Dimensions of Expectations: How it breaks Freshman Myth

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Abstract

First-year college students' often arrive with unrealistic academic and engagement expectations that typically results many of their expectations going unmet. This phenomenon is referred to as freshman myth. Due to the gap between the expected and actual engagement, investigations about their association at the average level may conceal the true relationship. In the current study, we used longitudinal student survey data from a national sample to explore how the variation in expectations influences the association of the expected and actual engagement of first-year college students. The results revealed that, at the same expectation level, entering college students who had more varied expectations were more likely to fulfill their expected engagement in the first academic year. An institution's environment did not show significant mediation on the association of expected and actual engagement.

Background

The transition from high school to college is a critical time for students, where many factors can contribute or undermine a successful first year. According to National Student Clearinghouse Research Center (2016), about 20% of full-time and 43% of part-time students do not persist to their second year of college. Students unmet expectation for higher education is one of the many factors that can explain this attrition (Schilling & Schilling, 2005). Though unmet expectations can contribute to attrition, studies have also shown that first-time college students who have overly enthusiastic expectations about what they will do in college are of particular concern (Kuh, 2005; Redish, Saul, & Steinberg, 1998; Schilling & Schilling, 1999). This phenomenon is usually referred to as *freshman myth* where first year students enter college with unrealistically high expectations that, not surprisingly, go mostly unmet (Stern, 1966). For example, Smith and Wertlieb (2005) found that students with unrealistically high academic expectations had overall lower FY GPA's than their peers with reasonable expectations.

Other studies, however, have not supported the existence that there is a Freshman Myth (Baker, McNeil, & Siryk, 1985; Jackson, Pancer, Pratt, & Hunsberger, 2000; Schilling & Schilling, 2005). In studying freshmen's expectations, previous studies have shown that that not all first-year students have overly optimistic expectations (Jackson et al., 2000; Kuh, 2005). In addition, studies have found evidence that entering college students' expectations generally have positive associations with students' actual experience and learning outcomes in college (Gonyea, Kuh, Kinzie, Cruce, & Laird, 2006; Gonyea, Kuh, Kinzie, Cruce, & Nelson-Laird, 2008). For instance, Gonyea et al. (2008) found the expected and actual challenging environment has a moderate but positive correlation, meaning that even very high expectations can be facilitative of

increased behavior. Jackson et al. (2000) revealed that students who hold optimistic and efficacious expectations experience good adjustment.

Despite these efforts, the extant literature has insufficiently attended the many sides of freshmen's expectations. On one hand, the incoming college students have expectations on the numerous aspects of their learning and living in colleges and universities. Breaking freshman myth first address whether student expectations are universally and naïvely high. If students' expectations have considerable variance, we have reason to believe there is no myth in freshmen's expectations. To this end, most previous studies focus on the expectation levels (Baker et al., 1985; Berdie, 1966; Buckley, 1971; Jackson et al., 2000; Lauterbach & Vielhaber, 1966; Pervin, 1966), only few studies explored the variance in student expectations (Pancer, Hunsberger, Pratt, & Alisat, 2000). Pancer et al. (2000) found students who had complex expectations before college, in another words more variance in their expectations, had better adjustment to college than their peers who had less variances in their expectations.

Institutional environment has also shown to play an important role in whether students' actual experience meet their prior expectations (Baker et al., 1985; Yorke & Vaughan, 2013). However, most of extant student expectation studies utilized student samples from one or a limited number of higher education institutions, thereby reducing the confidence that the results are generalizable across many types of institutions (e.g., Baker et al., 1985; Berdie, 1966; Jackson et al., 2000; Pancer et al., 2000). The role of environmental factors that mediate the association between expectation and actual experience are insufficiently explored. The current study aimed to fill the research gaps by digging into the variance and level of freshmen's expectations with a multi-institution analysis.

