

Motivation to Learn English: A Comparison of Engineering Major Students with Two Different Levels of English Proficiency

Noriko IWAMOTO

1. Introduction

Most L2 researchers agree that favorable attitudes toward language learning and high motivation are likely to lead to higher L2 proficiency. Dörnyei (2005:65) contends that “high motivation can make up for considerable deficiencies both in one’s language aptitude and learning conditions.” However, is there any difference in L2 motivation between high and low proficiency learners? In this study, I will compare the attitudes and motivation toward English learning among students, who are engineering majors, with two different levels of English proficiency.

2. Background

2.1 Motivation to Learn English

One of the major affective factors influencing L2 achievement is considered to be motivation. Gardner and MacIntyre (1993:3) describe a motivated individual as “one who wants to achieve a particular goal, denotes considerable effort to achieve this goal, and experiences satisfaction in the activities associated with achieving this goal.” Gardner emphasizes the importance of integrative motivation in L2 acquisition, which represents the willingness to become a member of an L2 community (Gardner, 1985), whereas other researchers argue, particularly in EFL contexts, that instrumental motivation toward more practical concerns such as getting a job

or passing an exam is more important (Clément, Dörnyei, & Noels, 1994; Dörnyei, 1990). Yashima (2002:57) includes a factor known as International Posture in her model, which she defines as an “interest in foreign or international affairs, willingness to go overseas to stay or work, readiness to interact with intercultural partners, and, one hopes, openness or a non-ethnocentric attitude toward different cultures, among others.”

2.2. Students with Engineering Majors

In recent times, an increasing number of studies have been conducted investigating Japanese university students' L2 motivation in a Japanese EFL context. In addition, several studies focused on students with engineering majors. Suzuki (2009) examined 444 students majoring in engineering at the National College of Technology. English proficiency and Integrative Motivation revealed weak correlation among the second year students ($r = .18, p < .05$) and moderate correlation among the third year students ($r = .46, p < .01$). However, no significant correlation was observed between English proficiency and Instrumental Motivation.

Revin, Redfield, and Figoni (2009) investigated 238 students at Toyohashi University of Technology. The results of their 14-item questionnaire illustrated that students have a stronger instrumental motivation than integrative motivation, and that they mainly study for academic and professional purposes. Nevertheless, they are not completely uninterested in the cultures of English speaking countries.

Johnson and Johnson (2010) examined the motivational characteristics of 75 Japanese engineering students. They observed a strong instrumental/extrinsic nature for the students' motivation, because they study English primarily to attain university credits or to take standardized tests such as TOEIC to prepare for their career.

Iwamoto (2010) investigated the relationship between attitude and motivation to learn English as well as English proficiency levels among 244 engineering students. The results indicated that high and middle proficiency students have a more positive attitude toward English learning and foreign

cultures than low proficiency students.

3. Research Questions

Almost all studies investigating the relationship between L2 motivation and English proficiency have examined participants from a single university. However, the participants of this study are from two different universities, and the difference in their English proficiency levels is far greater than students from a single university. I will compare their attitudes and motivation toward learning English by investigating the following two research questions: "What L2 motivation variables can be found among each population sample respectively?" and "Are there any differences in the components that make up each L2 motivation variable between the two groups?"

4. Method

4.1 Participants

The participants included 158 first-year Japanese students majoring in engineering at two different universities. Seventy-one students (61 male, 10 female) belonged to a very competitive university whose *hensachi*¹⁾ rating is 66, which means this university belongs to upper 15%, and thus the students who passed the competitive entrance examination of this university had high English proficiency. Indeed, most of these students have mastered very complex English grammar and can read scientific magazines such as *Nature* with the help of a dictionary. Eighty-seven students (81 male, 6 female) belonged to a less competitive university whose *hensachi* rating is about 40, which means that the university belongs to lower 15%, where all the freshmen were divided into six or seven proficiency levels for English classes. The participants of the study were placed in the lowest level, denoting minimal English proficiency. They had not yet mastered English grammar and often had difficulty comprehending simple English passages.

4.2 Instrument

A 26-item questionnaire was used to measure the participants' attitudes and motivation toward learning English. This questionnaire was based on Gardner's (1985) Attitude/Motivation Test Battery (AMTB). Moreover, certain items were adapted from Gardner, Tremblay, and Masgoret (1997), Yashima (2002), Irie (2005), and Sick (2006). The original Japanese version of the questionnaire is in Appendix A and its English translation along with the mean scores and standard deviations appear in Appendix B. The participants answered each question using a six-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Agree, and 6 = Strongly Agree.

4.3 Procedure

The students, who voluntarily agreed to participate in the study completed the questionnaire included in Appendix A. The collected data were analyzed using SPSS 18.0 and Winsteps 3.70. The alpha level for statistical significance was set at .05.

5. Results

Let us consider the results of the first research question, "What L2 motivation variables can be found among each population sample respectively?" This question was investigated by analyzing the dimensionality of the 26 questionnaire items, using a principal axis factor analysis.

