Do Background Variables Predict Students' Scores on a Japanese Placement Test? Implications for Placing Heritage Language Learners

Kimi Kondo-Brown
University of Hawaii at Manoa

Abstract

This study investigated how well heritage language background and other background variables predict the variability of students' performances on Japanese placement tests. Nine hundred thirty-two students participated in the study. The results showed that the parental language variable alone can predict the variability of incoming students' performances to a considerable degree on three proficiency measures adopted in the present study. Follow-up analyses of distributions of student scores on these proficiency measures wherein the parental language variable had the strongest predictive power were also conducted. The results suggested: some multiple-choice Japanese placement tests that may effectively discriminate among students *without* a Japanese parent may not necessarily be effective for discriminating among heritage language students with Japanese parents; however, a simple writing performance test proved to be an effective placement tool for discriminating among students with any parental background.

Introduction: Purpose of the Study

The development of effective placement procedures is important for any language program in order to create classes that are relatively homogeneous in terms of students' proficiency levels (Kondo-Brown & Brown, 2000). The goal of this study is to examine what considerations are necessary for developing appropriate placement procedures for programs where incoming students come from di-

verse language backgrounds, particularly heritage language backgrounds. To this end, this study first investigates how well heritage language and other background variables predict the variability of students' performances on four kinds of Japanese placement measures developed at the University of Hawaii at Manoa (UHM) (three multiple-choice tests and a written performance test). Among the variety of possible operationalizations of the heritage language variable (see for example, Wiley, 2001), this study focuses on parental language. In other words, this study examines how critical the parental language variable is in comparison to other background variables as a predictor of incoming students' performances on Japanese proficiency measures. It also investigates potential problems of using the same placement procedures for heritage language students with Japanese parents as for the rest of the students without such family background.

Various placement procedures have been locally developed in order to identify heritage language students with advanced skills in the target language who may not fit into a traditional foreign language instructional sequence. For example, in addition to student background questionnaires, some programs have developed tests that measure receptive skills (e.g., Teschner, 1983; McGinnis, 1996), while others use oral interviews to identify heritage language students (e.g., Sohn, 1995). Whatever the procedure, these studies reporting on their own placement procedures for heritage language learners are descriptive in nature, and there is little research investigating how effective and appropriate the adopted placement procedures are for measuring heritage language students' proficiency levels. Furthermore, it has been some time since Valdés (1989) raised issue of the validity of using foreign language proficiency tests, which were developed primarily for the non-heritage language population, for measuring the proficiency levels of heritage language learners. Nonetheless, to date, this issue has remained uninvestigated.

Background of the Study

Hundreds of students study Japanese at UHM each semester. By the time they are enrolled in the Japanese language program, the

majority already has had a variety of experiences with Japanese and demonstrates various levels of Japanese language proficiency. Notable language background variables for these students are as follows:

Instruction Variables

The great majority of incoming students have studied Japanese at K-12 school. There are also a small number of transfer students who have studied Japanese at other postsecondary institutions. Many incoming students have also studied Japanese at *Nihongo gakkoo* (Japanese language schools) or a *hoshuukoo* called Rainbow *gakuen.*[1] Some other incoming students have studied Japanese with a tutor or by attending schools in Japan such as American schools or Japanese high schools as exchange students.

Family Variable

Approximately 10% of incoming students each year have at least one Japanese parent.

Living-in-Japan Variable

A small number of incoming students have lived in Japan for study or work. Also there are some students who were born there but attended American schools speaking English as their primary language.

Korean/Chinese Background

Some incoming students are from Korea or China. Because a considerable number of Chinese characters are commonly used in the Japanese, Korean, and Chinese languages, their Chinese/ Korean backgrounds may influence their performance on Japanese placement tests where knowledge of *kanji* is critical (e.g., Brown & Iwashita, 1996).

