Reporting MANOVA: Four examples (not necessarily definitive)

Contents page

MANOVA reporting

Example 1: Gender in the future

An initial MANOVA examined age and educational literacy as covariates, the three latent variables as dependent variables (DVs), and gender of baby in survey and gender of participant as independent variables (IVs). After excluding age and educational level as nonsignificant, a follow-up MANOVA examined associations between the DVs and IVs described above. It showed a significant multivariate effect for the three latent variables as a group in relation to the gender of the baby in the survey (girl versus boy: $p<.001$) and the gender of the participant completing the survey ($p<.01$). However, the interaction between gender of participant and gender of baby in survey was nonsignificant.

Univariate analyses for the effect of the baby in the survey significant predicted responses related to *consumer trends* ($p<.05$), with responses significantly more positive for girl than boy babies. Follow-up nonparametric tests for items related to *consumer trends* indicated that male and female participants as a group were likely to indicate that baby girls in the future were not only more likely to follow *fashion trends* ($p<.01$) but also to *keep up with technology* ($p<.01$).

Univariate analyses for gender of participant significantly predicted responses related to *consumer trends* such that males responded more positively than females and for *emerging lifestyle* such that females responded more positively than males. Follow-up nonparametric tests for items related to *consumer trends* indicated that despite the significant univariate effect, the gender of participant did not influence responses to these items significantly. Follow-up nonparametric tests for items related to *emerging lifestyle* indicated that females were more likely to respond that babies of either gender would in future be able to live anywhere ($p<.05$).

Example 2: NESB teaching practice

Examining associations between scale scores and demographic variables

A series of multivariate ANOVAs were conducted with six demographic variables as independent variables, and with intercultural understanding and teaching confidence as dependent variables. The six independent variables included: years of teaching experience, teaching sector, training opportunities, linguistic status, cultural groups taught, and percentage of NESB students in classrooms. Significant associations were examined further by non-parametric testing (Kruskal-Wallis). Findings revealed nonsignificant associations between the scale scores for intercultural understanding and four of the six independent variables, including: Years of teaching experience, type of training; experience working with different cultural groups; and numbers of NESB students being taught. However, the interaction between teaching sector and teachers' linguistic status was significant (Roy's largest root=0.039, $F(6, 526)=3.413$, $p<0.05$).

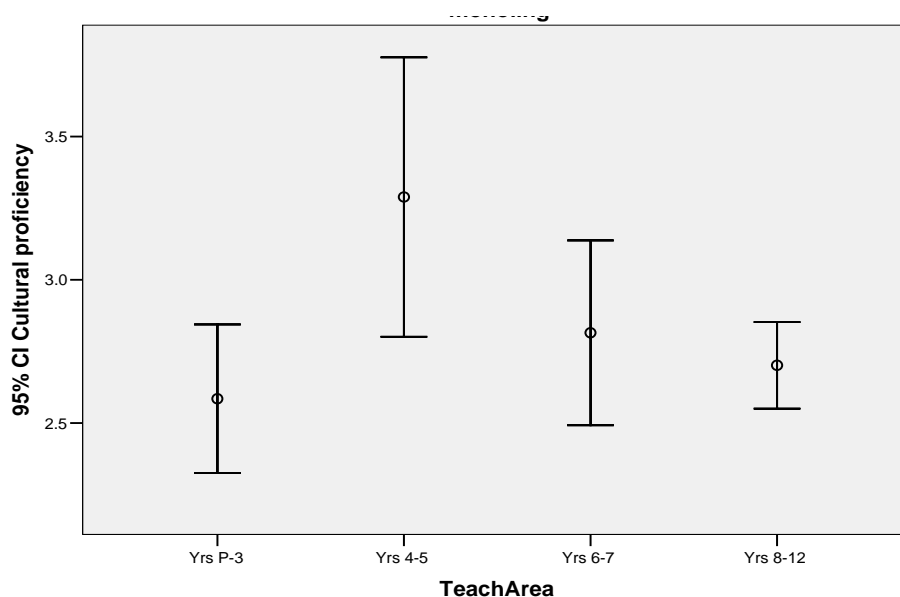**Reporting MANOVA: Four examples (not necessarily definitive)**