As for the high proficiency group, three factors were rotated using a varimax rotation. The results are illustrated in Table 1.

The first factor consists of Items 6, 7, 9, 10, 11, 12, 13, and 14. These items represent an interest in English-speaking cultures and persons. Thus, Factor 1 was labeled "International Posture." The second factor is loaded with four items, 4, 5, 8, and 17. These items are assumed to indicate students' desire to learn English. Therefore, Factor 2 was labeled "Desire to Learn

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English.” The third factor is comprised of items 22, 23, 24, and 25. These items represent the desire to learn English for practical purposes. Thus, Factor 3 was named “Instrumental Motivation.”

Table 1. *Factor Loadings from Principal-Axis Factoring for
Questionnaire Items Answered by High Proficiency Students*

	Factor			Communality
	1	2	3	
Item 13	.869	.292	.051	.842
Item 11	.850	.059	.237	.782
Item 12	.841	.025	.028	.708
Item 9	.698	.035	.209	.531
Item 6	.676	.339	.177	.603
Item 7	.654	.343	.251	.608
Item 10	.647	.162	.213	.490
Item 14	.496	.190	.115	.295
Item 5	.092	.926	.177	.897
Item 4	.155	.703	.268	.590
Item 8	.306	.667	.297	.626
Item 17	-.223	-.560	-.262	.432
Item 24	.228	.284	.813	.794
Item 23	.122	.197	.798	.598
Item 22	.220	.144	.639	.477
Item 25	.114	.265	.622	.470
% of variance	28.262	16.907	15.733	60.902

Note. $N = 71$. Boldface indicates factor loadings higher than .40

Further, the questionnaire data for the low proficiency group were analyzed with a principal axis factor analysis. Four factors were rotated using a varimax rotation. The results are illustrated in Table 2.

The first factor, consisting of seven items (6, 7, 9, 11, 12, 13, and 14), was labeled as “International Posture.” The second factor includes six items (17, 22, 23, 24, 25, and 26) and was called “Instrumental Motivation.” The third factor consists of four items (4, 5, 19, and 20) was named “Desire to

Learn English." The fourth factor is based on three items (1, 3, and 21), and was labeled "Interest in English."

Table 2. *Factor Loadings from Principal-Axis Factoring for Questionnaire Items Answered by Low Proficiency Students*

	Factor				Communality
	1	2	3	4	
Item 7	.857	-.037	.158	.004	.761
Item 13	.825	.150	.032	.243	.763
Item 11	.772	.126	.141	.122	.646
Item 14	.719	.354	.156	.275	.742
Item 9	.615	.179	.246	.072	.476
Item 6	.586	.309	.201	.280	.558
Item 12	.579	.335	.056	.261	.742
Item 24	.376	.718	.162	.107	.694
Item 25	.174	.663	.287	.147	.574
Item 22	.074	.638	-.113	.301	.516
Item 26	.083	.628	.058	.052	.407
Item 23	.210	.526	.310	.354	.543
Item 17	-.152	-.435	-.196	-.237	.307
Item 19	.282	-.066	.830	.056	.775
Item 20	.072	.209	.795	.038	.682
Item 5	.203	.281	.582	.352	.583
Item 4	.215	.377	.475	.291	.500
Item 1	.244	.165	.004	.809	.741
Item 3	.297	.214	.161	.735	.700
Item 21	.064	.298	.264	.566	.483
% of variance	20.799	15.294	12.074	11.686	59.853

Note. $N = 87$. Boldface indicates factor loadings higher than .40

Figures 1 and 2 are error bars illustrating dimensions of the average scores of each factor for the two groups. In both groups, Desire to Learn English has the highest average scores. In addition, Instrumental Motivation (High Group $M = 3.50$, $SD = .13$; Low Group $M = 3.28$, $SD = .09$) is significantly higher than International Posture (High $M = 3.44$, $SD = .13$; Low $M = 2.84$, $SD = .12$) for both groups (High $t(70) = -.49$, $p = .00$; Low $t(86) = -.40$, $p = .00$).