---

[1] Students at *Nihongo gakkoo* normally study Japanese for about one hour five days a week, while students at Rainbow *gakuen* meet on Saturdays for six hours and study Japanese language, mathematics, and social science in Japanese.

Method

In order to determine the levels of courses for enrollment of these incoming students with diverse language backgrounds, they are required to take the multiple-choice Japanese placement test. The multiple-choice Japanese placement battery, prepared by the department, consists of three tests (listening comprehension, grammar, and *kana/kanji* recognition) (see Kondo-Brown and Brown, 2000 for item analysis of these tests). In addition to the multiple-choice test, the students are also asked to write an essay, which is used for confirmation purposes and not normally graded.

Instruments:

The multiple-choice tests. The grammar test had 70 items, the listening comprehension test had 14, and the *kana/kanji* recognition test had 50. In all tests, the multiple-choice items included four options (one correct answer and three distractors). In the grammar section, all questions were written both in *kana* and *roomaji* (in which Japanese scripts are spelled out in Roman letters) so that students could answer questions in either mode. The grammar items were designed to test the syntactic and morphological rules of Japanese (one exception was a question that tested a lexical rule of *keigo*).

The directions for the listening test were in English and the test was played from an audiotape. During the test, the students listened to five prompts in Japanese: four conversations and one narrative. The prompts were recorded at a natural rate of speech, and the enunciation was very clear. Each prompt was read three times and the students answered questions, which were written in English. The entire listening test took approximately 10 minutes. In the recognition section, ten questions concerned *kana*-word spelling and 40 questions asked students to identify the meanings of words written in *kanji*. The reliability estimates (estimated using Kuder-Richardson formula 20) for the grammar, listening, and recognition were moderate to very high (.94, .80, .94, respectively).

Essay writing. The three prompts that the students could choose from for the essay writing were all descriptive in nature. Prompt one asked the students to describe how they like to spend

their vacation, prompt two asked them to describe themselves, their background, and their family members, and prompt three asked them to describe Hawaii to a friend in Japan. For the present study, each essay received three ratings independently given by three judges using an adapted version of Jacob et al.'s (1981) rating profile (Kondo-Brown, 2002). The inter-rater reliabilities among three raters were very high, ranging from .93 to .95. Average scores of three ratings were used as essay test scores for individual students.

Participants

Participants for the multiple-choice tests were 932 incoming students of Japanese in recent years. Among them, 225 students' essays were randomly selected for the study. The appendix shows background information of these students.

Predictor Measures

The students' family background was obtained through background information sheets that students filled out during the placement test. Table 1 lists the following six predictor variables used for this study.

Table 1
Taxonomy of Predictor Measures

Background/predictor variables		Coding
Parental language variable		Both parents are Japanese (3), One parent is Japanese (2), Neither parent is Japanese (1)
Instruction variable	At K-12 schools or other college	Number of years
	Nihongo gakkoo	Number of years
	Other (Rainbow *gakuen*, high school in Japan, American school in Japan, and tutor)	Number of years

Living-in-Japan variable	Number of years and months
Korean/Chinese background variable	Korean/Chinese (2), Other (1)

Parental language variable. Students whose parents both spoke Japanese were coded as "3," students with one Japanese-speaking parent as "2," and students with no Japanese-speaking parent as "1." Tables 2 and 3 compare means and standard deviations of multiple-choice test scores and essay scores by family background groups.

Table 2
Means and Standard Deviations of Multiple-Choice Tests by Family Background Groups

Family background	Grammar		Listening		Kana/kanji	
	M	*SD*	*M*	*SD*	*M*	*SD*
Both parents are Japanese (n=40)	54.1	17.9	11.9	2.9	27.7	13.5
One parent is Japanese (n=68)	38.5	18.5	10.5	3.2	23.6	11.1
At least one grandparent is Japanese (n=45)	21.4	10.3	6.8	2.6	18.6	8.9
No Japanese parent or grandparent (n=779)	24.0	11.5	7.3	3.1	21.3	8.9

As you see in these tables, the distributions of test and essay scores for students with at least one Japanese-speaking *grandparent* (but no Japanese speaking parent) were more or less similar to those for students with no Japanese speaking parent or grandparent, so these students were grouped together.

