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A Statistical Analysis of the Correlation Between the Scores on the Minimal English Test and the Scores on the Kanji Test: A Preliminary Study*

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1. Introduction

The purpose of this research is to investigate the relationship between English as a Second Language (ESL) proficiency and long-term memory. There have been a lot of research done on what factors affect ESL proficiency, most of which have mainly been concerned with the subjects' personality. To our knowledge, no research has investigated the relationship between ESL proficiency and long-term memory. In this project, we used a Kanji (Chinese characters) reading test as a device to measure long-term memory, and examined the relationship between ESL proficiency and long-term memory measured by Kanji reading proficiency of Japanese university students.

In this research project, we used two materials: (1) the Minimal English Test (MET), developed by Maki, Wasada, and Hashimoto (2003), to measure ESL proficiency, and (2) the Kanji Test, developed by Maki (2004), to measure long-term memory represented by Kanji reading proficiency, which is based on the official Kanji Proficiency Tests (Pre-second, Second, and Pre-first Grade) in 2004. Through a simple regression analysis, we found a statistically significant moderate correlation between the scores on the MET and the scores on the Kanji Test ($r=.57$, $p<.05$, and $n=134$). Therefore, it has turned out that ESL proficiency is more or less correlated with Kanji reading proficiency, hence also, long-term memory.

The organization of this paper is as follows. Section 2 gives an overview of the materials (the Minimal English Test (MET) and the Kanji Test) to be employed in this research. Section 3 analyzes the data and Section 4 reports the results. Finally, Section 5 concludes the paper.

2. Materials and Methodology

Section 2.1 gives an overview of the materials employed in this research project (Minimal English Test (MET) developed by Maki, Wasada, and Hashimoto (2003), and the Kanji Test developed by Maki (2004)), and Section 2.2 provides the methodology of this research.

2.1. Materials

2.1.1. The Minimal English Test

The MET is a simple test which requires the test taker to fill a correct English word with 4 or fewer letters into each of the 72 blank spaces of the given sentences written on one piece of A4 paper, while listening to the CD which produces the sentences. The MET is based on Lessons 1 and 2 of the textbook for college freshmen

by Kawana and Walker (2002), and the CD that accompanies it. The contents of the textbook are essays on the modern society of the United States. The CD lasts about 5 minutes with a speed of 125 words per minute. The MET is shown below.

The Minimal English Test (MET)

Name: _____ Date: Month ___ Day ___ Year _____ Score: _____ /72

Please fill an English word with 4 letters or fewer into each blank space, while listening to the CD.

1. The majority of people have at least one pet at () time in their ().
 2. Sometimes the relationship between a pet () or cat and its owner is () close
 3. that () begin to resemble () other in their appearance and behavior.
 4. On the other (), owners of unusual pets () as tigers or snakes
 5. sometimes () to protect themselves () their own pets.
 6. Thirty years () the idea of an inanimate () first arose.
 7. This was the pet (), which became a craze () the United States and
 8. spread () other countries as ().
 9. People () large sums of money for ordinary rocks and assigned () names.
 10. They tied a leash around the rock and pulled () down the street just () a dog.
 11. The rock owners () talked () their pet rocks.
 12. Now () we have entered the computer age, () have virtual pets.
 13. The Japanese Tamagotchi---() imaginary chicken ()---
 14. () the precursor of () virtual pets.
 15. Now there () an ever-increasing number of such virtual ()
 16. which mostly young people are adopting () their ().
 17. And () your virtual pet (),
 18. you () reserve a permanent resting place () the Internet in a virtual pet cemetery.
-
19. Sports are big business. Whereas Babe Ruth, the () famous athlete of () day,
 20. was well-known () earning as () as the President of the United States, the average
 21. salary () today's professional baseball players is () times that of the President.
 22. () a handful of sports superstars earn 100 times () through their contracts
 23. () manufacturers of clothing, (), and sports equipment.
 24. But every generation produces () or two legendary athletes () rewrite
 25. the record books, and whose ability and achievements () remembered () generations.
 26. () the current generation Tiger Woods and Michael Jordan are two () legendary
 27. figures, () of whom () achieved almost mythical status.
 28. The () that a large number of professional athletes () huge incomes
 29. has () to increased competition throughout () sports world.
 30. Parents () their children to sports training camps () an early age.
 31. Such () typically practice three to () hours a day,
 32. () weekend () during their school vacations
 33. in order () better their chances of eventually obtaining () well-paid position
 34. on a professional () when they grow ().
 35. As for the () young aspirants who do () succeed,
 36. one wonders if they () regret having () their childhood.

