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Author(s)	MAKI, Hideki; HAMATANI, Hiromasa; HASEBE, Megumi; GOTO, Kenichi; KASAI, Chise; DUNTON, Jessica
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Lifestyle Habits and ESL Proficiency: A Study at a Junior High School in Japan*

Hideki MAKI,^{*1} Hiromasa HAMATANI^{*2}, Megumi HASEBE,^{*1} Kenichi GOTO, Chise KASAI,^{*1} and Jessica DUNTON^{*3}

^{*1}Gifu University, ^{*2}Isshiki Junior High School, and ^{*3}The University of Maine

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1. Introduction

Citing Hirose (1989), Kageyama (2004) reports a correlation between Japanese junior high school (JHS) students' scores on term tests and the number of foods they eat at breakfast: the larger the number of foods the students eat for breakfast is, the better their scores on the term tests are. Furthermore, Maki et al (2009) report statistically significant differences in the scores on two ESL tests, between university freshmen who regularly eat breakfast seven days a week, and those who do not.

Motivated by these previous studies, the present research further investigated whether there would be statistically significant differences in the scores on ESL tests, between JHS students who have particular types of lifestyle habits with respect to (i) eating breakfast regularly and (ii) sleeping hours, and those who have the other types of lifestyle habits.

Through a series of t-Tests, we found (1) that there was a statistically significant difference ($p < .05$) between the two groups (those who eat breakfast 6 days or more per week and those who do not) with respect to the scores on two ESL tests, and (2) that there was a statistically significant difference ($p < .05$) between the two groups (those who sleep more than 6 hours at night and those who do not) with respect to the scores on the two ESL tests.

The organization of this paper is as follows. Section 2 introduces two materials in this study. Section 3 analyzes the data. Section 4 provides the results and Section 5 concludes this paper.

2. Materials

In this study, we used two materials to measure JHS students' ESL proficiency: the junior Minimal English Test (jMET) and the Term Test for the 2nd term (TT). Sections 2.1. and 2.2. provide an overview of the jMET and the TT, respectively.

2.1. The junior Minimal English Test (jMET)

The junior MET (jMET), which originated from Hasebe et al's (2008) work, is a simple test which requires the test taker to write a correct English word into blank spaces of the given sentences, written on one piece A4 paper, while listening to the CD on which the sentences are recorded. The passages of the jMET were adopted from a textbook widely used in junior high schools in Japan (*New Horizon English Course 3* by Tokyo Shoseki (Kasashima et al (2006))). The CD reads out the sentences at a speed of 120 words per minute. There are 65 blank spaces, and thus the full mark is 65 points. It takes about 5 minutes to administer the jMET.

There are two rules in making blank spaces in the jMET. First, every 6th word is blanked out, in order to completely randomize the choice of target words to be blanked in the jMET. Second, Japanese words, years, and unpronounced words in parentheses are not counted when making blank spaces. The actual jMET is shown below.

The junior Minimal English Test

Name: _____ Date: Month _____ Day _____ Year _____

Please fill an English word into each blank space, while listening to the CD.

1. When you want to () in Japanese restaurants, you usually (),
2. "Sumimasen," in a loud voice. But () America, we just make eye ()
3. or raise our hand. So () still have a hard time ()
4. Japanese restaurants. I always say, "Sumi ... uh, uh, sumimasen," () quietly.
5. It's not easy for () to get food. So I () very hungry.
6. My Japanese friend () a different problem. One day () family
7. took him to an () American restaurant. He ate a () and
8. became thirsty. He wanted () water, so he shouted, "I'm ()!
9. I'm sorry!" Everyone in the () stopped eating and looked at ().
10. This is one of the () telephones. It was made in 1876.
11. () is another telephone made in 1877. () is a picture taken
12. about 70 () ago. The people answering the () here are operators.
13. I'm fifteen. () mother says junior high school () shouldn't have
14. cell phones. What () you think? (Mike Davis)
15. I agree with () mother. You can use your () phone or a public
16. phone. () don't understand why you need () cell phone. (T. J.)
17. But it's not () to find public phones in () emergency. (Kaori)
18. That may be true. () people using cell phones sometimes () careful.
19. Some accidents are caused () people using cell phones. (R. B.)
20. Cell () are very useful. But people () understand
21. when and where to () them. (Bird)
22. In my opinion, people () use cell phones in trains () restaurants,
23. and never in school! (Hungry Lion)
24. () is a book I bought () the United States.
25. These are () of the people you can () in it.
26. Choose one and () a report about her or ().
27. Carson was a scientist who () about the danger of farm ().
28. Few people worried about it () the 1950's, but she did.
29. In 1962 () finished her book Silent Spring. "() Spring" means
30. "a spring without ()." The book became a best-seller.
31. () was a book that changed () view of nature.
32. Carson was () on farm. She loved nature () her life.
33. She especially loved () sea. When she was a (), she liked to write.
34. Later () wanted to be a writer () a scientist. She became both.
35. () had cancer while she was () Silent Spring.
36. But she worked () hard and finished it. Some () books that
37. she wrote are () Sea Around Us and The () of Wonder.

