

Understanding undergraduate attributes: A survey of student self-reported interest in and acceptance of diversity at the start of academic year 2014

Graduate Profile Outcomes Research Project Technical Report #4

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I. ABSTRACT

In addition to graduating students with significant disciplinary knowledge and skill, universities often seek to inculcate a range of generic cognitive and communicative skills and valued attitudes and dispositions. In New Zealand and Australia, these ambitions are referred to as graduate attributes.

This report examines student self-reported endorsement of one attribute drawn from The University of Auckland's Graduate Profile and contrasts mean scores according to degree programme and progress. Specifically, students in the Faculty of Education were surveyed in the first half of the 2014 academic year as to their self-rated *respect for the values of other individuals and groups, and appreciation of human and cultural diversity*.

A 30-item survey was completed by 342 students, and factor analyses resulted in a 7-item, 1-factor (unidimensional) model with adequate fit. There were no statistically significant differences in the mean scores of first-year undergraduates, final-year undergraduates, and Graduate Diploma students (who had already completed a bachelor's degree in a non-education discipline).

II. GRADUATE PROFILE ATTRIBUTES

In 2012, a project was funded by the Vice Chancellor Strategic Development Fund to evaluate student outcomes in light of The University of Auckland's Graduate Profile (GP; Appendix A). The GP lists 18 multi-faceted "attributes" distributed across three domains: (1) Specialist knowledge, (2) General intellectual skills and capacities, and (3) Personal qualities. In late 2013, interviews were conducted with members of the University's Senior Leadership Team for guidance as to which attributes should be the focus of the first study. Three attributes were selected—one of which is the focus of this report:

Respect for the values of other individuals and groups, and an appreciation of human and cultural diversity. (GP attribute 3.5)

III. SURVEY DEVELOPMENT

Any scale adopted to measure GP attributes should provide sufficient psychometric evidence to allow for accurate, useful inferences about students' level of the attributes and how it differs or changes over time. A review of the literature for relevant scales with psychometric analyses yielded three instruments for consideration:

- College Student Experience Questionnaire (CSEQ)
- Miville-Guzman Universality-Diversity Scale (MGUDS)
- Scale of Ethnocultural Empathy (SEE)

The CSEQ (Kuh et al., 2003) includes an 8-item subscale called Openness to Diversity/Challenge, which aims to measure "orientation toward enjoyment from being intellectually challenged by different ideas, values, and perspectives as well as an

appreciation of racial, cultural, and value diversity.” The breadth of this description aligns well with GP attribute 3.5, which concerns appreciation of the diverse values and cultures of individuals and groups. The CSEQ items have a strong academic focus (i.e., referring to diverse and challenging experiences in students’ courses). Five items were adapted from the CSEQ for inclusion on the GP survey.

The MGUDS (Fuertes et al., 2000) is a 45-item scale that aims to measure behavioral, affective, and cognitive components of *universal-diverse orientation*, described as “an awareness and potential acceptance of both similarities and differences in others.” The MGUDS items represent a more ethnic/cultural/demographic focus on diversity, which does not fully capture attribute 3.5, and a majority of the items were inappropriate for the current evaluation. Five items were modified and included on the GP survey.

The SEE (Wang et al., 2003) attempts to measure ethnocultural empathy, or “empathy toward people of racial and ethnic backgrounds different from one’s own” using 31 items. Like the MGUDS, the SEE is focused on racial and ethnic diversity, whereas GP attribute 3.5 takes a broader view on diversity to include diversity of values and viewpoints. Most of the SEE items were considered inappropriate in the current evaluation, and just one item was adapted for the GP survey.

Although most of the items from these three published scales were not suited for the GP survey, they did contribute content to the creation of several new items. Words and concepts from the scales (e.g., personal experiences, language, behaviors and cognition) were recombined and incorporated into new items which, unlike many of the source items, emphasized diversity of perspectives and experiences. Two items (14 and 27) were specifically written to align with attribute 3.5. Appendix B shows the 30 items that appeared on the GP survey and, where applicable, their sources and modifications from published scales.