Figure 5. Interaction between teaching area and monolingual status

As shown in Figures 5 and 6, univariate testing indicated this interaction to be significant (F(3,263)=3.34,p<05) such that monolingual teachers of students in Years 4 and 5 appeared to respond more positively than those in the early years of primary schooling or in secondary school. In contrast, the differences appeared to be less pronounced for multilingual teachers.
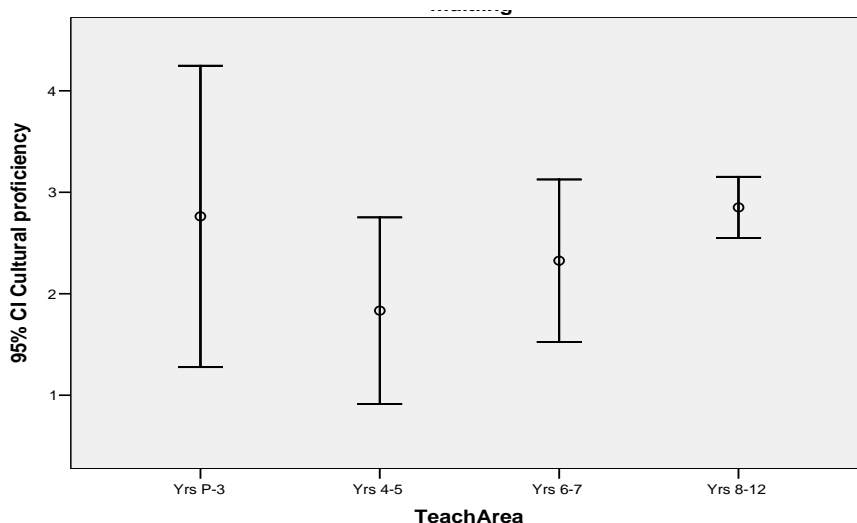

Figure 6. Interaction between teaching area and multilingual status

This interaction was examined further by splitting the dataset by linguistic status and performing MANOVAs for monolingual and multilingual teachers separately. As expected, the multivariate effect for Teaching status was significant for monolingual but not for multilingual teachers. *The* effect of teaching area for monolingual teachers was particularly pronounced in relation to being able to determine the proficiency of PI students as readers and writers. Teachers of students in Years 6 and 7 were significantly less likely ($\chi^2 = 10.229(3), p < 0.05$) than others, especially those working in the first five years of schooling, to respond positively to the proposal that they were able to determine the English language proficiency of PI students as readers and writers.

A separate MANOVA was used to examine the association between training opportunity (Preservice, In-service, PostGrad) as IV, and Academic and Cultural confidence as DVs, the interaction between training opportunities at post-graduate and pre-service levels was significant (Roy's Largest Root=0.03, F(2,277)=3.91,p<0.05). Univariate testing found the effect to be significant for teacher confidence (F(1,278)=7.29,p<0.01). Follow-up testing indicated that teachers with any type of training opportunity: pre-service, in-service, or postgraduate training were more confident than those without that training on all three items representing the factor associated with teachers' confidence. In addition, those with postgraduate training only were more confident than those with either pre-service or in-service training only.