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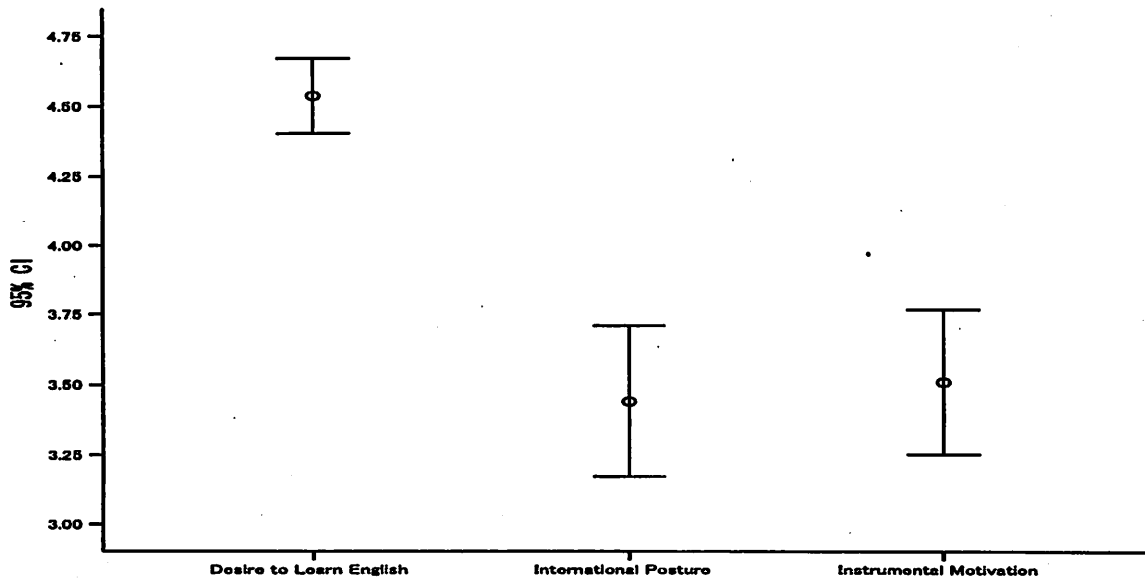


Figure 1. Distributions of Three Factors for High Proficiency Students

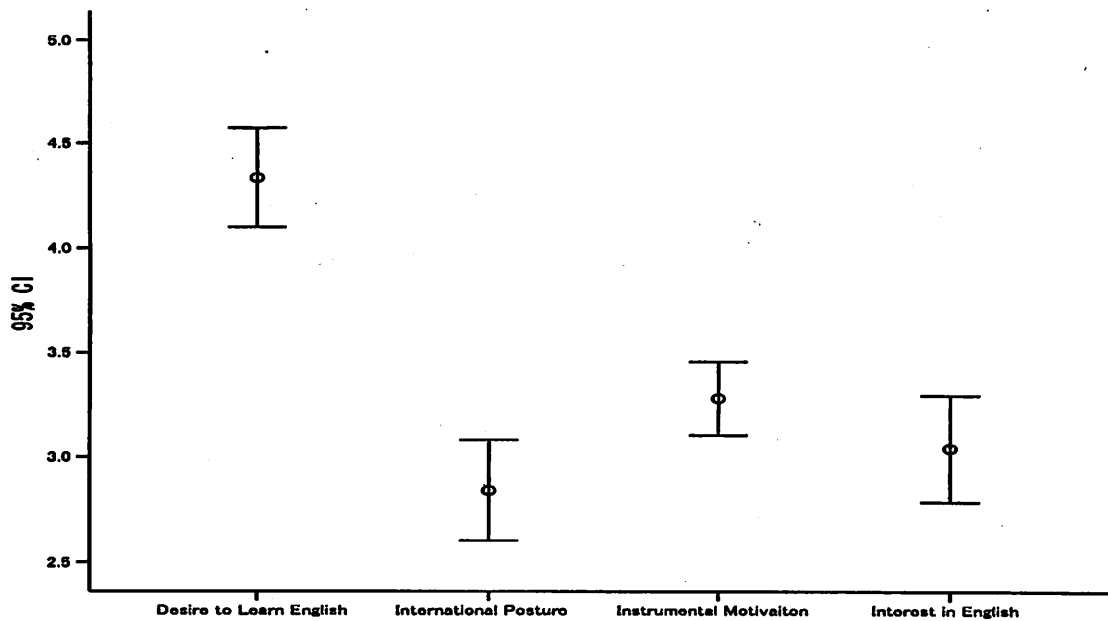


Figure 2. Distributions of Four Factors for Low Proficiency Students

To answer the second research question, “Are there any differences in the components that make up each L2 motivation variable between the two groups?” the items and their difficulties for each construct were examined using a Rasch model, which indicates the relative difficulty level of each item in comparison with other items in the questionnaire (Bond & Fox, 2007;

McNamara, 1996).

First, we will look at the item-person maps for International Posture represented by Figures 3 and 4. On the map, the items are indicated by the item number, while persons' performances are represented by an "X" representing one person. Persons and items are located on the map according to their ability and difficulty estimates, respectively; higher items represent those with which the participants found it difficult to agree, and lower items are agreed upon by most of the participants. Moreover, persons at higher rankings are those who have greater international posture and lower persons are those who are less internationally oriented.