A 6-point positively packed response scale was used. Research has demonstrated that this type of rating increases variance and precision in statistical analysis and helps reduce the effect of a positive response style (Brown, 2004). The response options and score values were: (1) *Strongly disagree*, (2) *Mostly disagree*, (3) *Slightly agree*, (4) *Moderately agree*, (5) *Mostly agree*, (6) *Strongly agree*.

In addition to the 30 items targeting GP attribute 3.5, the survey also presented 20 items to measure other GP attributes (2.2 and 3.1), which have been reported in Project Technical Report #2. At the end of the survey, participants were asked to provide their university ID number and background information including gender, ethnicity, date of birth, academic programme/specialisation, and programme year. Academic programme/specialisation and programme year were also obtained for most students from the Education Student Centre. In instances of conflicting information, official data from the Student Centre was substituted for student-provided data whenever possible.

IV. DATA COLLECTION & PREPARATION

Ethics approval for the evaluation was obtained from the University of Auckland Human Participants Ethics Committee (#010776). An online survey was designed and hosted through the Faculty of Education's LimeSurvey system beginning in January 2014.

The target population for the GP survey was first- and final-year students in all Faculty of Education bachelor's degree programmes, and students in the one-year Graduate Diploma in Teaching programme. These cohorts were selected to enable comparison of student performance at different stages of progression toward a bachelor's degree (i.e., through cross-sectional comparisons of new students, graduating students, and students who have already obtained a bachelor's degree). To encourage participation, every student who completed the survey was entered into a drawing for a 1-in-50 chance of winning one of several \$50 gift cards to Countdown, Event Cinemas, New World, and The Warehouse. Funding for the gift card incentives was obtained through the Performance-Based Research Fund.

A link to the GP survey was posted on the Faculty's Moodle website in late January. Also in late January, the Dean of Education shared the survey link with students in the Graduate Diploma programme. Initially, distribution of the survey link relied heavily on cooperation from programme directors within the Faculty. Of the 93 surveys that were completed between January and April 2014, most were from students in programmes whose directors had offered assistance in distributing the link.

To better reach *all* students in the target population, a survey invitation was sent out via mass email on 2 May to everyone in the target population who had not already completed the survey. An additional 249 students completed the survey between 2 May and 31 May, when the survey closed. A total of 354 online surveys were submitted. Six surveys had duplicate ID numbers with six previous surveys. For each of these cases, the first (earliest) submission was retained, and the second was deleted. Another six surveys were completed by students not enrolled in a Faculty of Education academic programme. These six cases were also deleted, leaving a total of 342. Of the 342 students who completed the survey, 101 (30%) participated on 2 May, the day the email was sent, and another 97 (28%) participated over the next four days, indicating the efficacy of the official UoA communication system in stimulating participant interest and cooperation.

Figure 1 shows when the 342 participants completed the GP survey. Participation in late January/early February can be primarily attributed to the Dean sharing the survey link with GradDip students. Participation in March can be primarily attributed to assistance from five programme directors who shared the link with their students. The large increase in participation in early May is linked to the mass email invitation. Continued participation in mid-May is likely attributable to the small number of programme directors who emailed their students with a reminder about the survey.