2.2. The Term Test (TT)

The Term Test (TT) consists of listening comprehension and reading comprehension, and has 50 questions (5 for listening comprehension and 45 for reading comprehension). The full score on the Term Test is 100 points (10 points for listening

comprehension and 90 points for reading comprehension). The test time for the TT is 40 minutes. The TT is the second term test administered to the 9th graders (seniors) at a junior high school in Japan in December of 2008. The scope of the Term Test is identical to that of the jMET.

3. Data and Analysis

3.1. Data

The subjects are students at a Japanese junior high school. The number of the subjects is 171. They are the 9th graders (seniors). They use New Horizon 3 in class, based on which the jMET was developed.

The two tests (the jMET and the TT) were administered to students at a junior high school in Japan in December of 2008. At the same time, we asked them two questions in (1).

- (1) a. How many days per week do you eat breakfast?
- b. How many hours per day do you sleep at night?

3.2. Analysis

3.2.1. Breakfast

First, in order to see if there was a statistically significant difference between those who eat breakfast seven days a week and those who do not in the scores on the jMET, we analyzed the data by a two-sample t-test assuming unequal sample variances. The result is shown in Table 1.

Table 1. The difference in the scores on the jMET

	Those who eat breakfast seven days per week	Those who eat breakfast less than seven days per week
Mean	27.66	23.42
Variance	201.54	234.48
Observations	126	45
t Stat	1.62	
t Critical Two Tail	1.99	

The mean of those who eat breakfast seven days per week was 27.66 out of 65 points on the jMET, and that of those who do not was 23.42 points. The absolute value of t Stat (1.62) is not larger than that of t Critical Two Tail (1.99). Therefore, Table 1 shows that, with respect to the scores on the jMET, there was not a statistically significant difference between those who eat breakfast seven days a week and those who do not, although there was a 4.24 point (6.52%) difference between the two groups.

Second, in order to see if there was a statistically significant difference in the total scores on the TT between those who eat breakfast seven days a week and those who do not, we analyzed the data with a two-sample t-test assuming unequal sample variances. The result is shown in Table 2.

Table 2. The difference in the total scores on the TT

	Those who eat breakfast seven days per week	Those who eat breakfast less than seven days per week
Mean	50.25	40.27
Variance	470.70	557.52
Observation	126	45
t Stat	2.49	
t Critical Two Tail	1.99	

The mean of those who eat breakfast seven days per week was 50.25 out of 100 points on the TT, and that of those who do not was 40.27 points. The absolute value of t Stat (2.49) is larger than that of t Critical Two Tail (1.99). Therefore, Table 2 shows that, with respect to the total scores on the TT, there was a statistically significant difference between those who eat breakfast seven days a week and those who do not by 9.98 points out of 100 points (9.98 %).

Third, in order to see if there was a statistically significant difference between those who eat breakfast six days or more per week and those who eat breakfast less than six days per week in the scores on the jMET, we analyzed the data by a two-sample t-test assuming unequal sample variances. The result is shown in Table 3.

Table 3. The difference in the scores on the jMET

	Those who eat breakfast six days or more per week	Those who eat breakfast less than six days per week
Mean	27.78	21.56
Variance	215.51	173.95
Observations	137	34
t Stat	2.41	
t Critical Two Tail	2.00	

The mean of those who eat breakfast six days or more per week was 27.78 out of 65 points on the jMET, and that of those who eat breakfast less than six days per week was 21.56 points. The absolute value of t Stat (2.41) is larger than that of t Critical Two Tail (2.00). Therefore, Table 3 shows that, with respect to the scores on the jMET, there was a statistically significant difference between those who eat breakfast six days or more per week and those who eat breakfast less than six days per week by 6.22 points out of 65 points (9.57 %).