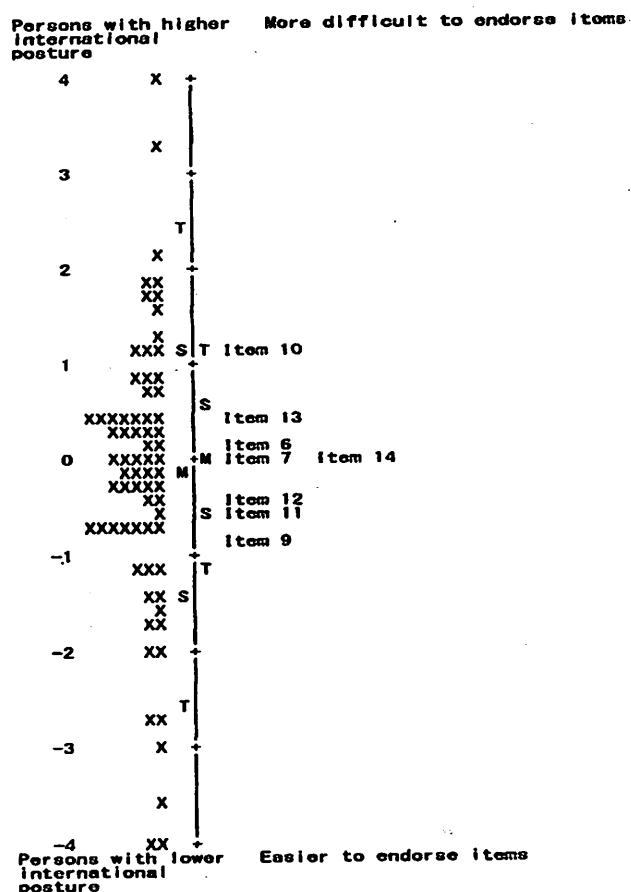


Figure 3. Item-person Map for High Group's International Posture

As for the high group of students, many students want to make friends with English-speaking persons (item 9) and have favorable impressions of them (item 11). Further, as a next step, their interests lie in the cultures of

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English-speaking countries (items 12 & 14) and they desire to study or live abroad (items 6 & 7). However, only those with higher international posture want to work in a foreign country (items 10 & 13).

On the other hand, as a first step, many low group students tend to feel that they want to study, live, or work in a foreign country (items 6, 7, & 13). Thus, as the next step, their interests lie in the cultures of English-speaking countries (items 12 & 14). However, only those with higher international posture want to make friends with English-speaking persons and have favorable impressions of them (items 9 & 11).

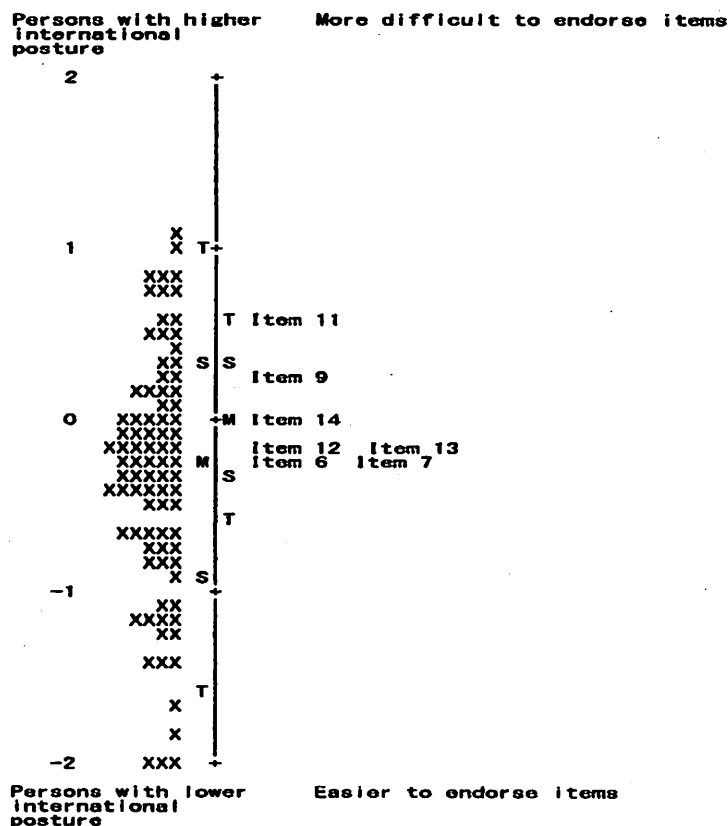


Figure 4. Item-person Map for Low Group's International Posture

With regard to the Desire to Learn English variable, illustrated in Figures 5 and 6, both groups of students agree that engineering majors should improve their English (item 5) and believe that they need to acquire English proficiency (item 4).