Table 3
Means and Standard Deviations of Essay Scores by Family Background Groups

Family background	Essay	
	M	*SD*
Both parents are Japanese (n=23)	80.3	11.1
One parent is Japanese (n=30)	71.8	10.4
At least one grandparent is Japanese (n=16)	64.4	7.7
No Japanese parent or grandparent (n=156)	68.7	10.6

Instruction variables. These variables were instruction at K-16, instruction at *nihongo gakkoo*, and other instruction (e.g., Rainbow *Gakuen*). The number of years of instruction was coded for each student.

Living-in-Japan variable. For this variable, the number of years and months was coded for each student.

Korean/Chinese background variable. Students whose native or strongest language is Korean/Chinese were coded as "2," and other students as "1."

Results and Discussion

Analyses of Predictive Measures

The Pearson correlations between predictor/background variables on the one hand and students' scores on three multiple-choice tests and an essay writing test on the other hand are presented in Table 4.

Table 4
Correlations Between Predictor Variables and Scores on Each of the Four Tests

Predictor variables		Grammar		Listening		Kanji/Kana		Essay	
		r	r^2	*r*	r^2	*r*	r^2	*r*	r^2
Parental language		.492**	0.242	.358**	0.128	.138**	0.019	.324**	0.105
Instruction	K-16	.206**	0.042	.195**	0.038	.298**	0.089	.139*	0.019
	Nihongo gakkoo	.190**	0.036	.200**	0.040	.166**	0.028	.053	0.003
	Other	.150**	0.023	.098**	0.010	.128**	0.016	.192**	0.037
Living in Japan		.199**	0.040	.144**	0.021	.095**	0.009	.217**	0.047
Korean/Chinese background		-.034	0.001	.016	0.000	.225**	0.050	NA [2]	

*p<.05; **p<.01

The results indicate that students' scores on each of the four measures have positive relationships with all predictor variables with the following two exceptions:

a) The Korean/Chinese background variable was not related to students' test scores on either the grammar or listening test.
b) One of the instructional variables, namely instruction at *Nihongo gakkoo*, was not related to students' test scores on the essay test.

However, when you look at the strength of association (r^2) between predictor measures and students' scores, meaningful relationships (i.e., those with r^2 of .05 or more, meaning an overlap of 5% or more) were observed only between:

a) Grammar test scores and the parental language variable (about 24% overlap meaning 24% of the variability of grammar test scores was accounted for by this variable),
b) Listening test scores and the parental language variable (about 13% overlap),
c) *Kanji/Kana* test scores and the instruction at K-16 variable (about 9% overlap) and the Korean/Chinese background variable (5% overlap),

[2] Note that the correlational analysis between the Korean/Chinese background variable and essay scores is not available because there was no participant from such a background.

d) Essay scores and the parental language variable (10.5% overlap).

Other indicated relationships with weaker strength of association (i.e., $r^2 < 0.05$) should be interpreted cautiously because it is possible that these relationships existed simply because there were so many participants, especially for the multiple-choice tests. At the same time, it is possible that these relationships with weak strength of association might indicate stronger associations when all the extraneous variables are controlled. In any case, the present correlational analyses suggest that the parental language variable may be the only variable that has a meaningful relationship with the grammar, listening comprehension, and essay test scores. The present analyses also suggest that there are some noteworthy positive relationships between the students' *kana/kanji* test scores and years of instruction at K-16 as well as the Korean/Chinese background.

Table 5 presents the results of a stepwise linear regression analysis with the *grammar* test scores as the dependent variable.