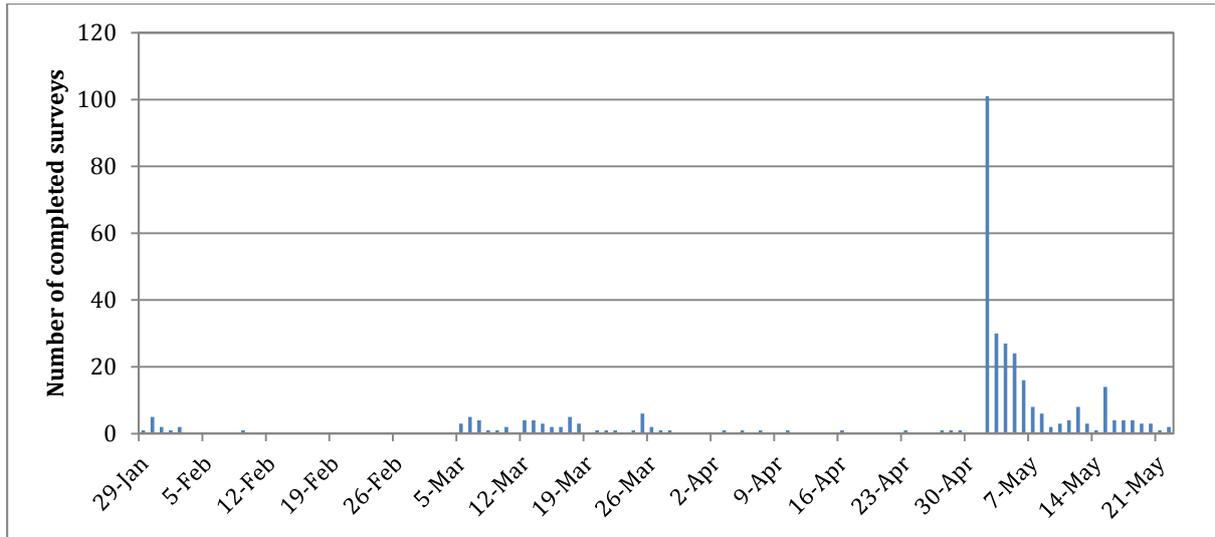


Figure 1. Survey completion between 29 January and 22 May, $n=342$.

We estimated that participants would require 10-15 minutes to complete the entire 50-item survey, taking into account the time needed to read the Participant Information Sheet and Consent Form, and to complete the background questions. The median completion time was 6 minutes, 14 seconds. Fifty percent of participants completed the survey in 4-7 minutes. Seventy-five percent completed the survey in 3-9 minutes. The longest completion time was more than 4 days, and the shortest was 2 minutes, 35 seconds. Through multiple timed trials, we determined that it should take approximately 2 minutes alone to simply read through all 50 survey items. Because additional time is needed to think about and select a response to each item, and also to complete the background questionnaire, 3 minutes was set as the minimum acceptable completion time. (Note this minimum time completion standard presumes that participants did not read the PIS or CF and simply completed the survey.) Three cases with recorded completions of less than 3 minutes were excluded from the dataset, leaving 339 cases. There was no missing item data as the survey was designed in a way that required a response to every survey item in order to proceed.

V. PARTICIPANTS

Background characteristics of the survey participants are shown in Table 1. Most participants were enrolled in bachelor's degree programmes (71%) and were female (80%). The numbers of first-year, final-year, and Graduate Diploma participants were roughly equal.

Table 1. Characteristics of the Bachelor's Degree and Graduate Diploma Samples, $n=339$

		Bachelor's degree $n=241$		Graduate diploma $n=98$	
		n	%	n	%
Gender	Female	196	81.3	75	76.5
	Male	37	15.4	16	16.3
	No response	8	3.3	7	7.1

		Bachelor's degree <i>n</i>=241		Graduate diploma <i>n</i>=98		
		<i>n</i>	%	<i>n</i>	%	
Ethnicity	Asian	35	14.5	13	13.3	
	European	98	40.7	56	57.1	
	Maori	23	9.5	1	1.0	
	Middle Eastern/Latin American/African Pacific	4	1.7	2	2.0	
	Pacific	37	15.4	7	7.1	
	Other	7	2.9	4	4.1	
	More than 1 ethnicity	34	14.1	15	15.3	
	Unknown	3	1.2	0	0.0	
	Programme year	First	119	49.4		
		Final	107	44.4		
Other/unknown ^a		15	6.2			

^a Survey data from participants with other/unknown programme year were used in the factor analyses but are not included in the reported survey results (Table 4).