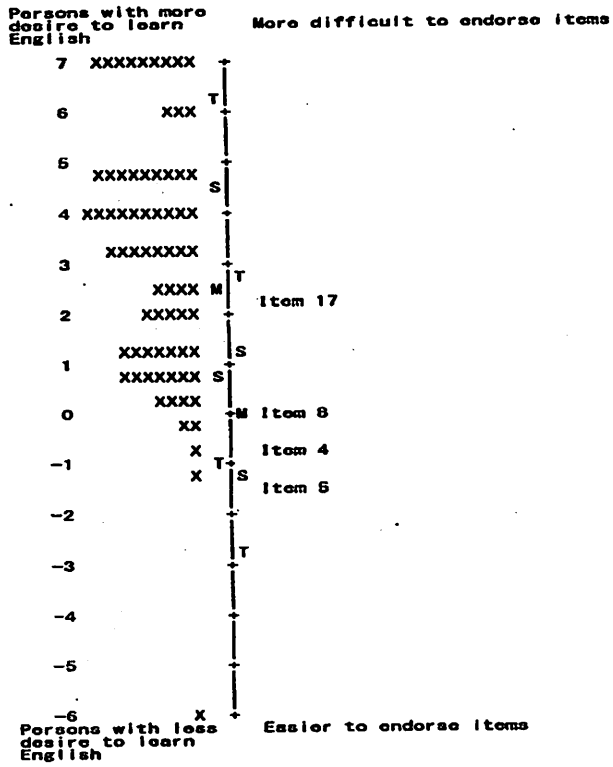


Figure 5. Item-person Map for High Group's Desire to Learn English

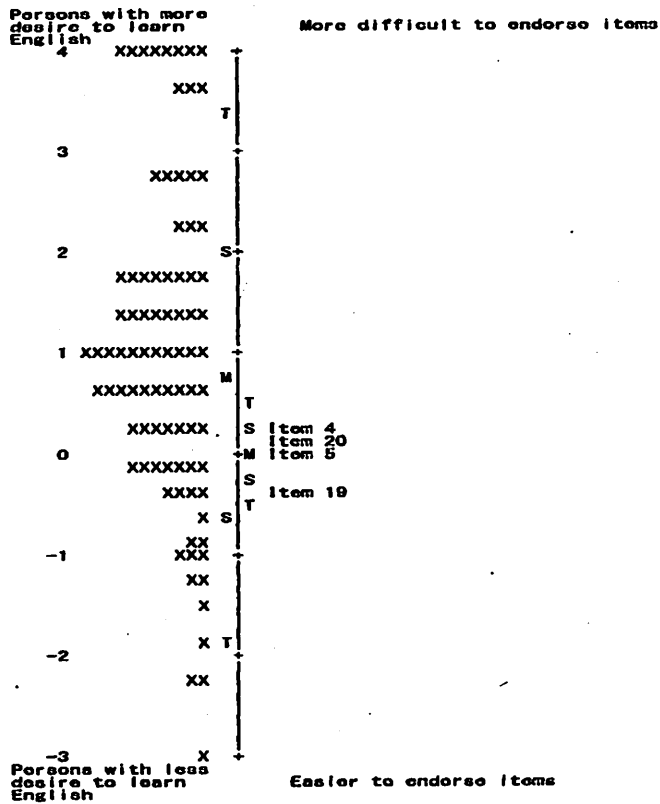


Figure 6. Item-person Map for Low Group's Desire to Learn English

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Figures 7 and 8 represent item-person maps for Instrumental Motivation. Almost all students in both groups agree that English is essential in securing a good job (item 23). They also study English with an intention to travel abroad (item 24), TOEIC or *Eiken* (item 22), or to communicate with native speakers in Japan (item 25). The low group's Instrumental Motivation variable includes item 17 (I study English to attain credits to graduate), which was included in the Desire to Learn English variable for the high group.

In conclusion, Interest in English was observed only in the low proficiency group (Figure 9). This variable seems to represent learners' emotional feelings toward English learning, such as "English class is one of my favorite classes" (item 1) and "It is fun to learn English" (Item 3).