The percentage of NESB students taught by a teacher influenced scores at the multivariate level (Roy's Largest Root =0.03, F(2,224)=3.26,p<0.05). The interaction of the percentage of NESB students taught with the teaching of different cultural groups also influenced scores at the multivariate level (Roy's Largest Root =0.06, F(19,225)=2.83,p<0.05)

Univariate testing indicated the effect for Percentage of NESB students (F(1,225)=6.52,p<0.05) and also the interaction between Percentage of NESB students and cultural group (F(5,225)=2.83,p<0.05) to be statistically significant. Examination of mean estimates indicated that students with more than 20% of NESB students in their classroom were more positive in terms of responses on the scale. The interaction between percentage of NESB students and teaching of cultural groups is illustrated in the error plot provided in Figure 5. This figure indicates that teachers of Indigenous students were more confident than those with fewer such students.

Follow-up nonparametric Kruskal-Wallis tests were used to examine associations between percentage of NESB for each of the three items on the teaching confidence scale, and for each of the six cultural groups. These tests found that teachers with more than 20% of NESB students in their classroom where Indigenous students were included were significantly more likely to report confidence in determining PI students' proficiency as speakers and listeners ($\chi^2(1)$=4.71,p<0.05), and in responding to PI students' English literacy needs ($\chi^2(1)$=6.18,p<0.05). In addition, teachers with more than 20% of NESB students, where European students were included, were significantly more likely (p<<0.05) to report proficiency in responding to PI students as readers and listeners ($\chi^2(1)$=5.44,p<0.05) plus confidence in responding to literacy needs ($\chi^2(1)$=6.18,p<0.05).

Example 3: ICT

A MANOVA was used to compare the current and preferred means of male and female teachers for the two dimensions of ICT use defined by the instrument, namely: (D1) ICT as a tool for the development of ICT-related skills and the enhancement of curriculum learning outcomes; and (D2) ICT as an integral component of reforms that change what students learn and how school is structured and organised.

The multivariate result was significant for gender, Pillai's Trace = .02, $F = 3.50$, $df = (4,924)$, $p = .01$, indicating a difference in the level of student use of ICT between male and female teachers. The univariate F tests showed there was a significant difference between males and females for D1, $F = 7.73$, $df = (1,927)$, $p = .01$, and D2, $F = 6.59$, $df = (1,927)$, $p = .01$, with respect to how frequently their students currently use ICT.

However, the F tests for both dimensions on the preferred scale were not significant, $F = 1.55$, $df = (1,927)$, $p = .21$ for D1, and $F = .00$, $df = (1,927)$, $p = .99$ for D 2. Thus, male and female teachers were not significantly different in their preferred level of student use of ICT.

Reporting MANOVA: Four examples (not necessarily definitive)

Table 5 displays the means for male and female teachers for the current and preferred scales for both dimensions of student ICT use.

Table 5: A comparison of means (with Standard Deviations) for male and female teachers for the two dimensions of ICT use by students for both the Current and Preferred scales (N = 929)

Teacher Gender Female	Dimension 1 Current Use 1.97 (0.61)∗	Dimension 1 Preferred Use 2.75 (0.62)	Dimension 2 Current Use 1.58 (0.54)∗	Dimension 2 Preferred Use 2.47 (0.70)
Male	2.1 (0.60)*	2.81 (0.59)	1.68 (0.56)*	2.47 (0.67)

* indicates significance at *p* < .05

As can be seen in Table 5, male teachers perceived that their students currently use ICT more frequently than the students of female teachers for both the curriculum enhancement and transformation dimensions of ICT use. However, a non-significant result for both dimensions of the preferred scale indicates that there is no real difference between male and female teachers with respect to how they'd prefer their students to use ICT.