Figure 2 shows the sample composition by academic programme and year. Note that bachelor's degree students with other/unknown year are not included in Figure 2, so $n=324$. Most participants were enrolled in the Bachelor of Education ($n=150$, or 47%) and Graduate Diploma-Teaching ($n=98$, or 30%) programmes. Unfortunately, overall response rates and response rate by programme could not be precisely calculated as the listing of students in the target population received from the Student Centre was incomplete.

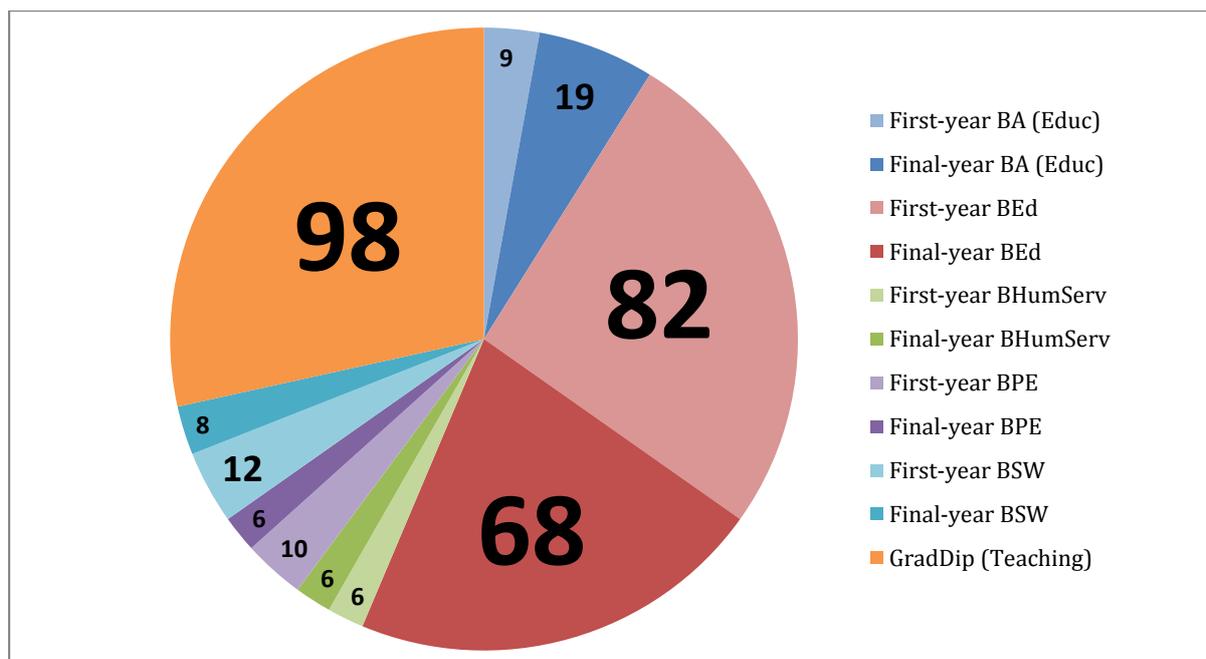


Figure 2. Overall sample composition by academic programme and year, $n=324$.

VI. DATA ANALYSIS

Exploratory and confirmatory factor analysis were performed using the GP survey data to determine the number of constructs underlying the data, how the constructs related to one another (if more than one), how each survey item related to the construct(s), and which items should be dropped to produce a better fitting model. The GP survey items were written and selected to encompass a range of interactions with and attitudes toward different ideas, individuals, and groups. Theorized potential factor structures included correlated three-factor (i.e., ideas; individuals; and groups) and two-factor (i.e., ideas or individuals and groups) models, as well as a one-factor model.

If the items form only one underlying factor (i.e., survey is unidimensional) then the survey item responses can be summed to produce a total scale score. If there is more than one factor (i.e., the survey is multidimensional), then it may be possible to produce subscale scores for the different factors. It is worth noting that while factor analysis clarifies the relationship among underlying constructs and the items used to measure them, it does not automatically indicate *what* those constructs are. Judgement processes concerning the content of items retained within factors are used to ascertain the meaning of a factor (Kline, 1994).

