Student Engagement in Two Countries: A Comparative Study Using National Survey of Student Engagement (NSSE) Data

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Abstract

To compare college and university student engagement in two countries with different responses to global forces, Canada and the United States (US), a series of hierarchical linear regression (HLM) models were developed to analyse data from the 2006 administration of the National Survey of Student Engagement (NSSE). Overall, students in the U.S. are more engaged, particularly in areas of active and collaborative learning and student–faculty interaction. This study identified areas of student engagement in both countries that administrators and researchers should investigate more thoroughly: Canadian and U.S. students in education and professional fields of study were more engaged generally, whereas Canadian students in the arts and humanities, and life and social sciences were less engaged than their peers. This large-scale quantitative comparative study provides insights and recommendations for future cross-national comparisons in higher education.

Keywords: Student Engagement, Comparative Higher Education, Hierarchical Linear Modelling

As the global knowledge economy becomes increasingly competitive, the role of higher education is under intense scrutiny. Nations focus on the key role of higher education in economic policy (Neave, 1988), although governments face concerns about the global expansion of higher education and escalating costs (Altbach, 1991; Teichler, 1996). While there is a focus on decreasing costs, there is also a push for increasing quality and quantity (Slaughter, 2001; Torres & Rhoades, 2006). The function of higher education in nations varies, dependent on the system's history, structure, the traditional roles and responsibilities of faculty, and the experiences, involvement, and characteristics of students. However, there is a global push for assessment of higher education, particularly for measurable outcomes of a quality student experience (Wotherspoon, 2004).

The purpose of this study was to explore differences in student engagement in the U.S. and Canada through two lenses: (1) characteristics of various discipline-based faculty practices and student behaviours in each country, and (2) effects of global forces on faculty work and interactions with students.

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Despite many similar historical episodes the US and Canada have reacted in different ways to global forces, such as the development of private higher education, the amount of competition in higher education, and the expansion of public higher education (Morrow, 2006). Thus, Canada and the US are a logical pairing for comparative research (Ogmundson, 2002). Comparative research can inform how students perform in educational systems with varying responses to global influences. Differences in student engagement across nations can be a starting point for further research into the effects of regional and national policies. Data collected from students on their experiences can be used to study how global forces and resulting national policies influence the fundamental unit of higher education: students. Working cautiously, such studies can hypothesise causal or mutually shaping relationships between faculty, institutional structures, and policies on student engagement. To explore the effects of nations' responses to global forces on faculty and students across academic disciplines, the following questions guided a study to compare student engagement in the U.S. and Canada. The questions focus on two faculty time-intensive aspects of student engagement: active and collaborative learning and student–faculty interaction.

- Are there differences in student engagement in U.S. and Canadian institutions?
- Do the effects of student characteristics, particularly field of study, vary between the U.S. and Canada?

Background and Frameworks

Some of the most dramatic effects of political and economic global forces are those that appear to be affecting faculty roles and responsibilities. The influence of corporatisation is seen in the increase of part-time faculty hires, full-time non-tenure-track faculty appointments, and graduate student assistantships to create a cheaper and more flexible workforce (Anderson, 2002; Currie, 1998b; Rhoades & Rhoades, 2005). The rising use of part-time instructors and non-tenure-track faculty is raising questions about the quality and success of undergraduate teaching (Ehrenberg & Zhang, 2005; Puplampu, 2004). While these changes have the potential to affect many aspects of faculty and student life, some of the more proximal links are between faculty work and changing global political and economic markets. Therefore, this study concentrates on the role of faculty in students' engagement.

As nations try to maximise their development of human capital through educating a larger number of students at a lower cost (Apple, 2000; Slaughter, 2001), one way to cut costs is by limiting the number of full-time faculty, hiring more contingent faculty, and increasing class size, particularly in low-cost fields of study. Faculty in research institutions are encouraged to pursue externally funded research (Slaughter & Leslie, 1997; Slaughter & Rhoades, 2004; Sporn, 1999). The increased role of commercial activities has reduced the share of faculty time and resources devoted to students and teaching (Anderson & Sugarman, 1989; Blumenthal, Epstein, & Maxwell, 1986). Such policies are leading to a devaluing of teaching and service (Fairweather, 1996; Marginson & Rhoades, 2002; Slaughter, 2001; Slaughter & Leslie, 1997).