Example 4: Internationalisation

Method of Analysis

Analyses of the relationship between the IVs, the first three scales of internationalisation, and the 10 subscales of the affective scales were conducted using MANOVAs. Of the 58 IVs considered, one to two were entered into the MANOVA at a time, with combinations of IVs selected such that cell sizes equalled or exceeded 30 (i.e., sufficient cell size to ensure normalcy of distribution of individual differences). When significant interactions were found, the file was split by both variables and MANOVAs were conducted with the other variable and only the significant findings were reported. Whenever Levene's test for homogeneity of variance was significant at the *p*<.01 level (in most cases on one to four of the 13 scales and subscales), nonparametric statistics (Kruskal-Wallis) were used to confirm the effects obtained via the MANOVAs. When significant interactions were found on scales for which Levene's was significant, the file was split by the significant variable and Kruskal-Wallis was used to confirm the effects on the other variable. In almost all cases, the Kruskal-Wallis tests confirmed the findings of the MANOVAs. In those cases, the results of the MANOVAs only were reported. In cases where significant results were found on one test but not the other, they were not reported. Because of the large number of IVs and DVs, the consequent number of significance tests, and the increased likelihood of making a Type I error, only results significant at the *p*<.001 level were reported (Abdi, 2007).

Multivariate Effects

Significant multivariate effects were found for the majority of IVs (see Table 24). There were no significant multivariate effects for major: biological or physical sciences; major: social sciences, law, criminology, or international studies; and socio-economic status. In addition, no statistically significant results were found for students who had studied abroad in terms of the effect of level of school at which they studied abroad, duration, number of study abroad experiences, or level of immersion. Also, for students who had travelled abroad, no significant effects were found for travel abroad at any age except 18 and above. Among those who had travelled to a developing country, only non-significant effects were obtained in relation to those who had gone for the purposes of work, cultural exchange, or study abroad.

Reporting MANOVA: Four examples (not necessarily definitive)

Table 24. Significant Multivariate Effects (at p<.001 level)

Variable(s)	Pillai's Trace	F	df	Error df
Country	.166	16.735	13	1093
Year at University	.073	6.645	13	1093
Country * Year at University	.034	2.917	13	1091
University	.213	10.036	26	2186
University * Year at University	.054	2.318	26	2180
Total Years at University	.137	4.035	39	3279
Age	.141	6.369	26	2186
Gender	.158	15.827	13	1093
Race/Ethnic Group	.145	6.569	26	2182
Born out of the Country	.086	7.875	13	1093
Second Language Spoken at Home	.276	31.994	13	1092
Mother Born Abroad	.043	3.729	13	1089
Father Born Abroad	.034	2.961	13	1089
Mother Born Abroad * Father Born Abroad	.033	2.868	13	1089
Mother's Education	.135	2.327	65	5445
Father's Education	.108	1.831	65	5405
GPA	.088	2.006	39	2595
Major: Business, Economics or Hospitality	.042	3.682	13	1093
Major: Humanities, Communication, Journalism, or Foreign Languages	.061	5.450	13	1093
Major: Education	.031	2.720	13	1093
Major: Engineering, Aviation, IT, or Mathematics	.052	4.570	13	1093
Major: Health, Human, or Medical Sciences	.031	2.656	13	1093
How Often International News Watched on TV or Listened to on Radio	.345	10.928	39	3279
How Often Read International News in Newspaper, Magazine, or Online	.294	9.138	39	3279
Religion	.186	5.531	39	3273
Frequency of Attendance at Religious Services	.112	3.246	39	3279
Political Beliefs	.341	7.839	52	4368
TV Stations Watched for International News: Australia	.297	5.746	39	2043
TV Stations Watched for International News: U.S.	.302	2.302	52	1464
International Major	.110	10.411	13	1093
Courses with Primarily International Content	.158	7.195	26	2186
Courses with Some International Content	.162	7.387	26	2184
Participation in Group Projects with International Students	.067	6.028	13	1093
Number of International Friends	.367	11.693	39	3276
Dated Someone from Another Country	.122	11.680	13	1093
Number of International Events Attended in the Past Year	.218	6.596	39	3279
Number of International Lecturers or Teaching Assistants	.135	2.926	52	4360
Study Abroad	.155	15.327	13	1086
Other Travel Abroad	.067	6.054	13	1089
Travel to a Developing Country (including only those who had studied or travelled abroad)	.082	5.037	13	737
Including only those who had travelled to a developing country:				
Purpose of Travel to Developing Country: Lived with Own Family	.189	4.967	13	277
Purpose of Travel to Developing Country: Tourism or Military	.132	3.232	13	277
Including only those who had travelled abroad:				
Other Travel Abroad: Ages 18 and Up	.074	4.338	13	707
Other Travel Abroad: Number of Trips	.099	1.858	39	2121
Purpose of Other Travel Abroad	.208	6.299	26	1414
Duration of Other Travel Abroad	.196	2.795	52	2828

