

Toward Computer Evaluation System through English Education at Public Elementary Schools in Japan - Adjective Comprehension and Retention in Semantic Markedness and Unmarkedness through Japanese Early Childhood English Education

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Abstract

*This paper has proved that unmarked English adjectives are more advantageous than marked ones among Japanese pre-school children in their comprehension and retention, before creating questions on the simultaneous evaluation system for Japanese children in public elementary school class. This test is necessary for the system reliability. Six contrastive adjectives are selected for Group A of Japanese 3-to-4-year-old children (n=37) and Group B of 4-to-5-year-old children (n=57) such as “big,” “long” and “clean” as unmarked after taking the pretest. Two posttests are held after learning contrastive adjectives in class; one is held right after the class, and the other 24 hours later. According to the exact probability test, the possibility of “big/small” shows “ $P < .01$ ” for Group A and “ $P < .08$ ” for Group B: the one of “long/short” does “ $P < .16$ ” for Group A and “ $P < .01$ ” for Group B: the other of “clean/dirty” indicates “ $P < .09$ ” for Group A and “ $P < .0004$ ” for Group B on the right-after-class posttest. On the 24-hour-later posttest, the possibility of “big/small” shows “ $P < .14$ ” for Group A and “ $P < .07$ ” for Group B: the one of “long/short” does “ $P < .24$ ” for Group A and “ $P < .02$ ” for Group B: the other of “clean/dirty” indicates “ $P < .03$ ” for Group A and “ $P < .0003$ ” for Group B. These results display that learning in class is effective for Group A and B, and the unmarked adjectives are more advantageous for both groups than the marked ones in their comprehension and retention. Moreover, the results of abstract adjective terms such as “clean/dirty” are more significant than the ones of concrete adjective terms. Therefore, these unmarked/marked questions become the ones on our simultaneous evaluation system in class, to calculate English abilities of each young Japanese English learner. *This research has been supported with the “Grant-in-Aid for Scientific Research” (KAKENHI) (17K02959) of “Japan Society for the Promotion of Science” (JSPS).*

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1. Introduction

Early language education instructors experience that some words are easy for children to understand and memorize, but some are not. Ellis points out Marked or Unmarked feature as a factor affecting the learnability of grammatical structure [1]. This paper has verified what he stated is true for even younger children. Unmarked English adjectives are more advantageous than marked ones among Japanese pre-school children in their comprehension and retention under the experiments. It is proposed here that the tests should be computerized, because there are some difficulties through the experiments. The accuracy of the experiments will be raised, and younger children will feel more fun through the computerized experiments as a video game.

2. Procedure of “Markedness Vs Unmarkedness” experiments

Unmarked English adjectives are more advantageous and easier to study than marked ones. Fukuchi attempted to verify whether Markedness and Unmarkedness of the meaning of the words influences the difficulty of learning the words [2].

2.1 Target words and sentences

Target contrastive adjectives surveyed in the pretest and two posttests were long/short, big/small, new/old, clean/dirty, and the following sentences were used in a pretest, two posttests and a skit. “What do you have? I have a long/short stick.” “What do you want? I want a big/small cat.” “What’s Harry/Hermione wearing today? He or She is wearing a dirty hat.”



2.2 Teaching procedures

A survey was conducted to see whether unmarked English adjectives are more advantageous than marked ones among Japanese pre-school children in their comprehension and retention.

2.2.1 Participants of a pretest and two posttests

The classes and the paper-based diagnosis tests were conducted under the same condition for each class. Group A, total seventy-two 3-to-4-year-old children in three classes at Tennoji Kindergarten, and Group B, total seventy-four 4-to-5-year-old children in three classes at the same Kindergarten, participated in this investigation. Children were separated into groups, where there are 2 or 3 children. Each facilitator supported 2 or 3 children in the group. The results of 37 of Group A and 57 of Group B, who participated in the pretest and two posttests for three days, were analyzed.