Fourth, in order to see if there was a statistically significant difference between those who eat breakfast six days or more per week and those who eat breakfast less than six days per week in the total scores on the TT, we analyzed the data by a two-sample t-test assuming unequal sample variances. The result is shown in Table 4.

Table 4. The difference in the total scores on the TT

	Those who eat breakfast six days or more per week	Those who eat breakfast less than six days per week
Mean	50.34	36.68
Variance	503.55	397.13
Observations	137	34
t Stat	3.49	
t Critical Two Tail	2.00	

The mean of those who eat breakfast six days or more per week was 50.34 out of 100 points on the TT, and that of those who eat breakfast less than six days per week was 36.68 points. The absolute value of t Stat (3.49) is larger than that of t Critical Two Tail (2.00). Therefore, Table 4 shows that, with respect to the total scores on the TT, there was a statistically significant difference between those who eat breakfast six days or more per week and those who eat breakfast less than six days per week by 13.66 points out of 100 points (13.66 %).

3.2. Sleeping Hours

Let us turn to the next question as to whether there will be a difference in the performance on the two tests between the two groups divided in terms of the sleeping hours at night.

First, in order to see if there was a statistically significant difference between those who sleep more than 6 hours at night and those who sleep 6 hours or less at night in the scores on the jMET, we analyzed the data by a two-sample t-test assuming unequal sample variances. The result is shown in Table 5.

Table 5. The difference in the scores on the jMET

	Those who sleep more than 6 hours at night	Those who sleep 6 hours or less at night
Mean	28.73	23.32
Variance	245.69	148.34
Observations	102	69
t Stat	2.53	
t Critical Two Tail	1.97	

The mean of those who sleep more than 6 hours at night was 28.73 out of 65 points on the jMET, and that of those who sleep 6 hours or less at night was 23.32 points. The absolute value of t Stat (2.53) is larger than that of t Critical Two Tail (1.97). Therefore, Table 5 shows that, with respect to the scores on the jMET, there was a statistically significant difference between those who sleep more than 6 hours at night and those who sleep 6 hours or less at night by 5.41 points out of 65 points (8.32 %).

Second, in order to see if there was a statistically significant difference between those who sleep more than 6 hours at night and those who sleep 6 hours or less at night in the total scores on the TT, we analyzed the data by a two-sample t-test assuming unequal sample variances. The result is shown in Table 6.

Table 6. The difference in the total scores on the TT

	Those who sleep more than 6 hours at night	Those who sleep 6 hours or less at night
Mean	51.36	42.10
Variance	560.13	390.77
Observations	102	69
t Stat	2.77	
t Critical Two Tail	1.97	

The mean of those who sleep more than 6 hours at night was 51.36 out of 100 points on the TT, and that of those who sleep 6 hours or less at night was 42.10 points. The absolute value of t Stat (2.77) is larger than that of t Critical Two Tail (1.97). Therefore, Table 6 shows that, with respect to the scores on the total scores on the TT, there was a statistically significant difference between those who sleep more than 6 hours at night and those who sleep 6 hours or less at night by 9.26 points out of 100 points (9.26 %).

4. Results

The results of the present study are summarized in (2).

- (2) a. There was a statistically significant difference ($p < .05$) between the two groups (those who eat breakfast 6 days or more per week and those who do not) with respect to the scores on the two ESL tests. There was a 6.22 point difference on the jMET and a 13.66 point difference on the TT ($n=171$).
- b. There was a statistically significant difference ($p < .05$) between the two groups (those who sleep more than 6 hours at night and those who do not) with respect to the scores on the two ESL tests. There was a 5.41 point difference on the jMET and a 9.26 point difference on the TT ($n=171$).

5. Conclusion

These results not only partially reconfirmed the results of the previous studies, but also clearly indicate significant differences in the scores on ESL tests between JHS students who have particular types of lifestyle habits with respect to (i) eating breakfast regularly and (ii) sleeping hours, and those who have the other types of lifestyle habits. These results, if reconfirmed by further study, will suggest that future ESL research should take into account the subjects' lifestyle habits as significant factors which might affect their performance in ESL.

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