These changes to the faculty profession are occurring despite the documented importance of student–faculty interaction on student performance and attainment (Astin, 1993; Bean, 1985;

Bean & Kuh, 1984; Feldman & Newcomb, 1969; Kuh, Schuh, Whitt, & Associates, 1991; Pascarella, 1985; Pascarella & Terenzini, 1991, 2005; Tinto, 1993). Using faculty self-reported data, Umbach (2007) found that part-time and full-time non-tenure-track faculty interact with students less frequently, both inside and outside of the classroom. Furthermore, contingent faculty require less effort and have lower expectations for their students (Umbach).

Methods

This study used a comparative quantitative design to explore similarities and differences of engagement in two countries. The comparative method is a fundamental analytic technique, but has become identified with cross-national research. A postpositivist philosophy guided this inquiry of survey data, under the assumption that observable phenomena in the world can be measured and validated through quantitative survey questionnaires (Creswell, 2003).

To account for the nested nature of students in institutions, a series of hierarchical linear regression models (HLM) were constructed to examine institutional and individual effects on student engagement in a disciplinary context. Multilevel modelling has several advantages. It allows for stable coefficients across groups of various sizes and it separates variance into individual and group components, as well as into between-group and within-group components.

HLM models are recommended to be run in three steps: a null model, a within model (consisting of student-level data), and a full model (including student- and institutional-level data) (Ethington, 1997; Raudenbush & Bryk, 2002). To measure differences between U.S. and Canadian students, the full model was run two ways. First, in addition to the student-level model, only a variable for country was included in the level-2 equation to determine the effect on the two engagement scales. To further investigate differences between U.S. and Canadian higher education, the second full model included interactions by field of study and country variables. In the level-1 model, the slopes of the field of study variables were allowed to vary. This provided information about differences in engagement by students in the U.S. and Canada in each of the field of study categories. Then a series of regression analyses were conducted, including independent and control variables to account for the possible influence of background characteristics that other studies suggest could affect student engagement and satisfaction (Astin, 1993; Pascarella & Terenzini, 1991, 2005). Since cross-level interactions were studied, group-mean centring was used rather than grand-mean centring. Group-mean centring is based on the theoretical concept that students' engagement is affected, at least in part, by the institution they attend and not solely determined by individual characteristics.

Data Sources

The data used in this study were from the spring 2006 administration of the National Survey of Student Engagement (NSSE), an annual survey of first-year and senior higher education students. The 2006 dataset includes 27 universities in Canada, and 511 U.S. colleges and universities. Of the more than one million students invited to participate in NSSE 2006, this study used data from 306,196 respondents (155,983 first-year and 150,213 senior students). Demographic data comparing students in the U.S. and Canada is available in Appendix A.

To analyse similarities and differences between U.S. and Canadian students, two sets of items were used to capture engagement of students in activities that reflect direct and indirect involvement of faculty in educational practices. The active and collaborative learning scale set represents the extent to which students are working together and actively engaged in the learning process inside and outside of the classroom. The student–faculty interaction scale covers the frequency of working with faculty members on projects and discussing coursework, grades, and career plans with faculty. This type of student-centred analysis is in contrast to most comparative research and allows for a deeper understanding of students in higher education.

Results and conclusions

As is common in educational research (Pascarella & Terenzini, 1991, 2005), there was a much greater effect for student-level results than institutional-level measures (see Tables 1–2 for first-year students; see Appendix B for results for senior students). In several cases, the overall model fit decreased with the addition of the institutional-level variables. Although in these models, the effect of country on engagement was non-trivial and was greater for senior year students. There was a negative effect for Canadian institutions on both engagement measures, for both first-year and senior students. The teaching practices aspects vary greatly between the two countries, as the large disparities in scores on both scales indicated. However, some of the low student–faculty interaction scores in Canada may be due to student-body characteristics not included in this study, such as the large proportions of commuter students in Canada.

The results of this study point to two primary conclusions. First, students in Canada and the U.S. differed in terms of the frequency with which they engage in active and collaborative learning and student–faculty interaction. It appears that the Canadian classroom experience involves less active participation by students and little individual contact with faculty. The large size of most Canadian universities and higher student–faculty ratios make collaborative learning experiences and faculty contact more challenging. However, as documented by Kuh et al. (2005), institutions with a wide variety of characteristics and resources can create highly engaged learning environments.