2.2.2 Tests and classes

The pretest was conducted on the first day and was examined for the knowledge of the target words before the pretest. On the second day, children enjoyed a skit and communication using target words at the background of 'Harry Potter' and had a posttest to see how much children understood the meaning of the words on the paper-based diagnosis test just after the class. On the third day, they were examined on the 24-hour-later paper-based posttest to see how much they remembered the target words.

3. Results and discussion

Some children understood six contrastive adjectives immediately after the class, and they remembered them 24 hours later after the class. Analysis by direct probability calculation method was investigated on the differences concerning retention of memory about six contrastive adjectives. Six contrastive adjectives, such as "big," "long" and "clean" as the unmarked, are selected for Group A, 3-to-4-year-old children (n=37), and Group B, 4-to-5-year-old children (n=57). Two posttests are held after learning contrastive adjectives in class; one is held right after the class, and the other is 24 hours later.

3.1 Pretest

Differences are recognized between the unmarked words and the marked words (Table1) before the investigation. Particularly, in Group A, a remarkable difference is recognized in clean/dirty as abstract vocabularies.

3.2 Right-after-class posttest

Table 2 shows it is easier for both Group A and Group B to understand unmarked words than marked words. In particular, a significant difference ($p < .0004$) was observed in Group B for the abstract words "clean/dirty" (Table 2).

According to the exact probability test, the possibility of "big/small" shows " $P < .01$ " in Group A and " $P < .08$ " in Group B: the one of "long/short" does " $P < .16$ " in Group A and " $P < .01$ " in Group B: the other of "clean/dirty" indicates " $P < .09$ " in Group A and " $P < .0004$ " in Group B on the right-after-class posttest (Table 3).

	Group A (n=37) 3-to-4-year-old children		Group B (n=57) 4-to-5-year-old children	
Children who did not know 'Big'	21	56.8%	16	28.1%
Children who did not know 'small'	29	78.4%	40	70.2%
Children who did not know 'Long'	29	78.4%	30	52.6%
Children who did not know 'Short'	28	75.7%	46	80.7%
Children who did not know 'Clean'	20	54.1%	30	52.6%
Children who did not know 'Dirty'	32	86.5%	41	71.9%

(Table 1: Pretest)



	Group A 3-to-4-year-old children		Group B 4-to-5-year-old children	
Children who could understand 'Big'	10/14	71%	7/10	70%
Children who could understand 'Small'	3/14	21%	3/10	30%
Children who could understand 'Long'	8/13	62%	12/16	75%
Children who could understand 'Short'	5/13	38%	4/16	25%
Children who could understand 'Clean'	8/12	67%	16/19	84%
Children who could understand 'Dirty'	4/12	33%	5/19	26%

(Table 2: Posttest Right-after-class)

	big / small	long / short	clean / dirty
Group A 3-to-4-year-old children	P<.01	P<.16	P<.09
Group B 4-to-5-year-old children	P<.08	P<.01	P<.0004

(Table 3: Probability of Posttest Right-after-class)

3.3 24-hour-later posttest

The results of the 24-hour-later posttest are shown in Table 4. Compared with the result of posttests, the number of Children who remembered the contrasting words of the adjective is decreasing, however, the Table shows unmarked words are more advantageous than marked words to maintenance of the memory. According to the exact probability test, the possibility of “big/small” shows “P<.14” in Group A and “P<.07” in Group B: the one of “long/short” does “P<.24” in Group A and “P<.02” in Group B: the other of “clean/dirty” indicates “P<.03” in Group A and “P<.0003” in Group B on the 24-hour-later posttest (Table 5).