VII. RESULTS

EXPLORATORY FACTOR ANALYSIS (EFA)

EFA was conducted in SPSS using data from a sample of 339 students. Cases were identified as multivariate outliers by Mahalanobis distances greater than 50.89 ($p < .01$); 37 multivariate outlier cases (10.9% of the sample) were removed from the dataset. EFA was then carried out on the remaining 302 cases using maximum likelihood

estimation with an oblique rotation, allowing for multiple factors to be correlated. Various methods were used to determine the number of factors underlying the 30 items. Methods suggested retaining anywhere from one factor (i.e., Scree plot) to four factors (Kaiser criterion). Based on EFA results and theorized structures, we went on to test various one-, two-, three-, and four-factor solutions using CFA.

CONFIRMATORY FACTOR ANALYSIS (CFA)

CFA was conducted in MPlus using the same dataset as was used in EFA ($n=302$). Maximum likelihood estimation was used because the response scale had more than 5 options. A variety of unidimensional and correlated-factor models were tested. Acceptable fit was imputed if the ratio of χ^2 to df was statistically not significant, gamma hat $>.90$, and SRMR $<.06$ (Fan & Sivo, 2007; Marsh, Hau, & Wen, 2004); less reliance was put on CFI and RMSEA since both of these fit indices are sensitive to model complexity. After trimming items to improve fit, the best fitting unidimensional model contained 7 items ($\chi^2/df=1.25$, RMSEA=.03, CFI=.997, SRMR=.02). Additionally, the estimate of internal reliability was $\alpha=.92$ for the 7-item scale. This model was selected over several other correlated-factor models we examined, which had extremely high factor intercorrelations ($r>.90$) indicating that there was no clear differentiation between factors. Figure 3 shows the standardised pattern coefficients for the 7-item unidimensional model.

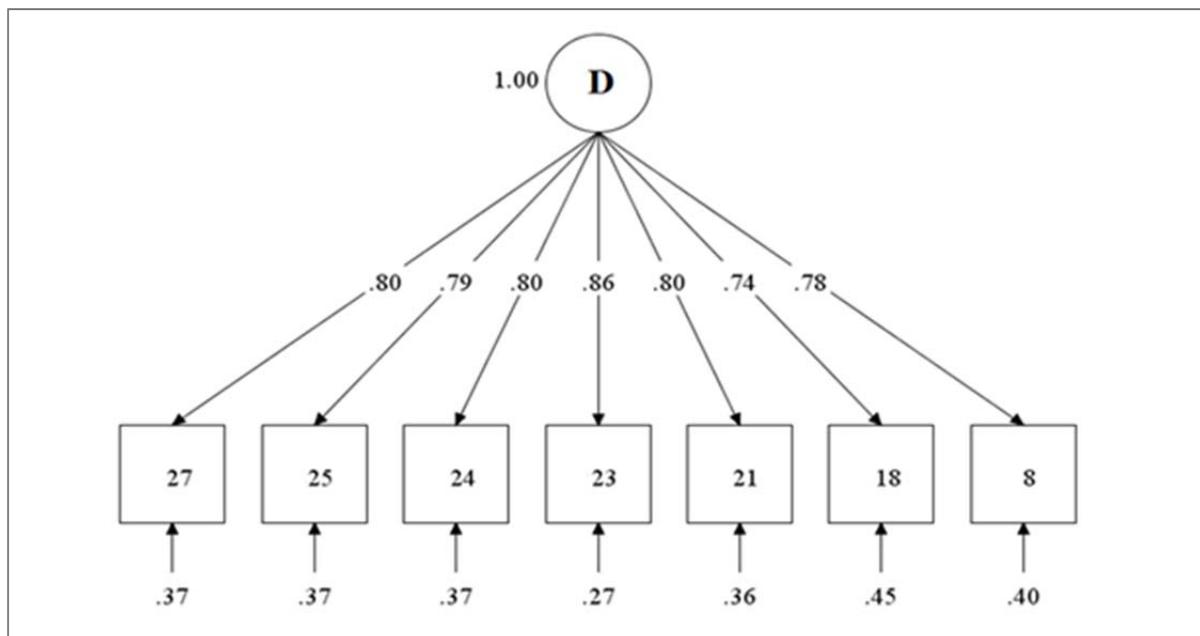


Figure 3. Standardised pattern coefficients and error variances of the 7-item, 1-factor model.