The findings of this study indicated that students in Canada were participating less in three of the best practices in undergraduate education: active learning, peer collaboration, and student–faculty interaction (Chickering & Gamson, 1987). Three possible explanations for low faculty engagement with students are: (1) as faculty spend more time doing research and publishing, there is less time available for students; (2) full-time non-tenure and part-time faculty are often overloaded with classes and unable to devote the time and effort towards fully engaging students (Umbach, 2007); and (3) increasing student–faculty ratios leave fewer faculty assigned to larger cohorts of students (Rae, 2005).

The second conclusion was that patterns of student engagement in Canada and the U.S. differed by field of study. Students in the practical fields, such as finance, management, and pre-law, had similar responses in both countries; the narrowest gaps occurred in the business and professional fields. Students in professional fields scored high in both countries. However, for those in business studies, the small gap was due to high-performing Canadian business students and relatively low scoring U.S. business students. In contrast, there was a marked difference between Canadian and U.S. students in arts and humanities, and life and social sciences fields.

Canadian students in those fields of study reported considerably less engagement overall compared to their U.S. peers.

Table 1
HLM Results for Student–Faculty Interaction for First-Year Students

	Student–Faculty Interaction (SFI)		
	Full	**Full with interactions**	
	B	**B**	***SE***
Institution-Level Variables			
Intercept	39.86***	44.65 ***	*3.22*
Canada	-13.04***	-14.52 ***	*0.81*
Percent First Generation		3.79	*2.35*
Percent Non-Traditional		-3.56	*1.89*
Student-Faculty Ratio		-0.23 **	*0.07*
Means of Student Variables			
Mean Gender	0.22	0.40	*2.75*
Mean Enrolment	3.91*	0.24	*1.92*
Mean Life Sciences	4.22	2.82	*4.09*
Mean Business	-8.55**	-6.90 *	*2.91*
Mean Education	-3.41	-5.59	*3.38*
Mean Engineering	-10.26*	-10.51 *	*4.47*
Mean Professional	-10.01***	-10.03 **	*2.78*
Mean Social Sciences	-1.83	-3.16	*3.82*
Mean Other Fields of Study	-6.91*	-8.19 *	*3.17*
Student-Level Variables			
Gender	-0.91***	-1.04 ***	*0.13*
Enrolment	2.89***	1.94 ***	*0.39*
Fields of Study			
Life Sciences	-0.04	0.32	*0.22*
Life Sciences * Canada		-3.61 ***	*0.55*
Business	-1.67***	-1.83 ***	*0.22*
Business * Canada		0.95	*0.56*
Education	0.93***	0.87 **	*0.25*
Education * Canada		0.38	*0.78*
Engineering	-2.76***	-2.85 ***	*0.34*
Engineering * Canada		0.10	*0.52*
Professional	-0.30	-0.39	*0.23*
Professional * Canada		0.87	*0.63*
Social Sciences	0.35	0.48 *	*0.21*
Social Sciences * Canada		-1.84 ***	*0.40*
Other Fields of Study	-2.11***	-2.14 ***	*0.21*
Other Fields of Study * Canada		0.10	*0.49*

Table 1 cont'd

	Student–Faculty Interaction (SFI)		
	B	**B**	**Reliability**
Variance Components			
Life Sciences	4.93***	2.79**	0.149
Business	2.83*	3.22*	0.181
Education	2.69	2.67*	0.111
Engineering	1.87*	1.84*	0.059
Professional	2.42	2.03	0.108
Social Sciences	2.37*	1.70	0.108
Other Fields of Study	3.34**	3.51***	0.222
Variance between institutions	17.93***	17.26***	
Variance within institutions	362.30	363.16	
Proportion between institutions	43.02%	45.17%	
Proportion within institutions	0.94%	0.70%	
Reliability Intercept	0.918	0.913	

