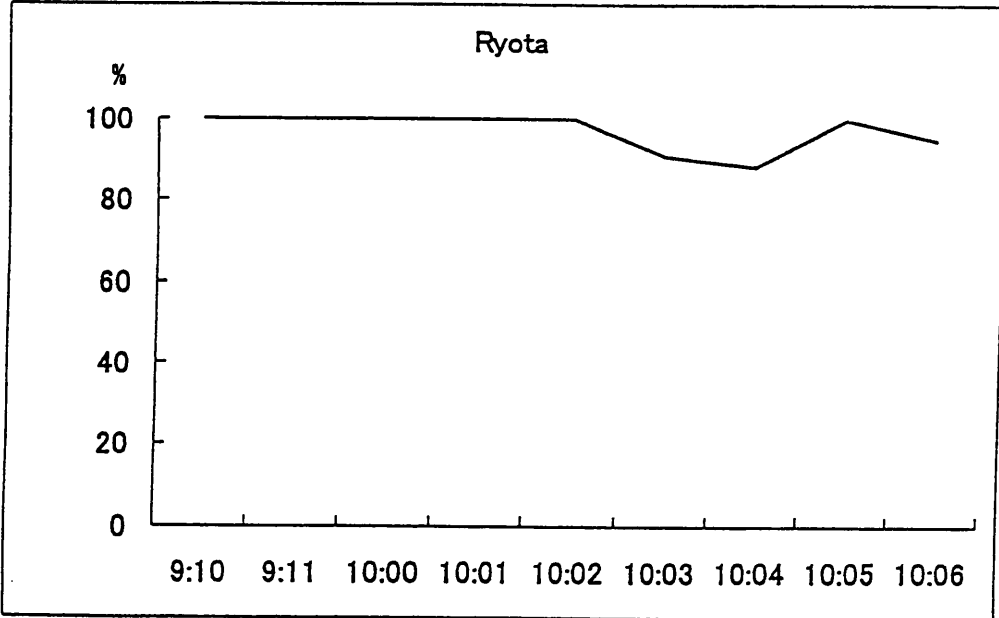


Figure 4. Ryota's Overregularization Rate





Although this type of error was excluded from the present study, the most common error in verb past morphology was the use of bare (or present) form such as *I eat* (=ate) *ice cream yesterday*. (see the column of ‘Stem irreg’ in Tables 3 to 6). The results from the four children suggest that overregularization is a relatively rare phenomenon not only in L1 acquisition but also in L2 acquisition. There seems to be no qualitative defect in L2 children’s grammars that must be eradicated. The traditional assumption that once a child begins overregularization, he always replaces correct irregular forms with overregularized forms during the period is not supported by the data in this study.

Table 2 Total Overregularization Rates for Individual Children

Child	Total	Correct	Stem	Stem+ed	Past+ed	Overre Rate	Other Errors
Kentaro	955	817	99	10	2	1.26(%)	27
Risa	1014	844	114	15	4	1.68(%)	29
Miho	126	75	34	4	0	3.17(%)	13
Ryota	124	83	24	2	2	3.23(%)	13

(c) When do they start overregularization?

Two subjects, Kentaro and Risa first produced overregularization errors at the 8th month of English acquisition (Tables 3-4 and Figures 1-2), while Miho and Ryota did at the 6th month (Table 5-6 and Figures 3-4). On the other hand, both Risa and Kentaro began to produce both correct irregular forms and correct regular forms from the 4th month (Table 3 and 4). Miho produced correct irregular forms in the 2nd month and correct regular forms in the 3rd month (Table 5). Ryota produced correct irregular forms in the 3rd month and correct regular forms in the 2nd month (Table 6). All the L2 learners produced correct forms earlier than overregularized ones. These results suggest that overregularization in verb morphology will begin to occur at a low rate at around 6-8 months, after the L2 learners have produced correct past irregular forms.

(d) How long do they continue to overregularize?

Two subjects, Ryota and Miho were observed for only nine months. It is highly possible that they continued to produce overregularization errors after that. Kentaro and Risa were observed for three years, and Kentaro continually produced overregularization from the 6th month through the 25th month, which means he had overregularized for 20 months, but intermittently. Risa first produced an overregularization error at the 6th month, and errors were observed intermittently until the 28th month. Risa’s overregularization period lasted 23 months. At least for the recording sessions, Kentaro and Risa did not produce errors after the 25th and 28th months, respectively. Thus, it can be assumed that Kentaro and Risa stopped overregularization from those months on.