Reporting MANOVA: Four examples (not necessarily definitive)

Univariate Effects – Background Variables

Country. Country was entered into a MANOVA with the DVs. Significant univariate effects were found on two scales and three subscales such that American students scored significantly higher on all five (see Table 25). Question-level examinations of differences were performed for several scales using MANOVAs. On the scale of IB – Academic Involvement, *s*ignificant differences were found on both questions. On the scale of IA&P – Cultural and National Self-Awareness, significant differences were only found for question 17: "It upsets me when migrants or international visitors criticise my country." On the scale of IA&P – Cultural Pluralism, significant differences were only found for question 5: "I prefer to work with students from my own country on groups projects – it makes things easier."

Year at university. Year at university was entered into a MANOVA with the DVs. Significant univariate effects were found for year at university on two scales and three subscales such that final year students scored significantly higher on all five (see Table 26).

Table 25 Significant Univariate Effects for Country (at p<.001 level)

Dependent Variable	df	df error	F	Country	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Foreign Language Proficiency	1	1105	42.581	Australia	18.467	16.115	20.819
				U.S.	26.305	23.116	29.495
Knowledge of a Specific Region or Country	1	1105	18.065	Australia	4.897	3.931	5.862
				U.S.	6.992	5.683	8.301
IA&P - Cultural Pluralism	1	1105	12.899	Australia	15.457	15.120	15.795
				U.S.	16.077	15.619	16.535
IA&P – Cultural and National Self-Awareness	1	1105	13.156	Australia	5.637	5.415	5.859
				U.S.	6.049	5.748	6.350
IB – Academic Involvement	1	1105	100.087	Australia	5.372	5.143	5.602
				U.S.	6.546	6.235	6.858

Table 26. Significant Univariate Effects for Year at University (at p<.001 level)

Dependent Variable	df	df error	F	Year at University	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Knowledge of a Specific Region or Country	1	1105	21.704	First year	4.655	3.614	5.696
				Final year	6.860	5.696	8.023
International Knowledge	1	1105	47.323	First year	.475	.452	.498
				Final year	.548	.522	.573
CC Skills – Intercultural Communication and Teamwork	1	1105	13.555	First year	21.761	21.318	22.204
				Final year	22.502	22.007	22.997
IB – Academic Involvement	1	1105	17.158	First year	5.571	5.314	5.828
				Final year	6.055	5.767	6.342
IB – Political Involvement	1	1105	29.331	First year	13.319	12.945	13.692
				Final year	14.238	13.820	14.655

Reporting MANOVA: Four examples (not necessarily definitive)

Interaction between country and year at university. Country and year at university were entered into a MANOVA. One significant interaction was found on the scale of Knowledge of a Specific Region or Country ($F(1,1103) = 13.948$, $p<.001$). The file was split by country to examine the interaction. It was found that the improvement for final year students on the scale of Knowledge of a Specific Region or Country held true only for American students. The file was then split by year at university and a MANOVA was performed to investigate the effects for country. It was found that final year American students performed significantly better than final year Australian students on the scale of Knowledge of a Specific Region or Country.