Table 5
Stepwise Regression with the **Grammar** *Test Scores as a Dependent Variable*

Step	Background/Predictor variables entered	R	R^2	Change in R^2
1	Parental language	.492**	.242	.242
2	Instruction at K-16	.559**	.312	.070
3	Instruction at *Nihongo gakkoo*	.582**	.339	.027
4	Other instruction	.592**	.351	.012

**p<.001

The table shows that the grammar test scores were significantly predicted by four background variables. The first variable entered was the variable that had the strongest correlation with the dependent variable, namely, "parental language." This variable had 24.2% overlap with the grammar test scores, suggesting that this variable accounted for about 24% of the total variability of the grammar test scores.

The second, third, and fourth variables entered were the instruction variables; naturally, the gain in prediction of adding each variable was relatively small: 7%, 2.7%, and 1.2%, respectively. Taking the instruction-at-K-16 variable for example, this means that after the variability of the grammar test scores accounted for by the parental language variable was entered, 7% of the remaining score variability is accounted for by the instruction-at-K-16 variable. Taken together, these four predictor measures explain about 35% of the variance in the grammar test scores. Thus, the best combination of background variables for predicting students' performance on the grammar test was parental language and all kinds of previous instruction in Japanese.

Table 6 presents the results of a stepwise linear regression analysis with the *listening* test scores as the dependent variable. The table shows that the listening test scores were significantly predicted by three background variables.

Table 6
Stepwise Regression with the ***Listening*** *Test Scores as a Dependent Variable*

Step	Background/Predictor variables entered	R	R^2	Change in R^2
1	Parental language	.358**	.128	.128
2	Instruction at K-16	.430**	.185	.057
3	Instruction at *Nihongo gakkoo*	.468**	.218	.033

**p<.001

The first variable entered was again "parental language," which accounted for 12.8% of the total variability of the listening test scores. The second and third variables entered were two of the three instruction variables, namely "instruction at K-16" and "instruction at *Nihongo gakkoo*," respectively. The gains in prediction of these variables were small: 5.7% and 3.3%, respectively. Taken together, these measures overlapped 22% with the listening test scores. Thus, students with a Japanese parent who had studied longer years of in-

struction at K-16 and/or *Nihongo gakkoo* seemed to have higher scores in general on the listening test.

Table 7 presents the results of a stepwise regression analysis with the *Kana/Kanji* recognition test scores as the dependent variable.

Table 7
Stepwise Regression with the **Kana/Kanji** ***Recognition Test Scores as a Dependent Variable***

Step	Background/Predictor entered	R	R^2	Change in R^2
1	Instruction at K-16 schools	.298**	.089	.089
2	Korean/Chinese background	.384**	.147	.058
3	Instruction at *Nihongo gakkoo*	.437**	.191	.044
4	Other instruction	.477**	.227	.036
5	Parental language	.499	.249	.022

**p<.00

The table shows that the *Kana/Kanji* recognition test scores were significantly predicted by five background variables. The first variable entered was "instruction at K-16 schools," which accounted for about 9% of the total variability of the *Kana/Kanji* recognition test scores. The other four variables entered were the Korean/Chinese background, two other instruction variables, and the parental language variable. The gains in prediction for these variables were 5.8%, 4.4%, 3.6%, and 2.2%, respectively. Taken together, these five measures explained about 25% of the variance in the *Kana/Kanji* recognition test scores. Thus, although the parental language was the best predictor for the grammar and listening tests, in the case of the recognition test, it did not seem to be the best predictor.

Table 8 presents the results of a stepwise regression analysis with the *essay* test scores as the dependent variable.