The final set of items is presented in Table 2. We tentatively refer to the latent factor as “interest in and enjoyment of diversity,” as the items reflect an interest in, enjoyment of, and appreciation for experiences involving diverse groups, individuals, and ideas. Item 27, “I appreciate human and cultural diversity,” was developed directly from attribute 3.5 as stated in the GP. Although none of the retained items refer to values, which are

highlighted in the attribute, it is possible that the related concepts of perspectives, ideas, and beliefs are adequately synonymous.

Table 2. *Interest in and Enjoyment of Diversity Scale Items*

Item
8. I like to consider how other people's perspectives might differ from mine.
18. I enjoy being introduced to new ideas and ways of thinking.
21. I enjoy conversations with people about their backgrounds.
23. I am interested in the diversity of people's beliefs.
24. I attempt to learn about people's upbringing and life experiences.
25. I would like to experience the customs and practices of other cultures.
27. I appreciate human and cultural diversity.

Because a 1-6 item response scale was used, total scores on the Openness to Diversity scale can range from 7-42. However, average scores are used to permit interpretation against the verbal anchors of each response option.

FACTOR MEAN SCORE ANALYSIS

Table 3 presents survey results for the 324 participants by academic programme and year. Mean scores were lowest for the final-year undergraduates and highest for Graduate Diploma students. All group means were at or above 5, indicating that students generally "mostly agreed" with items on the diversity scale.

Table 3. *Survey Results by Group*

Group	N	M	SD
Undergraduate, first-year	119	5.17	0.74
Undergraduate, final-year	107	5.00	0.81
Total undergraduate	226	5.09	0.78
Graduate diploma (post-degree)	98	5.23	0.75

The first-to-final year undergraduate mean difference was not statistically significant ($p=.10$). Furthermore, there were no statistically significant differences found among the three student groups— $F(2,321)=2.53$, $p=.08$. The mean score differences were trivial to small at best, further supporting the conclusion that results by group should be treated as equivalent.

VIII. DISCUSSION

One positive result from the survey is that students generally gave high self-ratings to the diversity scale items. The fact that there were no statistically significant differences among first- and final-year undergraduates and graduate students is perplexing. It is possible that the University is not effective in fostering this particular attribute. Alternatively, the University may foster the attribute; however, since the initial

endorsement of this construct is so high, that it may create a ceiling effect in which it is not possible to detect change or growth over time. Given the strong priority given within the Faculty of Education to social equity, it may be that participants are either influenced by social desirability or else choose to enter this faculty because of their high interest in or appreciation of diversity. This reinforces the conclusions of Technical Report #2 which pointed to the need for cross-faculty comparisons in order to establish whether some attributes are a function of disciplinary priority or individual preference at initial entry or selection.

Feedback should be sought from individuals familiar with the GP as to whether the retained survey items adequately represent attribute 3.5. It is important that the survey items and results match the expectations of University officials and support the intended uses of the data. The current survey items are few in number, making scale administration easier, and still broadly represent attitudes to diversity with items reflecting interest in, enjoyment of, and appreciation for diverse groups, individuals, and ideas. It would be possible to develop a more complex, multi-faceted set of items to measure the attribute, but this may have limited or no practical utility to the University.