*p <.05. **p <.01. ***p <.001

Table 2
HLM Results for Course Structure Model for First-Year Students

	Active and Collaborative Learning (ACL)		
	Full	**Full with interactions**	
	B	**B**	***SE***
Institution-Level Variables			
Intercept	39.82 ***	43.11 ***	*2.91*
Canada	-7.86 ***	-8.43 ***	*0.72*
Percent First Generation		-2.42	*2.08*
Percent Non-Traditional		-1.37	*1.80*
Student–Faculty Ratio		-0.08	*0.06*
Means of Student Variables			
Mean Gender	3.15	3.76	*2.30*
Mean Enrolment	4.01	1.55	*2.14*
Mean Life Sciences	2.30	1.52	*2.88*
Mean Business	-2.43	-0.62	*3.59*
Mean Education	-4.30	-2.63	*3.16*
Mean Engineering	2.28	2.84	*4.06*
Mean Professional	-5.99 *	-4.03	*2.28*
Mean Social Sciences	-3.78	-4.95	*3.28*
Mean Other Fields of Study	-6.64	-4.52	*2.86*
Student-Level Variables			
Gender	-0.62 ***	-0.73 ***	*0.10*
Enrolment	2.82 ***	2.78 ***	*0.36*

Table 2 cont'd

	Active and Collaborative Learning (ACL)		
	Full	**Full with interactions**	
	B	**B**	***SE***
Fields of Study			
Life Sciences	0.07	0.20	*0.19*
Life Sciences * Canada		-1.13	*0.61*
Business	-0.56 *	-0.96 ***	*0.20*
Business * Canada		5.38 ***	*1.01*
Education	1.92 ***	1.74 ***	*0.23*
Education * Canada		3.13 **	*1.01*
Engineering	0.79 *	0.36	*0.35*
Engineering * Canada		3.64 **	*1.13*
Professional	-0.35	-0.62 **	*0.20*
Professional * Canada		3.91 ***	*0.71*
Social Sciences	-0.37 *	-0.16	*0.17*
Social Sciences * Canada		-1.40 ***	*0.33*
Other Fields of Study	-1.80 ***	-1.96 ***	*0.16*
Other Fields of Study * Canada		2.22 ***	*0.55*

	Active and Collaborative Learning (ACL)		
	Full	**Full with interactions**	
	B	**B**	**Reliability**
Variance Components			
Life Sciences	4.07***	4.16***	0.286
Business	9.92***	7.44***	0.428
Education	8.13***	6.94***	0.323
Engineering	10.19***	9.85***	0.264
Professional	5.48***	3.53***	0.246
Social Sciences	1.61***	1.49**	0.149
Other Fields of Study	3.14***	2.69***	0.27
Variance between institutions	15.29***	15.11***	
Variance within institutions	226.23	226.86	
Proportion between institutions	22.67%	23.58%	
Proportion within institutions	2.15%	1.88%	
Reliability Intercept		0.938	

*p <.05. **p <.01. ***p <.001

Significance of the Study Findings

This study contributes to the literature in the following ways: (1) theoretically, by bringing the comparative method to the student engagement literature; (2) empirically, by highlighting the differences in experiences and engagement of U.S. and Canadian higher education students; (3) practically, by informing policy regarding the relationship between

faculty and student engagement in both the U.S. and Canada. This study provided a broad overview of two aspects of student engagement in the U.S. and Canada. However, higher education is quite decentralised in both countries, to the point where neither has a true national 'system' of higher education. An exploratory study such as this provides direction for future, in-depth research.

It appears that Laidler's (2005) fears about the consequences of 'cash cow' programs in the Canadian arts and social sciences fields, with high enrolment and few faculty, are becoming a reality for many Canadian students. Such programs are often defaults for students that were denied admittance to desired programs due to enrolment capping or those unable to meet rising tuition costs in high demand fields. In Canada there is concern over increased student enrolments without a comparable hiring of faculty (Rae, 2005). There is much to be investigated about the lack of student–faculty interaction in Canada, particularly in light of the research on the positive effects of student–faculty interaction (Astin, 1993; Kuh & Hu, 2001b; Pascarella & Terenzini, 2005).

Students in the most popular fields of study in both the U.S. and Canada had the lowest engagement. This presents a challenge to administrators because the disciplines close to the market with rich research potential are opposite from the fields of study that are attracting the most students. There is much to be done to improve the educational experience in 'cash cow' programs. Grubb and Lazerson (2005) argue for creating smaller learning communities within large comprehensive institutions to increase support, intellectual exchange, and motivation to succeed.