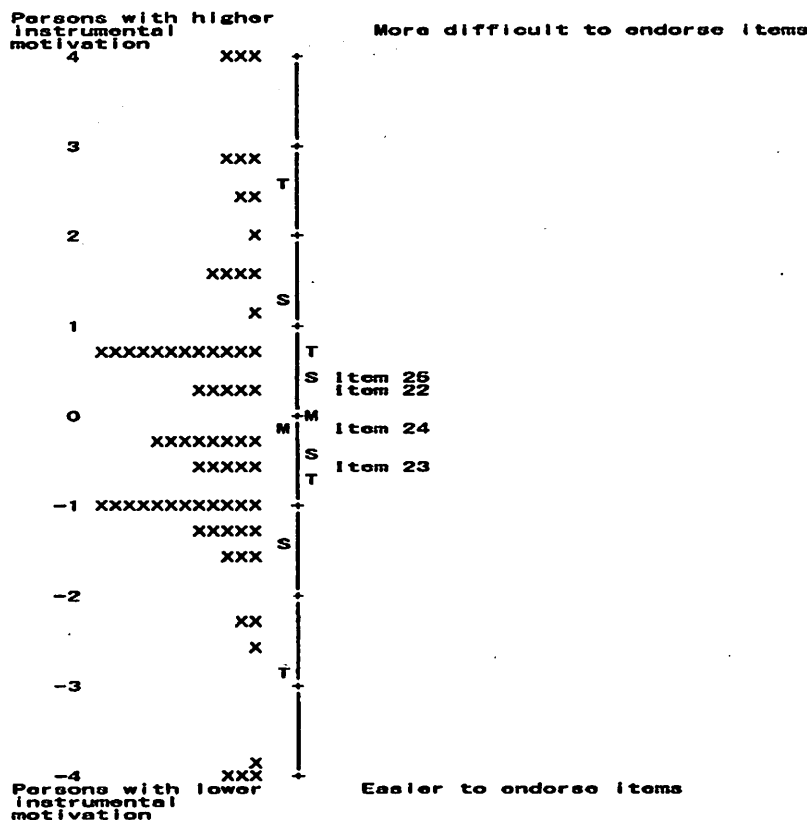


Figure 7. Item-person Map for High Group's Instrumental Motivation

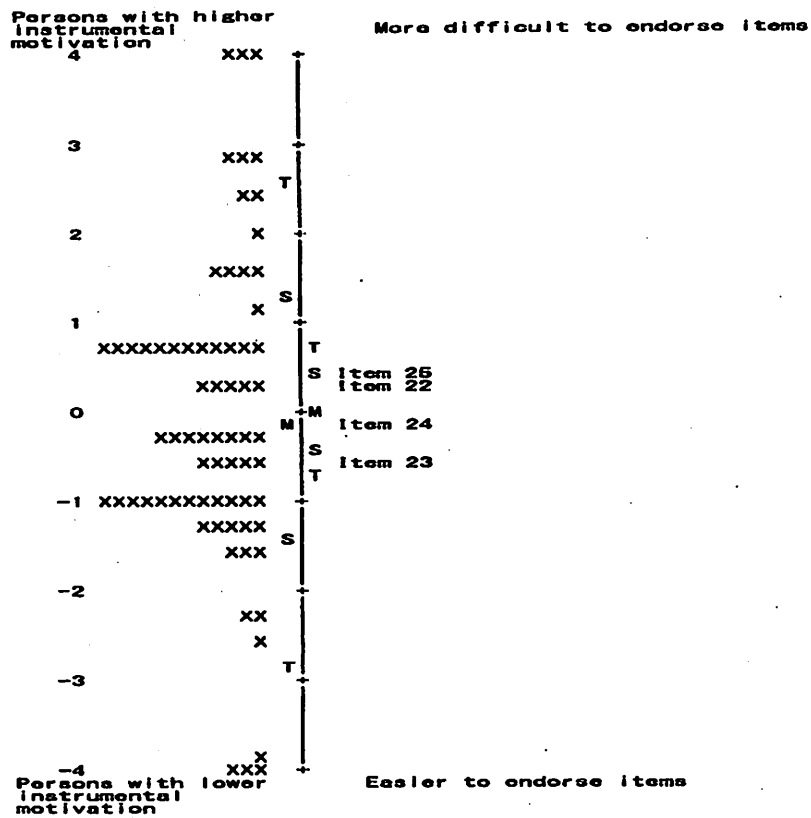


Figure 8. Item-person Map for Low Group's Instrumental Motivation

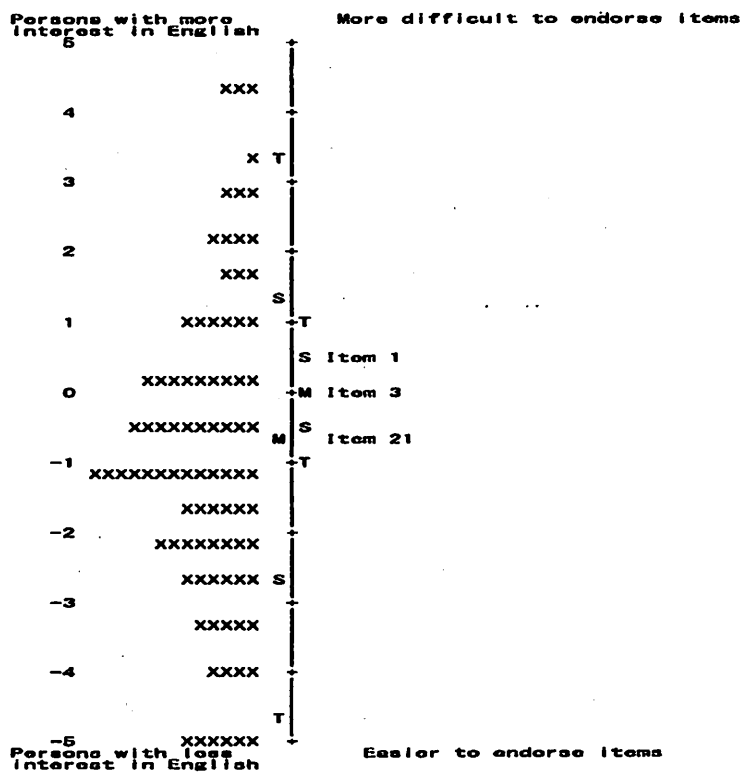


Figure 9. Item-person Map for Low Group's Interest in English

6. Discussion and Conclusion

A comparison of the attitudes and motivation toward learning English was made among engineering majors with two levels of English proficiency. The results of factor analysis illustrated that International Posture, Desire to Learn English, and Instrumental Motivation were observed in both groups. In addition, Interest in English was observed only for the low proficiency group. Regardless of English proficiency levels, most engineering students agreed that English is important and that they needed to improve their English skills. Moreover, similar to other studies on engineering majors, such as Revin et al. (2009) and Johnson and Johnson (2010), this study confirmed that students' Instrumental Motivation was significantly higher than their International Posture. Moreover, similar to Suzuki (2009), the high proficiency students' International Posture ($M = 3.44$) was much higher than that of the low proficiency students ($M = 2.84$).

After investigating the items and their difficulties for each variable, three major differences were observed between the two groups. First, students with different proficiency levels have differing ideas on studying English to attain credits. High proficiency students relate it to their desire to learn English, while low proficiency students study English in class for an instrumental purpose.

Second, item difficulties for International Posture varied between the two groups. As for the high group students, first preference is given to their interest in English-speaking persons, followed by their cultures, and finally the desire to study or work abroad. In contrast, with the low proficiency students, their first interest is studying or working abroad, while their interest toward English-speaking persons comes last. This is probably because high proficiency students have an advanced English level, and thus they are interested in communicating with native speakers, while low proficiency students do not have much confidence in their English abilities, and thus they may not be as eager to make friends and communicate with native speakers.

The final difference is that the Interest in English variable was only

observed for the low proficiency group. Emotional reasons such as “English is a favorite subject” or “It is fun to learn English” seem to be an important motivational factor only for the low proficiency students.

This study compared the L2 motivation of engineering students at two different universities and observed several major differences between them. However, this study focused only on Japanese engineering majors. Hence, it should be noted that research on students in other majors may reveal somewhat different results. However, many studies have not yet compared the participants at different schools or of different proficiency levels. Thus, I hope that the results of this study will help us better understand the relationship of L2 motivation and English proficiency.