Table 27. Significant Univariate Effects for University

Dependent Variable	*df*	*df* error	*F*	University	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Foreign Language Proficiency	2	1104	21.665	GU	18.467	16.115	20.820
				KSU	25.445	20.887	30.003
				UCBS	27.131	22.665	31.596
Knowledge of a Specific Region or Country	2	1104	9.534	GU	4.897	3.931	5.862
				KSU	7.398	5.527	9.269
				UCBS	6.603	4.770	8.436
International Knowledge	2	1104	11.546	GU	.515	.494	.537
				KSU	.533	.491	.575
				UCBS	.455	.414	.496
IA&P - Cultural and National Self-Awareness	2	1104	8.243	GU	5.637	5.416	5.859
				KSU	5.880	5.450	6.309
				UCBS	6.211	5.790	6.632
CC Skills - Intercultural Communication and Teamwork	2	1104	8.031	GU	21.849	21.440	22.259
				KSU	22.932	22.138	23.726
				UCBS	22.151	21.373	22.929
IB – Academic Involvement	2	1104	50.376	GU	5.372	5.143	5.602
				KSU	6.466	6.021	6.911
				UCBS	6.623	6.187	7.059

University. University was entered into a MANOVA with the DVs. Significant univariate effects were found on three scales and three subscales (see Table 27). Pairwise comparisons revealed that for the scales of Foreign Language Proficiency and IB – Academic Involvement, GU students scored significantly lower than students from both American universities. Further MANOVAs confirmed that the significant differences in IB – Academic Involvement held true for both questions. On the scales of

Knowledge of a Specific Region or Country and CC Skills – Intercultural Communication and Teamwork, GU students scored significantly lower than students from KSU. Question-level comparisons for CC Skills – Intercultural Communication and Teamwork showed that KSU students scored significantly higher than GU students on questions 1 ("I have worked successfully with international students on group projects.") and 4 ("Sometimes international students have different communication styles, but we still manage to communicate well.") and higher than UCBS students on question 1 as well. On the scale of International Knowledge, students from UCBS scored significantly lower than students from the other two

universities. On the scale of IA&P – Cultural and National Self-Awareness, GU students scored significantly lower than UCBS students. Question-level analysis showed that significant differences on this scale were only found on question 17 (It upsets me when migrants or international visitors criticise my country.)

Interaction between university and year at university. One significant interaction was found between university and year at university on the scale of Knowledge of a Specific Region or Country ($F(2,1101) = 6.784$, $p<.001$). To examine the interaction, the file was split by university and a MANOVA was run for year at university. Because GU was the only university in Australia, these results will be the same as for country and will not be repeated here. The only significant finding was that final year students from UCBS scored significantly higher than first year students on the scale of Knowledge of a Specific Region or Country.

Total years at university he t number of years at university was entered into a MANOVA with the DVs. Significant univariate effects were found for two scales and six subscales (see Table 28). Pairwise comparisons revealed that for Knowledge of a Specific Region or Country, students with one year or less of university scored significantly lower than those with more than three of university. On the scales of International Knowledge and IB – Political Involvement, students with one year or less of university scored significantly lower than all the other groups. On the subscales of IA&P – Cultural Pluralism, CC Skills – Intercultural Communication and Teamwork, IB – Academic Involvement, and IB – Intercultural Curiosity and Involvement students with one year or less of university scored significantly lower than those students with four or more years of university. Finally, on the subscale of IA&P – Cultural and National Self-Awareness, students with greater than four years of university scored significantly higher than those with one year or less or one to three years of university.

Age. Age was entered into a MANOVA with the DVs. Significant univariate effects were found on two scales and four subscales (see Table 29). Pairwise comparisons showed that for the scale of Knowledge of a Specific Region or Country, 16-18 year olds had significantly lower scores than both of the other age groups. On the scale of International Knowledge, all three age groups were significantly different from one another. On the subscales of IA&P – Cultural Pluralism and IB – Political Involvement, students aged 23 and over were significantly different from both of the other age groups. On the subscales of CC Skills – Intercultural Communication and Teamwork and IB – Intercultural Curiosity and Involvement, students aged 23 and over were significantly different than those between the ages of 16 and 18.