Table 8
Stepwise Regression with the ***Essay*** *Test Scores as a Dependent Variable*

Step	Background/Predictor variables entered	R	R^2	Change in R^2
1	Parental language	.324**	.105	.105
2	Instruction at K-16 schools	.376**	.134	.029
3	Other types of instruction	.422**	.178	.044
4	Living in Japan	.439**	.193	.015

**p<.001

The table shows that the essay scores were significantly predicted by three background variables. The first variable entered was "parental language," which accounted for 10.5% of the total variability of the essay test scores. The second, third, and fourth variables entered were the "instruction at K-16," "other instruction," and "living in Japan" variables. The gains in prediction for these variables were 3.6%, 3.7%, 1.5%, respectively. Taken together, these four measures explained 19.3% of the variance in the essay test scores.

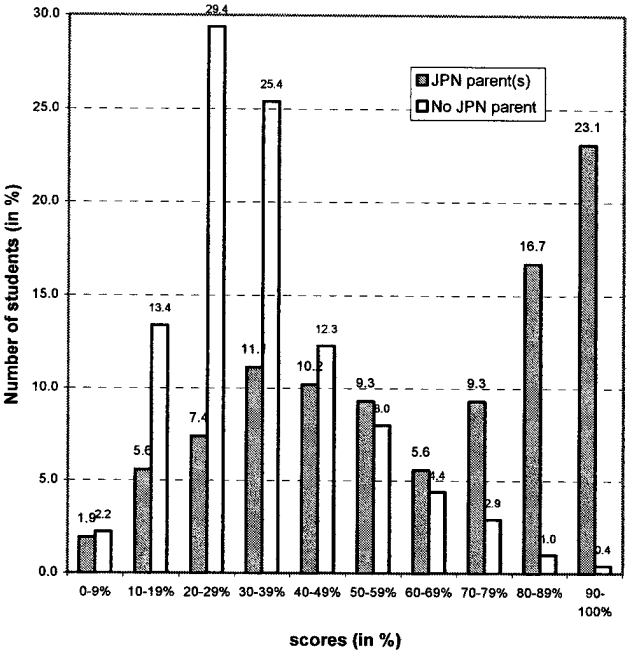
Analyses of Score Distributions for Two Groups of Students:

Students With and Without a Japanese Parent

Since the parental language variable proved to be a critical predictor variable for the grammar, listening, and essay test scores, distributions of scores for each of these placement tests for two groups of students—students with at least one Japanese parent and students with no Japanese parent—were further investigated.

Figure 1 shows graphically how scores on the grammar test were distributed for two groups of students (those with or without a Japanese parent).

Figure 1
The Score Distribution of the ***Grammar*** *Test*

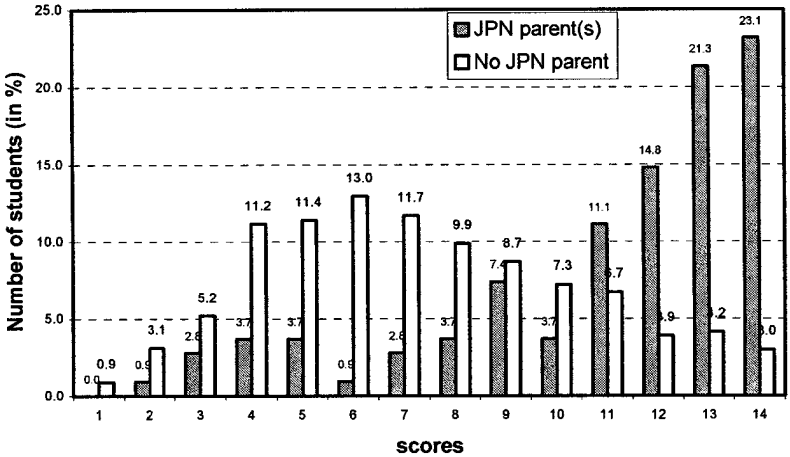


For example, on the far right, 23.1% of the students with a Japanese parent responded to the test with 90%–100% correct answers, while only 0.4% of the students without a Japanese parent did the same. The figure shows that, while scores on the grammar test for the non-Japanese parent group seemed to be normally distributed, scores for the Japanese parent group formed a bimodal distribution, suggesting that, in this group, there were in fact two different subgroups. The score distribution for one of the subgroups seemed more or less identical with that for the non-Japanese parent group. Therefore, the present grammar placement test seemed to work as well for this subgroup to distribute the students as for the non-Japanese parent group. The score distribution for the other subgroup was negatively skewed, suggesting that the present grammar place-

ment test, which seemed to be able to effectively differentiate grammar knowledge of students without a Japanese parent, did not seem to be able to function the same way for this subgroup.