This study is based on the oral presentation at the Japan Association of English Linguistics and Literature Conference on March 5, 2011.

Note

- 1) *hensachi* is standard score for academic ability determined by trial examinations offered by major preparatory schools in Japan. It is calculated by $(\text{scores} - \text{average scores}) \div \text{standard deviation} \times 10 + 50$. Schools with *hensachi* 50 have average level of difficulty. Schools with *hensachi* 60 belong to upper 15%, while those with *hensachi* 40 belong to lower 15%.

References

- Bond, Trevor, G. and Christine M. Fox, 2007. *Applying the Rasch Model: Fundamental Measurement in the Human Sciences*. Mahwah, N. J.: Lawrence Erlbaum.
- Clément, Richard, Zoltán Dörnyei, and Kimberly A. Noels. 1994. “Motivation, Self-Confidence, and Group Cohesion in the Foreign Language Classroom.” *Language Learning* 44(3): 417-448.
- Dörnyei, Zoltán. 1990. “Conceptualizing Motivation in Foreign Language Learning.” *Language Learning* 40(1): 45-78.
- Dörnyei, Zoltán. 2005. *The Psychology of the Language Learner: Individual Differences in Second Language Acquisition*. London: Lawrence Erlbaum Associates Publishers.

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- Gardner, Robert. C. 1985. *Social Psychology and Second Language Learning: The Role of Attitude and Motivation*. London: Edward Arnold.
- Gardner, Robert. C. and Peter D. MacIntyre. 1993. "A Student's Contribution to Second Language Learning. Part II: Affective Variables." *Language Learning* 26: 1-11.
- Gardner, Robert. C., Paul F. Tremblay, and Anne-Marie Masgoret. 1997. "Towards A Full Model of Second Language Learning: An Empirical Investigation." *Modern Language Journal* 81: 344-362.
- Irie, Kei. 2005. *Stability and Flexibility of Language Learning Motivation*. Unpublished Doctorial Dissertation, Temple University Japan, Tokyo, Japan.
- Iwamoto, Noriko. 2010. "Mapping Student Motivation: A Study of Undergraduate Japanese EFL Engineering Majors." *The Bulletin of the Institute of Human Sciences, Toyo University* 13: 1-16.
- Johnson, Michael and Yoko Johnson. 2010. "An Exploratory Study of Japanese Engineering Students' EFL Learning Motivation." *Journal of Language and Culture of Hokkaido* 8: 43-56.
- McNamara, Tim, F. 1996. *Measuring Second Language Performance*. New York: Longman.
- Revin, David, Michael R. Redfield, and William Figoni. 2009. "University Technology Students' Integrative and Instrumental Motivation: The Case of Toyohashi University of Technology." *The Lark Hill Bulletin of the School of Humanities and Social Engineering* 31: 99-111.
- Sick, Jim. 2006. *The Learner's Contribution: Individual Differences in Language Learning in a Japanese High School*. Unpublished Doctorial Dissertation, Temple University Japan, Tokyo, Japan.
- Suzuki, Tomoki. 2009. "A Study on Possible English Learning Motivation Scale Variation over Time and its Correlation to English Proficiency among Different Grade Levels." *Journal of the Asahikawa National College of Technology* 46: 21-32
- Yashima, Tomoko. 2002. "Willingness to Communicate in a Second Language: The Japanese EFL Context." *The Modern Language Journal* 86(1): 54-66.