The test taker is verbally given the following three instructions in advance: (1) Fill an English word with 4 letters or fewer into blank spaces, while listening to the CD, (2) The CD lasts about 5 minutes, and (3) There is about a three-second interval between Line 18 and Line 19.

As for the reliability of the MET, Goto et al (in progress a) shows that the reliability coefficient of the MET is .88 (n=693), which indicates that the MET is moderately reliable as an ESL test.¹

As for the validity of the MET, a series of research projects on the MET have shown that the MET is valid as an ESL test. After the development of the MET in 2003, the Maki Group has investigated whether or not the MET measures ESL proficiency.

They found statistically relatively high correlations between the scores on the MET and the scores on another widely-used English test: (1) the Center Test (English Part) 2002, which is the common university entrance examination in Japan ($r=.68$, $p<.05$, and $n=154$) (Maki et al (2003)), (2) the Paul Nation Vocabulary Test (Nation (2001)) ($r=.81$, $p<.05$, and $n=160$) (Kasai et al (2005)), and (3) the College Scholastic Achievement Test (English Part) (CSAT), which is the common university entrance examination in Korea ($r=.61$, $p<.05$, and $n=155$) (Maki et al (2006)). Furthermore, the Maki Group has confirmed that the MET, which looks like a listening test at first sight, measures not only ESL listening proficiency, but also ESL reading proficiency. Therefore, the MET seems to more or less measure the same ESL proficiency (that is, both listening and reading ESL proficiency) as the other widely-used English tests.

2.1.2. The Kanji Test

Maki (2004) developed the Kanji Test based on the official Kanji Proficiency Tests (Pre-second, Second, and Pre-first Grade) in 2004 (Nihon Kanji Nooryoku Kentee Kyookai (2004a, b, c)). The Kanji Test only contains questions asking the reading of the given Kanji. We chose a Kanji reading test of this sort as a device to measure long-term memory, because Kanji reading proficiency mainly reflects the ability to memorize the information about how to read a given Kanji and keep it in the long-term period.

The total number of the questions in the Kanji Test is 90, and the number of the questions from each grade is 30. The relevant part of the Kanji Test is shown below.

The Kanji Test

名前: _____	日付: ___年___月___日	合計: _____/90
以下の文の <u>下線部分</u> の読みをひらがなで記せ。		
1	会費の一部を郵送料に <u>充当</u> する。()	
2	情状を <u>酌量</u> した判決が下った。()	
.		
.		
29	敵の軍勢に <u>雄々</u> しく立ち向かう。()	
30	代金を郵便為替で送る。()	
31	礼拝堂に <u>荘厳</u> な音楽が鳴り響く。()	
32	<u>冲天</u> の勢いに圧倒された。()	
.		
.		
59	常に <u>己</u> の分をわきまえる。()	
60	広い庭園に <u>築山</u> を設ける。()	
61	政局を読む <u>慧眼</u> には定評がある。()	
62	雨上がりの <u>翠微</u> が目に染みる。()	
.		
.		
89	<u>轡</u> を並べて合格した。()	
90	<u>御伽噺</u> の世界そのままだ。()	

Questions 1-30 are from Pre-second Grade, Questions 31-60 are from Second Grade, and Questions 61-90 are from Pre-first Grade of the official Kanji Proficiency Test in 2004. The answers to the questions are shown below.

The Answers to the Kanji Test

名前: _____ 日付: ____年__月__日 合計: _____/90

以下の文の下線部分の読みをひらがなで記せ。

- 1 会費の一部を郵送料に充当する。(じゅうとう)
 2 情状を酌量した判決が下った。(しゃくりょう)
 .
 .
 29 敵の軍勢に雄々しく立ち向かう。(おお)
 30 代金を郵便為替で送る。(かわせ)
 .
 31 礼拝堂に荘厳な音楽が鳴り響く。(そうごん)
 32 冲天の勢いに圧倒された。(ちゅうてん)
 .
 .
 59 常に己の分をわきまえる。(おのれ)
 60 広い庭園に築山を設ける。(つきやま)
 .
 61 政局を読む慧眼には定評がある。(けいがん)
 62 雨上がりの翠微が目に染みる。(すいび)
 .
 .
 89 轡を並べて合格した。(くつわ)
 90 御伽噺の世界そのままだ。(おとぎばなし)

2.2. Methodology

This survey was conducted at Gifu University and Kochi Gakuen College during the period from September 2006 to January 2007. The MET and the Kanji Test were administered in this order during this period.