Figure 2 indicates visually how scores on the listening test were distributed for the Japanese parent and non-Japanese parent groups.

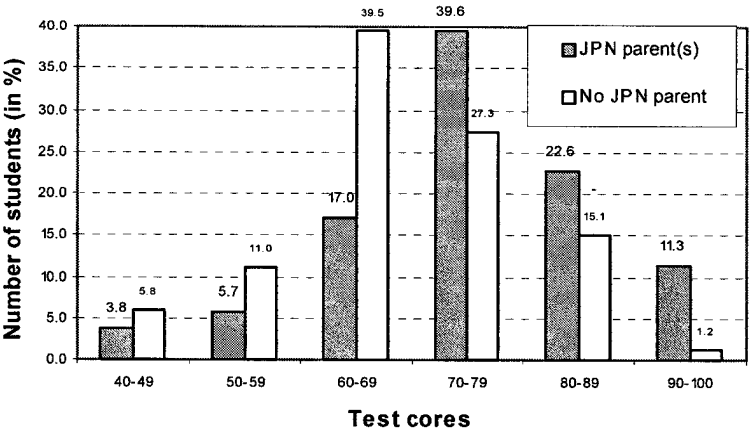
Figure 2
The Score Distribution of the ***Listening*** *Test*



The figure shows that, while scores on the listening test for the non-Japanese parent group seemed to be normally distributed, scores for the Japanese parent group were negatively skewed. For example, approximately 70% of students with at least one Japanese parent had scored at least 13 out of 15 points. This suggests that, like the grammar test, the listening test, which seemed to work effectively for the non-Japanese parent group, did not seem to be able differentiate the listening skills of highest-scoring students in the Japanese parent group.

Figure 3 indicates visually how scores on the essay test were distributed for two groups of students.

Figure 3
The Score Distribution of the ***Essay*** *Test*



Compared to the results of the grammar and listening tests, scores on the recognition test were more evenly distributed over the range of possible scores for both groups. This result suggests that a performance test such as an essay writing test may be an effective placement test procedure for discriminating among students with any parental background.

Conclusion

The present results suggest that the parental language background of incoming students needs to be carefully considered in developing placement procedures. This factor alone seems to predict the variability of incoming students' performances to a considerable degree on all proficiency measures adopted in the present study, except the *Kana/Kanji* recognition test (i.e., grammar, listening comprehension, and essay writing test). The *Kana/kanji* recognition test was the only proficiency measure in the present study wherein the parental language variable had the least prediction power of all the background variables.

Follow-up analyses of distributions of student scores on three proficiency measures wherein the parental language variable had the strongest prediction power were conducted. The results indicate that all of the present placement tests developed at UHM seem to be effective in separating incoming students of Japanese *without* a Japanese parent into different proficiency levels. It may follow that the use of multiple-choice tests—although they only measure the receptive skills of students—can serve as an effective placement procedure for placing students without a Japanese parent into various levels.

However, this study also suggests that the same placement procedure may not necessarily be effective for discriminating proficiency levels of heritage language students with Japanese parents. As shown earlier, the present multiple-choice tests that effectively discriminated among students without a Japanese parent into various levels did not seem to work very well for advanced heritage language students *with* Japanese parents. On the other hand, interestingly, simple descriptive essay writing proved to be an effective placement tool for discriminating among the proficiency levels (at least in terms of written skills) of students of any parental background. Thus, performance-based placement procedures may be useful for a program with advanced heritage language learners whose parents speak the target language.