Theoretical Framework

The current study is mainly guided by Pascarella's model (1985) for assessing the effects of differential college environments on student learning and cognitive development. Astin's I-E-O model (1991) and Tinto's Conceptual Schema for Dropout from college (1975) are also relevant. Pascarella (1985) created the model to explain students' cognitive-psychological outcomes. Here, we use part of the model to explain the relationship of students' expectations of engagement before entering college and their actual engagement in the first academic year. Figure 1 illustrates the variables of interest and the associations to investigate.
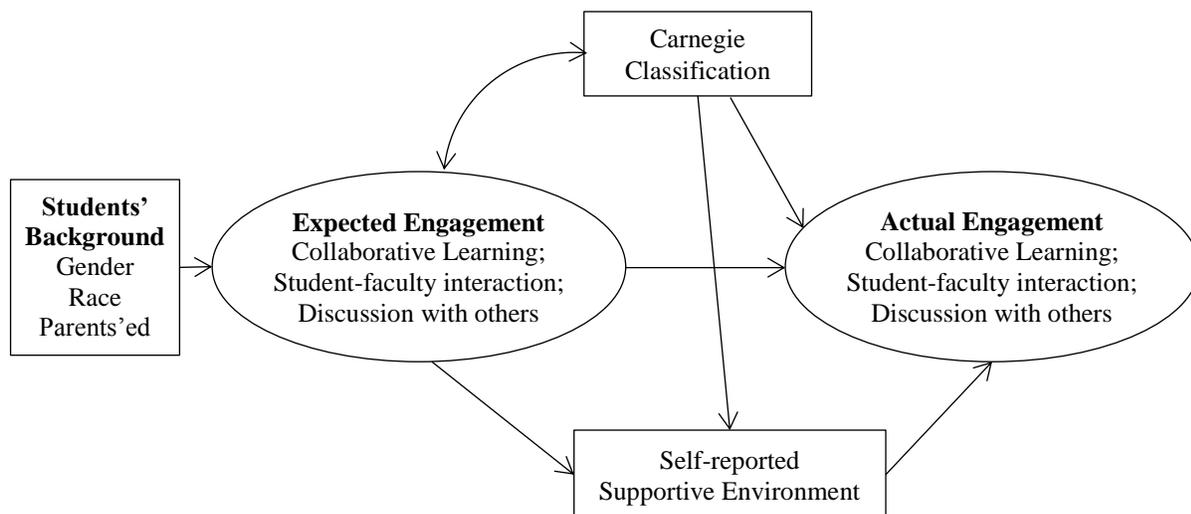
Figure 1. Conceptual Path Diagram

According to Pascarella (1985), students' pre-college aspiration has both direct and indirect effects on their engagement in higher education institutions. The indirect effect of pre-college aspiration on student engagement has two demonstrations. First, selection and self-selection during higher education enrollment process results in the correlation of students' pre-college traits and an institution' structural characteristics (Hossler, Braxton, & Coopersmith, 1989; Willis & Rosen, 1978). As an institution' structural characteristics have a direct effect on

student engagement, students' pre-college traits thus have an indirect effect on student

engagement through an institution' structural features. The second indirect effect of students' pre-

college traits on student engagement is through the institutional environment, which is the

intangible environment in Astin's I-E-O model as compared with the tangible structural

characteristics. Here, we use students' self-reported supportive environment to represent

intangible environment surrounding individual students. In Pascarella's model (1985), students'

aspiration and demographic characteristics are clustered together as students' pre-college traits.

Inspired by Tinto's model (1975), we propose students' background characteristics influence

their expectations of engagement in college.

The current study is also encouraged by ecology research about within-individual

variation in labile components of the phenotype. In ecology, a phenotype is a composite of an

organism's observable characteristics, including skin color, behaviors, etc. (http://www.biology-

online.org). A phenotype may have multiple elements. The between-individual variance are

attributable to individual differences, representing the effects of biological factors and permanent

environment. The within-individual variance is the differences between an individual's multiple

observations of a specific phenotype. It reflects the influences from temporary environment on

phenotypes. Thus, in analyzing a phenotype, the between- and within-individual variance shall

be studied simultaneously (Dingemanse & Dochtermann, 2013). Applying this notion to

education research, the decomposition of within- and between- individual variance of the

observations is still meaningful. In the current research scenario, we consider the within-

individual variance signifies the degree of clarity of students' expectations about engagement in

college. Following this assumption, we ask, do students who have varied expectations regarding

different aspects show higher probability of fulfilling their expectations during the first year in college? In the analysis, we will test our conceptual model for different within-variance groups.

Research Question

Utilizing longitudinal student survey data of new college students' expected and actual engagement in student-faculty interaction, collaborative learning, and discussion with diverse others, this study answered the following questions:

(1) What is the variance in new college students' expectations of multiple engagement aspects?

(2) Are student expectations of engagement associated with student backgrounds?

(3) For students who have low-variance expectations and those who have high-variance expectations, is the association of expectations and actual engagement the same?

(4) Does an institution's environment mediate the relationship between students' expected and actual engagement?

Method

The analysis started with using intraclass correlation coefficient (hereafter ICC) to answer the first research question. The one-way form ICC tells us how much of the total variation happens at the individual level (Landers, 2015; Shrout & Fleiss, 1979). The ICC offers a general description of the consistency of individual students' expectations for a variety of activities.