This study provided an example of student-centred comparative quantitative research, which can give students a voice in policy discussions. As Banta and Associates (2002) note, 'What has become ever more apparent is that what is valued is what is funded and what is funded is what is measured' (p. 273). This indicates all the more reason to pursue more student-centred research on teaching, learning, and engagement in the era of globalisation. As higher education is an increasingly global enterprise, there is rich potential for research that looks beyond borders to other countries for policy comparison, practice improvements, and new paradigms for teaching and learning. Furthermore, comparative research offers the added benefit that the more you learn about others, the more you learn about yourself.

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Appendix A

Demographic Comparisons of Canadian and U.S. Students

Gender and Enrollment Status in U.S. and Canadian Higher Education

		Mean	SD	N
First-Year U.S.				
	Gender[a]	0.64	0.48	129,257
	Enrolment[b]	0.96	0.20	129,257
First-Year Canada				
	Gender	0.63	0.48	26,723
	Enrolment	0.95	0.21	26,726
Senior U.S.				
	Gender	0.64	0.48	125,685
	Enrolment	0.86	0.34	125,685
Senior Canada				
	Gender	0.62	0.48	24,528
	Enrolment	0.86	0.35	24,528

[a] Gender is coded as 0 = male and 1 = female. [b] Enrolment status is coded as 0 = part-time and 1 = full-time.

Fields of Study in U.S. and Canadian Higher Education

	First-year		Senior	
	Canada	U.S.	Canada	U.S.
Arts and Humanities	14.88%	13.44%	15.48%	15.04%
Life Sciences	13.40%	10.05%	13.54%	9.35%
Business	9.61%	12.28%	9.74%	15.16%
Education	2.18%	8.11%	2.48%	9.79%
Engineering	8.51%	4.89%	9.48%	5.10%
Professional	7.39%	9.60%	6.49%	8.17%
Social Sciences	17.23%	11.38%	20.38%	14.12%
Other Fields of Study	13.60%	16.04%	13.67%	14.64%
N	26,726	129,257	24,528	125,685

Transfer and Residence Status for U.S. and Canadian Students

		First-year		Senior	
		U.S.	**Canada**	**U.S.**	**Canada**
Transfer Status					
	Started here	91.4%	88.0%	61.3%	80.5%
	Started elsewhere	8.6%	12.0%	38.7%	19.5%
Current residence					
	On campus	72.1%	43.9%	19.9%	5.6%
	Within walking distance	5.7%	11.9%	24.8%	37.5%
	Within driving distance	22.2%	44.2%	55.2%	57.0%
N		26,726	129,257	24,528	125,685

Institutional Characteristics in the U.S. and Canada

		Min	**Max**	**Mean**	***SD***
Canada[a]					
	Percentage First-Generation	0.24	0.73	0.47	0.11
	Percentage Non-Traditional	0.03	0.36	0.16	0.08
	Student-Faculty Ratio	5.33	15.16	10.36	2.83
U.S. [b]					
	Percentage First-Generation	0.00	0.85	0.45	0.17
	Percentage Non-Traditional	0.00	0.98	0.20	0.18
	Student-Faculty Ratio	0.94	20.45	7.89	3.33

[a]Canadian data based on 27 institutions. [b]U.S. data based on 511 institutions

Appendix B: HLM Results for Senior Students

HLM Results for Student–Faculty Interaction for Senior Students

	Student–Faculty Interaction (SFI)		
	Full	Full with interactions	
	B	**B**	***SE***
Institution-Level Variables			
Intercept	29.62***	32.66 ***	4.10
Canada	-10.66***	-14.60 ***	1.07
Percentage First Generation		3.41	2.32
Percentage Non-Traditional		-4.22 *	1.99
Student–Faculty Ratio		-0.08	0.07
Means of Student Variables			
Mean Gender	7.54*	7.43 *	3.34
Mean Enrolment	18.19***	15.80 ***	2.13
Mean Life Sciences	18.12***	17.12 ***	3.38
Mean Business	-5.27*	-5.48 *	2.68
Mean Education	1.68	-0.82	3.17
Mean Engineering	-7.18	-7.72	4.10
Mean Professional	-8.15**	-8.24 **	2.89
Mean Social Sciences	-0.78	-2.18	3.61
Mean Other Fields of Study	-6.89*	-8.11 *	3.43
Student-Level Variables			
Gender	0.41**	0.23	0.14
Enrolment	6.74***	6.00 ***	0.28
Fields of Study			
Life Sciences	0.78**	1.20 ***	0.27
Life Sciences * Canada		-5.11 ***	0.66
Business	-4.45***	-4.68 ***	0.27
Business * Canada		2.22 **	0.72
Education	0.43	0.55	0.30
Education * Canada		-0.62	1.41
Engineering	-1.83***	-1.89 ***	0.42
Engineering * Canada		-2.88 ***	0.78
Professional	0.35	0.31	0.33
Professional * Canada		0.01	0.77
Social Sciences	-0.38	-0.10	0.23
Social Sciences * Canada		-2.83 ***	0.53
Other Fields of Study	-2.11***	-2.07 ***	0.26
Other Fields of Study * Canada		-0.57	0.74