Lastly, it should be noted that this study did not investigate other heritage variables such as parental language use at home and students' use of Japanese with parents, relatives, and peers as well as in the community. Future studies should examine how these variables predict students' proficiency in Japanese, and what placement considerations are necessary for placing heritage language students as defined by these variables.

References

Brown, A. & Iwashita, N. (1996). "Language Background and Item Difficulty: The Development of a Computer-Adaptive Test of Japanese." *System* 24, 199–206.

Jacobs, H. L., Zinkgraf, S. A., Wormuth, D. R., Hartfiel, V. F. & Hughey, J. B. (1981). *Testing ESL Composition: A Practical Approach.* Rowley, MA: Newbury House.

Kondo-Brown, K. & Brown, J. D. (2000). *The Japanese Placement Tests at the University of Hawaii: Applying Item Response Theory.* Second Language Teaching & Curriculum Center. [Online]. Available: http://nflrc.hawaii.edu/NetWorks/NW20/default.html

Kondo-Brown, K. (2002). "An Analysis of Rater Bias with FACETS in Measuring Japanese L2 Writing Performance." *Language Testing* 19, 1–29.

McGinnis, S. (1996). "Teaching Chinese to the Chinese: The Development of an Assessment and Instructional Model." In J. E. Liskin-Gasparro (ed.), *Patterns and Policies: The Changing Demographics of Foreign Language Instruction* (pp. 107–121). Boston, MA: Heinle and Heinle.

Sohn, S.-O. (1995). "The Design of Curriculum for Teaching Korean as a Heritage Language." In H. Sohn (ed.), *The Korean Language in America 1: Papers from the First National Conference on Korean Language Education* (pp. 19–35). Honolulu: American Association of Teachers of Korean.

Teschner, R. V. (1983). "Spanish Placement for Native Speakers, Nonnative Speakers, and Others." *ADFL Bulletin* 12(3), 37–42.

Valdés, G. (1989). "Teaching Spanish to Hispanic Bilinguals: A Look at Oral Proficiency Testing the Proficiency Movement." *Hispania* 72, 392–401.

Wiley, T. G. (2001). "On Defining Heritage Languages and their Speakers." In J. K. Payton, D. A. Ranard, and S. McGinnis (eds.), *Heritage Languages in America: Preserving a National Resource* (pp. 29–36). McHenry, IL: The Center for Applied Linguistics and Delta Systems.

Appendix

Background Information of Participants

		Multiple-choice tests (*N*=932)	Essay test (*N*=225)
Parent	Both or one is Japanese	108 (11.6%)	53 (23.6%)
	Neither is Japanese	824 (88.4%)	172 (76.4%)
Gender	Female	548 (58.8%)	142 (63.1%)
	Male	331 (35.5%)	83 (36.9%)
	Unknown	53 (5.7%)	0
Strongest language	Japanese-English bilingual	8 (0.9%)	4 (1.8%)
	Chinese or Korean	53 (5.7%)	0
	English	855 (91.7%)	221 (98.2%)
	Other (Vietnamese, Filipino, etc.)	16 (1.7%)	0
Class standing	(Incoming) Freshman	812 (87.1%)	209 (92.9%)
	Sophomore, Junior, or Senior	6 (7.2%)	16 (7.1%)
	Graduate/unclassified	3 (0.3%)	0
	Unknown	50 (5.4%)	0
Instruction in Japanese	K-16 (elementary, intermediate, high school, other college)	915 (98.2%)	220 (97.8%)
	Nihongo gakkoo	120 (12.9%)	38 (16.9%)
	Other (Rainbow *gakuen*, schools in Japan, and tutor)	18 (1.9%)	6 (2.7%)
Living in Japan		38 (4.1%)	18 (8.0%)