(e) Does the acquisition process follow U-shaped development ?

The acquisition process of all the subjects followed U-shaped development, with the rate of overregularization errors never becoming particularly high. The occurrence of correct performance preceded the occurrence of overregularization errors by several months. Plunkett and Marchman (1991) claim that in a neural network model, verbs acquired early can never be overregularized. The onset of overregularization in this model is related to the performance on newly acquired verbs. However, this assumption is not compatible with the data in this L2 study. Children in this study overregularized verbs which they had produced correctly at an earlier stage. Table 7 lists every verb which was overregularized. We see that, in total, 27 out of 39 verbs (69%) were overregularized after being produced correctly.

Moreover, even during the period of overregularization, correct forms of the same verbs were produced, and the correct forms were more frequently produced than the overregularized ones. For example, at the 13th month, Kentaro (7 ; 8) produced the correct form *came* 4 times while he produced *comed* only once. The other subjects displayed the same tendency.

Table 7 Overregularized irregular verbs

Kentaro (12)	overregularized irregular verbs
correctly used before :	comed/camed/heard/slepted/teached/taked (2 times)
not correctly used before :	bringed/falled/waked (3 times)
Risa (19)	overregularized irregular verbs
correctly used before :	buyed/gived (2 times)/leaved/maked(2 times)/ runned/standed (2 times) /stoled/taked/throwed/ woked/wroted
not correctly used before :	feeled/hitted/sended/shotted/striked
Miho (4)	overregularized irregular verbs
correctly used before :	catched/gived/taked
not correctly used before :	blowed
Ryota (4)	overregularized irregular verbs
correctly used before :	chosed/eated/losted
not correctly used before :	finded

How did the children in this study realize that *went*, for example, was correct but *goed* was an incorrect past form for *go*. When we examine the children's spontaneous speech samples in the videotapes, we find that people surrounding them did not directly tell them at all that *goed* was not correct. Their overregularization errors were not corrected

by anybody, but they ceased producing overregularization. It seems that positive evidence cannot explain the U-shaped development. In order to know that *goed* is not correct, a child must use indirect negative evidence. Probably he notices that there is basically one past form for expressing the past of a given verb. Since people do not use *goed* but use *went*, *goed* is not correct with gradual memorization of individual irregular past forms. Thus, it is plausible that correction of overregularization is an example of the use of indirect negative evidence.

(f) Are all verbs overregularized?

This question is hard to answer because of the limited nature of the data. By looking at Table 7, however, we can see that a variety of irregular verbs were overregularized. At the same time, the data also show that there are verbs which were never overregularized. At any rate, we need more data.

(g) Is Marcus et al's hypothesis of blocking with occasional retrieval failure also valid for the the acquisition process of the L2 learners?

The data and the results shown (a) to (f) above demonstrate that their hypothesis is valid for the acquisition process of L2 learners, at least in this study.

## CONCLUSION

Let us summarize the acquisition process of verb morphology by the four children. They produced correct past tense irregular forms as well as correct regular ones before overregularization began. Most of the errors at the early stages were the use of bare (or present) forms of the verbs. 3-4 months after the children had first produced correct irregular forms, they started overregularization. Although overregularizations were a small minority of irregular past tense utterances, they did occur at a low rate over 20 months, affecting a variety of irregular verbs. Their occurrence followed a U-shaped development. Overregularization decreased as the children's exposure to verb past forms increased. This is because children's memory of the irregular forms became stronger and it could block the application of the regular rule well enough.