Reporting MANOVA: Four examples (not necessarily definitive)

Table 28Significant Univariate Effects for Total Years at University

Dependent Variable	df	df error	F	Total Years at University	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Knowledge of a Specific Region or Country	3	1103	18.071	1 or less	4.046	2.907	5.185
				>1 and < or = 3	5.885	4.123	7.647
				>3 and < or = 4	6.202	4.319	8.085
				>4	8.605	6.868	10.342
International Knowledge	3	1103	26.800	1 or less	.459	.434	.484
				>1 and < or = 3	.528	.489	.567
				>3 and < or = 4	.538	.497	.580
				>4	.573	.535	.612
IA&P – Cultural Pluralism	3	1103	5.725	1 or less	15.406	15.002	15.810
				>1 and < or = 3	15.502	14.877	16.127
				>3 and < or = 4	15.913	15.245	16.580
				>4	16.270	15.654	16.886
IA&P – Cultural and National Self-Awareness	3	1103	5.721	1 or less	5.708	5.442	5.974
				>1 and < or = 3	5.608	5.197	6.019
				>3 and < or = 4	5.656	5.217	6.095
				>4	6.233	5.827	6.638
CC Skills – Intercultural Communication and Teamwork	3	1103	5.859	1 or less	21.712	21.221	22.203
				>1 and < or = 3	22.081	21.323	22.840
				>3 and < or = 4	22.268	21.457	23.079
				>4	22.828	22.080	23.576
IB – Academic Involvement	3	1103	8.052	1 or less	5.528	5.244	5.812
				>1 and < or = 3	5.813	5.373	6.253
				>3 and < or = 4	5.863	5.393	6.334
				>4	6.293	5.859	6.727
IB – Intercultural Curiosity and Involvement	3	1103	5.233	1 or less	25.146	24.519	25.773
				>1 and < or = 3	25.967	24.997	26.936
				>3 and < or = 4	26.005	24.969	27.042
				>4	26.377	25.421	27.333
IB – Political Involvement	3	1103	18.919	1 or less	13.114	12.705	13.523
				>1 and < or = 3	13.876	13.242	14.509
				>3 and < or = 4	14.022	13.345	14.699
				>4	14.758	14.134	15.383

Gender. Gender was entered into a MANOVA with the DVs. Significant univariate effects were found for two scales and four subscales (see Table 30) such that males scored significantly higher than females on the scales of Knowledge of a Specific Region or Country and International Knowledge and females scored significantly higher than males on the four affective subscales.

Reporting MANOVA: Four examples (not necessarily definitive)

Table 29. Significant Univariate Effects for Age (at p<.001 level)

Dependent Variable	*df*	*df* error	*F*	Age	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Knowledge of a Specific Region or Country	2	1104	16.540	16-18 yrs	3.827	2.471	5.183
				19-22 yrs	5.881	4.529	7.233
				23+ yrs	7.083	5.777	8.389
International Knowledge	2	1104	60.226	16-18 yrs	.444	.415	.473
				19-22 yrs	.495	.466	.524
				23+ yrs	.578	.550	.606
IA&P – Cultural Pluralism	2	1104	12.895	16-18 yrs	15.276	14.801	15.751
				19-22 yrs	15.476	15.003	15.950
				23+ yrs	16.233	15.775	16.690
CC Skills – Intercultural Communication and Teamwork	2	1104	9.971	16-18 yrs	21.646	21.068	22.224
				19-22 yrs	21.898	21.321	22.474
				23+ yrs	22.682	22.125	23.239
IB – Intercultural Curiosity and Involvement	2	1104	9.554	16-18 yrs	24.997	24.259	25.736
				19-22 yrs	25.643	24.906	26.379
				23+ yrs	26.354	25.643	27.065
IB – Political Involvement	2	1104	21.297	16-18 yrs	13.103	12.617	13.589
				19-22 yrs	13.604	13.119	14.088
				23+ yrs	14.421	13.953	14.889