IX. ADVICE FOR FUTURE RESEARCH

This study also has reinforced issues reported in Project Advisory Report #1 concerning difficulties in conducting surveys within the Faculty of Education. Low response rates not only limit the inferences that can be made about results due to lack of representation within programmes, but also limit the ability to perform some types of “large sample” analyses (e.g., multi-group comparisons and measurement invariance). The following tips on increasing response rates and other evaluation design points are offered:

- Web-based surveys are very efficient in terms of the human and material resources needed for administration. It is best to create a situation where students are just one click away from the survey, such as sending the link via email or posting on a frequently accessed website.
- An announcement or invitation from a recognised authority figure increases students’ perceived legitimacy of the survey. Increased involvement from the Dean and programme directors had a positive impact on response rates. Likewise, alerting students through the official UoA communication system. These channels should be maintained.
- Incentivising student participation is also beneficial to response rates. In the first round of data collection we offered survey completers a 1-in-50 chance of winning a \$50 prize. In the end-of-year, follow-up data collection, we offered 1-in-10 and 1-in-20 chances of winning a \$25 prize. Of course, a shorter survey will require less incentivisation to attract participants, so there is also a monetary benefit to creating a short survey. Additional funding may be necessary to continue administering the survey with acceptable response rates.

- If possible, online surveys should be delivered through software (e.g., Qualtrics) that can record time spent on each page of the survey to screen out rapid, and thus invalid, responders. The speed at which some participants completed the entire survey is worrisome. Even the 3-minute cutoff we selected would not have allowed students enough time to completely read through the opening screens containing the Participant Information Sheet and Consent Form. To help ensure the quality of survey results, it is important to verify that participants have spent adequate time reading, considering, and selecting responses to the items.
- While the repeated measure design will allow determination of change, it should be noted that for many students the “pre” data were collected *after* the mid-point of the first semester. Ideally, the “pre” measure should occur much earlier in the first semester, preferably even during Orientation before classes begin.

References

- Brown, G. T. L. (2004). Measuring attitude with positively packed self-report ratings: Comparison of agreement and frequency scales. *Psychological Reports, 94*, 1015-1024.
- Fan, X., & Sivo, S. A. (2007). Sensitivity of fit indices to model misspecification and model types. *Multivariate Behavioral Research, 42*(3), 509-529.
- Fueres, J. N., Miville, M. L., Mohr, J. J., Sedlacek, W. E., & Gretchen, D. (2000). Factor structure and short form of the Miville-Guzman Universality-Diversity Scale. *Measurement and Evaluation in Counseling and Development, 33*, 157-169.
- Grays, M., & Brown, G. T. L. (2014, May). *Structural Challenges in Evaluating Graduate Profile Outcomes at The University of Auckland* (Tech. Rep. #1). Graduate Profile Outcomes Research Project, Faculty of Education, The University of Auckland.
- Grays, M., & Brown, G. T. L. (2014, November). *Understanding undergraduate attributes: A survey of student self-reported intellectual openness and love of learning at the start of academic year 2014*. (Tech. Rep. #2). Graduate Profile Outcomes Research Project, Faculty of Education, The University of Auckland.
- Kline, P. (1994). *An easy guide to factor analysis*. London: Routledge.
- Kuh, G.D., R.M. Gonyea, K.E. Kish, R. Muthiah, and A. Thomas (2003). *College Student Experiences Questionnaire: Norms for the 4th Edition*. Bloomington, IN: Indiana University Center for Postsecondary Research and Planning.
- Lord, K. R., & Putrevu, S. (2006). Exploring the dimensionality of the Need for Cognition Scale. *Psychology & Marketing, 23*(1), 22-34.
- Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling, 11*(3), 320-341.

APPENDIX A

The University of Auckland Graduate Profile

The Graduate Profile is a description of the personal qualities, skills and attributes a student is expected to obtain by the end of an undergraduate degree programme at the University.

A student who has completed an undergraduate degree at The University of Auckland will have acquired an education at an advanced level, including both specialist knowledge and general intellectual and life skills that equip them for employment and citizenship and lay the foundations for a lifetime of continuous learning and personal development.