Table 3 Kentaro's Overregularization Rate

Age	Irreg total	Correct Irreg	Stem irreg	Stem +ed	Past +ed	Overre Rate	Other irreg errors	Reg total	Correct reg	Stem reg	Reg Mark Rate	Other reg errors
6 : 8	0	0	0	0	0	—	0	0	0	0	—	0
6 : 9	0	0	0	0	0	—	0	0	0	0	—	0
6 : 10	3	0	2	0	0	0.00	1	0	0	0	—	0
6 : 11	7	1	4	0	0	0.00	2	3	1	2	0.33	0
7 : 0	8	3	2	0	0	0.00	3	5	2	2	0.40	1
7 : 1	18	8	6	0	0	0.00	4	9	4	1	0.44	4
7 : 2	20	8	8	0	0	0.00	4	6	3	2	0.50	1
7 : 3	28	15	10	1	0	0.06	2	11	6	3	0.55	2
7 : 4	14	8	5	0	0	0.00	1	9	4	2	0.44	3
7 : 5	37	23	10	1	0	0.04	3	13	8	4	0.62	1
7 : 6	22	16	4	0	1	10.06	1	20	13	3	0.65	4
7 : 7	22	16	4	2	0	0.11	0	11	8	3	0.73	0
7 : 8	28	18	7	1	0	0.05	2	16	12	2	0.75	2
7 : 9	25	21	4	0	0	0.00	0	14	12	2	0.86	0
7 : 10	15	14	1	0	0	0.00	0	10	8	2	0.80	0
7 : 11	27	25	0	1	1	0.07	0	13	11	1	0.85	1
8 : 0	27	24	1	1	0	0.08	1	20	16	3	0.80	1
8 : 1	12	11	1	0	0	0.00	0	20	18	2	0.90	0
8 : 2	31	29	1	1	0	0.03	0	13	11	2	0.85	0
8 : 3	22	21	1	0	0	0.00	0	12	11	1	0.92	0
8 : 4	27	25	1	1	0	0.04	0	14	12	1	0.86	1
8 : 5	30	30	0	0	0	0.00	0	12	10	2	0.83	0
8 : 6	37	35	2	0	0	0.00	0	13	11	1	0.85	1
8 : 7	25	25	0	0	0	0.00	0	24	23	1	0.96	0
8 : 8	41	40	1	0	0	0.00	0	9	8	1	0.89	0
8 : 9	25	23	1	0	0	0.00	1	16	16	0	1.00	0
8 : 10	29	27	1	1	0	0.04	0	10	10	0	1.00	0
8 : 11	33	30	2	0	0	0.00	1	17	15	2	0.88	0
9 : 0	29	27	2	0	0	0.00	0	20	19	1	0.95	0
9 : 3	31	30	1	0	0	0.00	0	14	12	2	0.86	0
9 : 4	20	19	1	0	0	0.00	0	17	16	1	0.94	0
9 : 5	24	22	1	0	0	0.00	1	10	8	1	0.80	1
9 : 6	45	42	3	0	0	0.00	0	17	17	0	1.00	0
9 : 7	35	33	2	0	0	0.00	0	20	19	1	0.95	0
9 : 8	20	20	0	0	0	0.00	0	8	6	2	0.75	0
total	955	817	99	10	2	0.01	27	505	424	57	0.84	26

Table 5 Miho's Overregularization Rate

Age	Irreg total	Correct Irreg	Stem irreg	Stem +ed	Past +ed	Overre Rate	Other irreg errors	Reg total	Correct reg	Stem reg	Reg Mark Rate	Other reg errors
6 : 2	0	0	0	0	0	—	0	0	0	0	—	0
6 : 3	1	1	0	0	0	0.00	0	0	0	0	—	0
6 : 4	9	2	3	0	0	0.00	4	4	1	1	0.25	2
6 : 5	17	3	8	0	0	0.00	5	10	6	2	0.60	2
6 : 6	22	11	10	0	0	0.00	1	14	9	4	0.64	1
6 : 7	15	11	3	1	0	0.08	1	6	1	4	0.17	1
6 : 8	22	15	4	1	0	0.06	2	10	7	3	0.70	0
6 : 9	24	18	4	2	0	0.10	0	7	5	2	0.71	0
6 : 10	16	14	2	0	0	0.00	0	7	6	1	0.86	0
total	126	75	34	4	0	0.05	13	58	35	17	0.60	6