3. Data and Analysis**3.1. Data**

In this research project, the samples were obtained from Gifu University and Kochi Gakuen College. The total number of samples was 134 as shown below.

Institution	Number of Samples
Gifu University	61
Kochi Gakuen College	73
Total	134

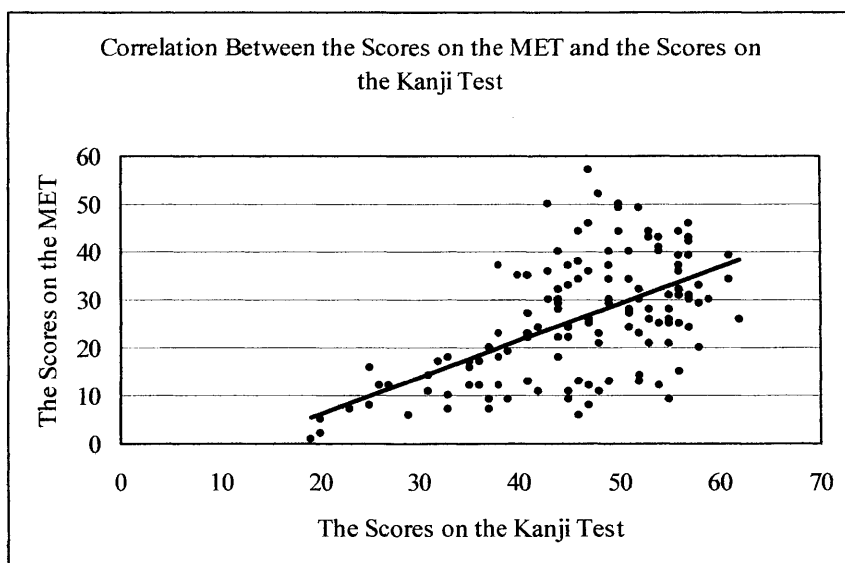
3.2 Analysis

We analyzed the data (the scores on the MET and the scores on the Kanji Test) using a simple regression analysis (correlation analysis). The level of statistical significance was $p < .05$. The results are shown below.

Regression Statistics	
Correlation Coefficient (R)	0.572715
R Square	0.328002
Adjusted R Square	0.322911
Standard Error	10.40342
Observations	134
P-value	4.82E-13

The results of this analysis are more clearly represented by the following graph.

Correlation Between the Scores on the MET and the Scores on the Kanji Test



4. Results

As the above analysis shows, there turned out to be a statistically significant moderate correlation between the scores on the MET and the scores on the Kanji Test ($r = .57$, $p = 4.82E-13$, and $n = 134$). The regression line was $y = .77x - 9.31$.

5. Conclusion

In this research, we found a moderate correlation between the scores on the MET and the scores on the Kanji Test ($r = .57$, $p = 4.82E-13$, and $n = 134$).² Therefore, ESL proficiency is more or less correlated with Kanji reading proficiency. This indicates that ESL proficiency is related to long-term memory to some degree. If it is true that there is a correlation between ESL proficiency and long-term memory, it will have an important impact on ESL education, since ESL proficiency is affected not only by one's personality, as previous studies have indicated, but also by one's long-term memory, and if we could find a good way to develop one's long-term memory, this may be able to contribute to enhancing one's ESL proficiency.

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Note

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1. As for interpreting values of reliability coefficient, Lado (1961) states that good vocabulary, structure, and reading tests are usually in the .90 to .99 range; auditory comprehension tests are often in the .80 to .89 range; and oral production tests may be in the .70 to .79 range. Goto et al (in progress b) found that the MET is a set of listening and reading comprehension tests, rather than just a listening or a reading test. Therefore, the MET is moderately reliable as an ESL test, as the reliability coefficient of the MET is in the .80 to .99 range.

2. We follow Yanai (1998) in interpreting values of correlation coefficients. She assumes the following correspondence between correlation coefficients and their characteristics.

Correlation Coefficients	Characteristics
$0.0 \leq r < 0.2 $	almost no correlation
$ 0.2 \leq r < 0.4 $	weak correlation
$ 0.4 \leq r < 0.7 $	moderate correlation
$ 0.7 \leq r < 0.9 $	strong correlation
$ 0.9 \leq r < 1.0 $	extremely strong correlation