	Student–Faculty Interaction (SFI)		
	Full	Full with interactions	
	B	B	Reliability
Variance Components			
Life Sciences	8.03***	5.46***	0.25
Business	9.62***	9.55***	0.422
Education	8.93***	9.76***	0.323
Engineering	7.17***	5.63**	0.194
Professional	8.69**	9.31**	0.33
Social Sciences	3.67**	2.82*	0.191
Other Fields of Study	6.94***	6.80***	0.363
Variance between institutions	19.05***	18.13***	
Variance within institutions	420.28	421.50	
Proportion between institutions	57.27%	59.34%	
Proportion within institutions	2.74%	2.46%	
Reliability Intercept	0.937	0.934	

*p <.05. **p <.01. ***p <.001

HLM Results for Course Structure Model for Senior Students

	Active and Collaborative Learning (ACL)		
	Full	Full with interactions	
	B	**B**	***SE***
Institution-Level Variables			
Intercept	35.41 ***	31.91 ***	2.97
Canada	-6.52 ***	-7.54 ***	0.84
Percentage First Generation		2.38	1.85
Percentage Non-Traditional		2.20	1.59
Student–Faculty Ratio		0.03	0.05
Means of Student Variables			
Mean Gender	5.64 *	5.48 *	2.25
Mean Enrolment	11.31 ***	14.24 ***	1.86
Mean Life Sciences	9.60 ***	10.51 ***	2.57
Mean Business	8.11 ***	6.97 **	2.01
Mean Education	5.73 **	3.88	2.32
Mean Engineering	4.44	4.55	3.13
Mean Professional	3.03	1.77	2.16
Mean Social Sciences	-0.85	-0.87	2.78
Mean Other Fields of Study	3.20	1.56	2.51
Student-Level Variables			
Gender	0.98 ***	0.91 ***	0.11
Enrolment	5.46 ***	5.30 ***	0.22
Fields of Study			
Life Sciences	-0.25	-0.05	0.26
Life Sciences * Canada		-2.72 ***	0.74
Business	1.76 ***	1.40 ***	0.23
Business * Canada		5.53 ***	0.93
Education	6.38 ***	6.29 ***	0.28
Education * Canada		2.04	1.28
Engineering	1.79 ***	1.78 ***	0.36
Engineering * Canada		-1.11	0.80
Professional	3.78 ***	3.55 ***	0.29
Professional * Canada		2.92 **	0.92
Social Sciences	-0.59 **	-0.45 *	0.20
Social Sciences * Canada		-1.78 ***	0.47
Other Fields of Study	-0.03	-0.16	0.21
Other Fields of Study * Canada		1.44 *	0.71

	Active and Collaborative Learning (ACL)		
	Full	Full with interactions	
	B	B	Reliability
Variance Components			
Life Sciences	12.59***	12.17***	0.520
Business	13.68***	11.21***	0.582
Education	14.53***	14.33***	0.513
Engineering	8.44***	8.35***	0.336
Professional	12.79***	12.83***	0.508
Social Sciences	4.45***	4.12***	0.353
Other Fields of Study	6.45***	6.44***	0.473
Variance between institutions	10.11***	9.97***	
Variance within institutions	254.91	255.70	
Proportion between institutions	38.19%	39.08%	
Proportion within institutions	5.18%	4.89%	
Reliability Intercept	0.931	0.930	

*p <.05. **p <.01. ***p <.001