Table 4 Risa's Overregularization Rate

Age	Irreg total	Correct Irreg	Stem irreg	Stem +ed	Past +ed	Overre Rate	Other irreg errors	Reg total	Correct reg	Stem reg	Reg Mark Rate	Other reg errors
9 : 4	0	0	0	0	0	—	0	0	0	0	—	0
9 : 5	0	0	0	0	0	—	0	0	0	0	—	0
9 : 6	3	0	3	0	0	0.00	0	2	0	2	0.00	0
9 : 7	10	2	8	0	0	0.00	0	5	1	4	0.20	0
9 : 8	8	2	4	0	0	0.00	2	8	2	4	0.25	2
9 : 9	13	6	2	0	0	0.00	5	6	3	2	0.50	1
9 : 10	18	6	8	0	0	0.00	4	7	5	2	0.71	0
9 : 11	30	15	10	2	0	0.12	3	10	4	3	0.40	3
10 : 0	40	14	12	1	0	0.07	3	15	12	2	0.80	1
10 : 1	32	20	10	1	1	0.09	1	14	8	3	0.57	3
10 : 2	27	19	5	1	1	0.10	2	14	9	3	0.64	2
10 : 3	17	14	1	2	0	0.13	0	12	10	1	0.83	1
10 : 4	23	18	3	0	1	0.05	1	10	8	2	0.80	0
10 : 5	47	39	6	2	0	0.05	0	13	9	2	0.69	1
10 : 6	44	40	3	1	0	0.02	1	9	7	2	0.78	0
10 : 7	28	23	3	1	0	0.04	1	12	10	2	0.83	0
10 : 8	38	32	3	0	0	0.00	2	22	16	3	0.73	3
10 : 9	41	37	4	0	0	0.00	0	23	21	2	0.91	0
10 : 10	28	26	2	0	0	0.00	0	12	11	1	0.92	0
10 : 11	27	25	1	1	0	0.04	0	13	12	1	0.92	0
11 : 0	34	33	1	0	0	0.00	0	8	6	2	0.75	0
11 : 1	30	27	1	1	0	0.04	1	16	13	2	0.81	1
11 : 2	44	40	3	0	1	0.02	0	16	15	1	0.94	0
11 : 3	20	18	1	1	0	0.05	0	9	8	1	0.89	0
11 : 4	21	20	1	0	0	0.00	0	9	8	1	0.89	0
11 : 5	25	24	1	0	0	0.00	0	11	8	2	0.73	1
11 : 6	15	14	1	0	0	0.00	0	16	14	2	0.88	0
11 : 7	31	27	2	0	0	0.00	2	12	11	1	0.92	0
11 : 8	27	25	2	0	0	0.00	0	20	18	2	0.90	0
11 : 9	41	39	1	1	0	0.03	0	17	16	1	0.94	0
11 : 10	39	37	2	0	0	0.00	0	19	17	2	0.89	0
11 : 11	30	30	0	0	0	0.00	0	14	12	2	0.86	0
12 : 0	27	25	2	0	0	0.00	0	12	11	1	0.92	0
12 : 1	27	25	1	0	0	0.00	1	31	29	2	0.94	0
12 : 2	22	21	1	0	0	0.00	0	26	23	2	0.88	1
12 : 3	32	31	1	0	0	0.00	0	15	12	3	0.80	0
12 : 4	29	27	2	0	0	0.00	0	17	16	1	0.94	0
total	1014	844	114	15	4	0.02	29	512	420	71	0.82	20

Table 6 Ryota's Overregularization Rate

Age	Irreg total	Correct Irreg	Stem irreg	Stem +ed	Past +ed	Overre Rate	Other irreg errors	Reg total	Correct reg	Stem reg	Reg Mark Rate	Other reg errors
9 : 10	0	0	0	0	0	—	0	0	0	0	—	0
9 : 11	0	0	0	0	0	—	0	2	2	0	1.00	0
10 : 0	7	3	2	0	0	0.00	2	2	0	1	0.00	1
10 : 1	14	10	2	0	0	0.00	2	9	7	2	0.78	0
10 : 2	32	16	11	0	0	0.00	5	18	7	7	0.39	4
10 : 3	14	10	2	0	1	0.09	1	8	6	2	0.75	0
10 : 4	19	15	2	1	1	0.12	0	6	4	1	0.67	1
10 : 5	17	11	4	0	0	0.00	2	11	6	3	0.55	2
10 : 6	21	18	1	1	0	0.05	1	7	7	0	1.00	0
total	124	83	24	2	2	0.05	13	63	39	16	0.62	8

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