Table 30.Significant Univariate Effects for Gender (at p<.001 level)

Dependent Variable	*df*	*df* error	*F*	Gender	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Knowledge of a Specific Region or Country	1	1105	15.510	Male	7.042	5.630	8.454
				Female	5.022	4.090	5.954
International Knowledge	1	1105	53.407	Male	.565	.534	.596
				Female	.482	.462	.503
IA&P – Global Interdependence and Cooperation	1	1105	14.324	Male	32.223	31.250	33.196
				Female	33.560	32.918	34.202
IA&P – Cultural Pluralism	1	1105	26.617	Male	15.036	14.545	15.526
				Female	15.955	15.631	16.278
IB – Intercultural Curiosity and Involvement	1	1105	21.324	Male	24.792	24.029	25.554
				Female	26.070	25.567	26.573
IB – Charitable Involvement	1	1105	24.706	Male	5.491	5.169	5.813
				Female	6.073	5.860	6.285

Reporting MANOVA: Four examples (not necessarily definitive)

Table 31. Significant Univariate Effects for Race/Ethnic Group (at p<.001 level)

Dependent Variable	df	df error	F	Race/Ethnic Group	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Foreign Language Proficiency	2	1102	46.943	White[a]	18.723	16.658	20.788
				Black[b]	24.677	16.844	32.511
				Other[c]	34.470	29.451	39.490
Knowledge of a Specific Region or Country	2	1102	13.589	White[a]	5.080	4.217	5.942
				Black[b]	6.210	2.940	9.480
				Other[c]	8.636	6.540	10.731
International Knowledge	2	1102	6.847	White[a]	.517	.497	.536
				Black[b]	.453	.379	.527
				Other[c]	.475	.427	.522
IA&P – Cultural Pluralism	2	1102	8.884	White[a]	15.511	15.209	15.813
				Black[b]	16.758	15.612	17.904
				Other[c]	16.166	15.431	16.900
CC Skills – Intercultural Communication and Teamwork	2	1102	10.604	White[a]	21.864	21.498	22.231
				Black[b]	23.274	21.885	24.664
				Other[c]	22.907	22.017	23.798
IB – Academic Involvement	2	1102	7.502	White[a]	5.684	5.470	5.897
				Black[b]	6.565	5.754	7.375
				Other[c]	6.033	5.514	6.552

[a]White, European American/Australian, Non-Hispanic [b]Aboriginal, Torres Strait Islander, Black, or African-American (all or part) [c]Other or Multiracial (White + Other)

Race/ethnic group. Race/Ethnic Group was entered into a MANOVA with the DVs. Significant univariate effects were found on three scales and three subscales (see Table 31). Pairwise comparisons revealed that the differences on the scale of Foreign Language Proficiency were due to others scoring significantly higher than both other groups. On the scales of Knowledge of a Specific Region or Country and CC Skills – Intercultural Communication and Teamwork, others scored significantly higher than Whites. On the scales of IA&P - Cultural Pluralism and IB – Academic Involvement, Blacks scored significantly higher than Whites. On the scale of International Knowledge, none of the pairwise comparisons were significant at the *p*<.001 level.

Table 32. Significant Univariate Effects for Born out of the Country (at p<.001 level)

Dependent Variable	df	df error	F	Born out of the Country	Means	99.9% Confidence Interval	
						Lower Bound	Upper Bound
Foreign Language Proficiency	1	1105	66.062	Yes	34.168	28.591	39.745
				No	19.581	17.592	21.571
Knowledge of a Specific Region or Country	1	1105	24.422	Yes	8.888	6.582	11.194
				No	5.221	4.398	6.044

Born out of the country. Born out of the country was entered into the MANOVA with the DVs. Significant univariate effects were found on two scales such that those who were born abroad had significantly higher scores (see Table 32).