The University of Auckland expects its graduates to have the following attributes:

I Specialist knowledge

1. A mastery of a body of knowledge, including an understanding of broad conceptual and theoretical elements, in the major fields of study.
2. An understanding and appreciation of current issues and debates in the major fields of knowledge studied.
3. An understanding and appreciation of the philosophical bases, methodologies and characteristics of scholarship, research and creative work.

II General intellectual skills and capacities

1. A capacity for critical, conceptual and reflective thinking.
2. An intellectual openness and curiosity.
3. A capacity for creativity and originality.
4. Intellectual integrity, respect for truth and for the ethics of research and scholarly activity.
5. An ability to recognise when information is needed and a capacity to locate, evaluate and use this information effectively.
6. An awareness of international and global dimensions of intellectual, political and economic activities, and distinctive qualities of Aotearoa/New Zealand.
7. An ability to access, identify, organise and communicate knowledge effectively in both written and spoken English and/or Māori.
8. An ability to undertake numerical calculations and understand quantitative information.
9. An ability to make appropriate use of advanced information and communication technologies.

III Personal qualities

1. A love and enjoyment of ideas, discovery and learning.
2. An ability to work independently and in collaboration with others.
3. Self-discipline and an ability to plan and achieve personal and professional goals.
4. An ability to lead in the community, and a willingness to engage in constructive public discourse and to accept social and civic responsibilities.
5. Respect for the values of other individuals and groups, and an appreciation of human and cultural diversity.
6. Personal and professional integrity and an awareness of the requirements of ethical behaviour.

APPENDIX B
Survey items, sources and modifications

Survey item / Original item and source (if modified)

1. I look for ways to increase my awareness of issues related to diversity.
2. I make an effort to understand other people's values.
3. I like participating in activities that present different viewpoints on issues.
4. I like getting to know people of a race or nationality other than my own.
I would like to join an organization that emphasizes getting to know people from different countries. [MGUDS]
5. I try to talk to people who come from different backgrounds than me.
Contact with individuals whose background (e.g., race, national origin, sexual orientation) is different from my own is an essential part of my college education. [CSEQ]
6. I read about customs and cultural practices of other groups.
7. I enjoy going places where people speak a different language.
I feel irritated when people of different racial or ethnic backgrounds speak their language around me. [SEE]
8. I like to consider how other people's perspectives might differ from mine.
9. I watch films that deal with matters of race.
10. I seek opportunities to meet people who will challenge my beliefs.
I enjoy taking courses that challenge my beliefs and values. [CSEQ]
11. I am interested in visiting sites that have special significance in another culture.
12. I enjoy interacting with people whose opinions differ from my own.
I enjoy having discussions with people whose ideas and values are different from my own. [CSEQ]
13. I like thinking about how people are shaped by their experiences.
14. I respect the values of other individuals and groups.
15. I try to do things that will broaden my perspective.
The courses I enjoy the most are those that make me think about things from a different perspective. [CSEQ]
16. I know about cultures other than my own.
17. I admire artistic works by people from countries around the world.
18. I enjoy being introduced to new ideas and ways of thinking.
The real value of a college education lies in being introduced to different values. [CSEQ]
19. I attend events in which different opinions on a topic are presented.
20. I listen to music that is in another language.
I often listen to the music of other cultures. [MGUDS]
21. I enjoy conversations with people about their backgrounds.
22. I have close friends who are of an ethnicity different than my own.
I have friends of differing ethnic origins. [MGUDS]

Survey item / Original item and source (if modified)

23. I am interested in the diversity of people's beliefs.

24. I attempt to learn about people's upbringing and life experiences.

25. I would like to experience the customs and practices of other cultures.

26. I seek out exposure to different viewpoints.

27. I appreciate human and cultural diversity.

28. I have discussions with people about their ideas.

29. I travel to other countries.

If given another chance, I would travel to different countries to study what other cultures are like. [MGUDS]

30. I want to know more about another ethnic group.

I would like to know more about the beliefs and customs of ethnic groups who live in this country. [MGUDS]