Appendix A

- Item 1 英語は好きな科目の一つである
- Item 2 大学で英語を学ぶのは当然だと思っている
- Item 3 英語を学ぶことは楽しい
- Item 4 英語を習得する必要があると感じる
- Item 5 文系の学生だけでなく、理系の学生も英語の力を伸ばす必要があると思う
- Item 6 できれば留学したいと思っている
- Item 7 海外に住んでみたいと思う
- Item 8 ネイティブスピーカーと英語でコミュニケーションがとれるようになるので、英語の勉強は大切だと思う
- Item 9 英語圏の人と友達になりたい
- Item 10 国連のような国際的な組織で働いてみたい
- Item 11 アメリカ人やイギリス人に好印象を持っている
- Item 12 英語圏の文化に興味がある
- Item 13 将来、海外赴任（ふにん）をする仕事につきたい
- Item 14 英語に関する世界について学びたいと思う
- Item 15 将来、海外にひんぱんに行くような仕事に就きたい
- Item 16 外国の人たちと自由に交流できるようになるので、英語の勉強は大切だと思う
- Item 17 英語を勉強するのは単位を取るためである
- Item 18 英語をしゃべれるとカッコいいので、英語の勉強をしている
- Item 19 英語は今日の国際社会で必要なものである
- Item 20 将来成功するためには、英語は必要だと思う
- Item 21 教養を高めるために、英語を勉強している
- Item 22 英検やTOEICなどの検定試験のために英語を勉強している
- Item 23 英語ができると就職に有利なので、英語を勉強している
- Item 24 海外旅行で困らないように英語を勉強している
- Item 25 日本国内で外国人に話しかけられた時に、困らないように英語を勉強している
- Item 26 英語の文献やウェブサイトから情報を得るために、英語を勉強している

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Appendix B

Questionnaire Items	high		low	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. English class is one of my favorite classes.	3.41	1.55	2.77	1.40
2. I believe absolutely English should be taught at university.	5.13	.94	4.05	1.43
3. It is fun to learn English.	3.70	1.29	3.01	1.39
4. I feel that I need to acquire English.	5.08	1.08	4.14	1.40
5. Not only literature majors but also engineering majors should improve English.	5.25	.92	4.38	1.42
6. If possible, I want to study abroad.	3.30	1.54	2.30	1.43
7. I want to live in a foreign country.	3.46	1.65	2.78	1.57
8. Studying English is important to me because it will allow me to communicate with native speakers.	4.86	1.13	3.82	1.40
9. I want to make friends with English speaking people.	3.87	1.23	3.31	1.32
10. I want to work in an international organization such as the United Nation.	2.49	1.26	2.16	1.11
11. I have a favorable impression towards British and Americans.	4.08	1.48	3.28	1.47
12. I am interested in the cultures of English speaking countries.	3.79	1.47	3.06	1.43
13. I would like to have a job in which I work overseas for a certain period.	3.13	1.53	2.49	1.32
14. I would like to learn about the English-speaking world.	3.42	1.34	2.68	1.31
15. I want to have the kind of work that sends me overseas frequently.	2.79	1.36	2.24	1.23
16. Studying English is important to me because it will allow me to communicate freely with foreign people.	4.89	1.08	3.85	1.41
17. I study English to attain credits to graduate.	2.94	1.21	4.45	1.32
18. I study English because it is cool to be able to speak English.	3.96	1.36	3.59	1.48
19. English is necessary in today's international world.	5.28	.88	4.55	1.28
20. English is a must for me to succeed in the future.	4.87	1.33	4.28	1.37
21. I learn English to be more knowledgeable.	3.96	1.27	3.34	1.35
22. I study English for an English proficiency test such as <i>Eiken</i> or TOEIC.	3.37	1.51	2.68	1.38
23. I study English because I think it will be useful in getting a good job.	3.80	1.32	3.34	1.40
24. I study English to travel abroad.	3.59	1.20	3.02	1.40
25. I study English so that I would not get embarrassed when I am spoken to by native speaker of English.	3.27	1.26	3.13	1.49
26. I study English in order to get the information from English books or Web sites.	3.10	1.32	3.06	1.49