	Group A 3-to-4-year-old children		Group B 4-to-5-year-old children	
Children who remembered 'Big'	4/14	29%	5/10	50%
Children who remembered 'Small'	1/14	7%	1/10	10%
Children who remembered 'Long'	2/13	15%	8/16	50%
Children who remembered 'Short'	4/13	31%	2/16	13%
Children who remembered 'Clean'	6/12	50%	13/19	68%
Children who remembered 'Dirty'	1/12	8%	2/19	11%

(Table 4: Posttest 24-hour-later)

These results display that learning in class is effective for Group A and B, and the unmarked adjectives are more advantageous in both groups than the marked ones in their comprehension and retention. Moreover, the results of abstract adjective terms such as “clean/dirty” are more significant than the ones of concrete adjective terms.

	big / small	long / short	clean / dirty
Group A 3-to-4-year-old children	P<.14	P<.24	P<.03
Group B 4-to-5-year-old children	P<.07	P<.02	P<.0003

(Table 5: Probability of Posttest 24-hour-later)



4. Difficulties in Paper-Based Test

There are some difficulties among children and facilitators when the paper-based tests are conducted. These difficulties might affect consistency of the test results.

4.1 Different facilitators

It is very difficult for facilitators to keep the consistency of instructions and tests among children. Children are separated into some groups in class. Each group has 2 or 3 children and one facilitator. Although the basic instruction is same, it is very natural for facilitators that some different instructions and supports happen in groups.

4.2 Understanding how to take the tests

It is very difficult for children to understand how to take the tests. Although it is the best way no child be aware of that he/she is taking a test, a paper-based test is too obvious for children. Moreover, it might be the first test in their life. Therefore, it is very difficult for each child to understand how to take the tests, even though a facilitator is next to him/her.

4.3 Children's behavior control

Although one facilitator is next to 2 or 3 children in each group, it is very difficult for facilitators to control children's behaviors. When each correct child finds out the answer, he/she easily speaks out the correct one in Japanese with delight. As soon as one of each group finds out the correct answer, he/she innocently points out the correct one on the answer sheet to the others with joy.

4.4 Making 3 kinds of different answer sheets for each group

Therefore, it takes a long time to prepare for making, print out and sort three kinds of answer sheets in a group, avoiding from cheating among children in the group.

4.5 Time to collect and process data

It takes a long time to sort 3 kinds of the answer sheets, check and count the correct answers before it also takes another long time to collect and process the data.

5. To solve difficulties

A new survey will be conducted soon with power of technology. It is a story-based test, so it is hard for children to aware of taking tests. A program on computer tells children the story of Newton, a main character and an alien. Each child has iPod Touch in class to answer the questions, which Newton asks. As you may know, it is easy for even 2 or 3-year-old children to use smartphones for playing games. Moreover, an example practice is included before taking the real test and learn how to use iPodTouch and answer the questions on it. There are one practice test and 10 unmarked and marked questions on the program.

The classroom circumstances will be very consistent with this computer program. There are few facilitators to control children and his behavior in class. It is clearer and more understandable for children to play the game on iPodTouch with their joy, and they never aware of taking the tests. The test results should be on the main computer, immediately and automatically sorted, collected and checked.

 <p>Newton</p>		
1 Introduction	2 Escaping onto the Earth	3 Shopping with children
 <p>Missing Newton</p>		
7 Newton lost on the way	8 Calling his friend	9 He doesn't know which way.
 <p>Let's ask together!</p>		
10 Children ask him, "Newton, Newton, what do you see?"	11 Newton answers "It is a long bridge."	12 Children choose on iPod Touch in 3 seconds what Newton said.

(Graphics 1: Story-based Test with iPod Touch)

6. Conclusion

The experiments are very successful under a lot of consideration with paper-based tests. The test results have shown that unmarked adjectives are easier for even children to remember and recall 24-hour-later than marked adjectives. Although there are some difficulties, the tests are consistently conducted in class circumstances as much as possible. However, after these tests are on computer as a game, it will be easier for facilitators to more smoothly utilize the tests and collect accurate data from children, in order to fascinatedly develop children's abilities effectively in a limited time.

References

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