To answer the second question, we first identified students' expectation levels and variation. We used the mean of a student's responses to all twelve expectation questions to represent the student's general expectation level.

$$\sigma^2 = \frac{1}{N}\sum(x_i - u)^2 \qquad\qquad\qquad (1)$$

Then, as in calculating variance, we calculated the variation of one's responses to the expectation

questions as an individual-level index. Using equation (1) to the current scenario, N equals the

number of all expectation questions, x_i is one's response to each question, and u is the average

expectation calculated in the first step. Next, we grouped students based on individuals' average

and variance of expectations separately. By each measure, four groups were identified. We

further cut the data into sixteen groups using the two four-category grouping variables. In order

to answer the second research question, we applied Chi-square test to determine whether

students' average and variation of expectations are associated with students' background

characteristics, including gender, race/ethnicity, and parents' education level.

To answer the third and fourth research questions, when students have different averages

and variation in expectations, whether expectation influences actual engagement in college in the

same way, we employ multi-group structural equation model (hereafter SEM). Multi-group SEM

is popular in education research to compare groups (e.g., Elliott, Jung, Kim, & Chowa, 2010;

Pike & Kuh, 2005). We did the analysis by the following steps. First, we examined the

measurement model and full-SEM model for each group separately to see if the models would

converge (Muthen, 2006). Next, using the complete sample, we tested the equivalence of the

measurement among the sixteen groups. At last, we explored the equivalence of the causal

structure. The full SEM model had all the covariates and mediators as illustrated in Figure 1.

Data Sources

This study combined the data sources from Beginning College Survey of Student

Engagement (BCSSE) administered during summer and early fall in 2014 and the following

National Survey of Student Engagement (NSSE) administration in 2015 spring. We utilized data

from the U.S. undergraduates who responded to both BCSSE and NSSE in the same institution

during the 2014-2015 academic year. BCSSE was administered to new college students before

the first year begins and asked about students' expectations of engagement in these activities in

the coming academic year. At the end of the first academic year, NSSE asked parallel questions

about students' actual engagement. In the analysis, the sample included 8,759 students from 69

U.S. colleges and universities. We focused on students' interpersonal interactions and selected

three aspects, student-faculty interaction, collaborative learning, and discussion with diverse

others (see Appendix I). Before conducting SEM, these measures were standardized to a mean of

zero and a standard deviation of 1.

We also used the factor score of *Supportive Campus Environment* from the NSSE dataset.

The Supportive Campus Environment scale includes eight questions asking students to what

extent the institution emphasizes "providing support to help students succeed academically",

"using learning support services (tutoring services, writing center, etc.)", etc. (Please find a full

list of the questions of Supportive Environment Scale on NSSE website: http://nsse.indiana.edu).

The other variables used in the analysis were students' background characteristics (gender,

parents' educational level, and race/ethnicity) and institutions' basic Carnegie classification.

Table 1 shows the descriptive statistics of variables used in the analysis.

[Table 1 about here]

Results

RQ1: What is the variance in new college students' expectations of multiple engagement aspects?

Answering the first research question, the one-way form ICC equaled .82, representing

about 20% of the total variation at the individual level. Accordingly, students' responses to the

twelve questions of three engagement scales had very high consistency (Cicchetti, 1994).

Serving as the basis for the following analysis, the one-fifth variance at the individual level implies that, before their first year in college, some freshmen had a clear picture of their college life while others only had blurry expectations.

RQ2: Are student expectations of engagement associated with student backgrounds?

The Chi-square analysis (Table 2 and 3) revealed that students' average expectation and the variation of expectation were statistically associated with individuals' gender and racial or ethnical groups. In addition, the variation of expectations had a statistically significant correlation with parents' educational levels. Consistent with previous findings, female students tended to have higher expectations than male students. The Black and Hispanic students reported higher expectations than other racial/ethnical groups. As for the variation of expectations, female students had a larger variance in their expectations than male students. Black students were overrepresented in the high variation group. Students whose parents had no college experience were more likely to have expectations that lacked variation.

[Table 2 and 3 about here]

RQ3. For students who have low-variance expectations and those who have high-variance expectations, is the association of expectations and actual engagement the same?

We applied a full SEM model to investigate direct effects of expected engagement on actual engagement (Table 4). We found, on most occasions, expected engagement had a statistically significant and positive direct effect on actual engagement. In general, within the same expectation level, the larger the variation of expectation, the stronger the positive relationship between expected and actual engagement. For example, the total effects of expected engagement on actual engagement in Discussion with Diverse Others scale were 0.07, 0.21, 0.33, and 0.21 from low to high variance at the mid-average expectation level. When examining the

effects from varied average groups, we found the effects of expected on actual engagement in low average groups tended to be stronger than those in other groups. This finding provides some evidence about the importance of the variation of expectations.

RQ4. Does an institution's environment mediate the relationship between students' expected and actual engagement?

In the same SEM model, we included an institution's Carnegie classification and individual students' self-reported supportive environment investigate how an institution's environment mediates the relationship between students' expected and actual engagement. As a pilot study of the question, we focused on the holistic effect of the environment, rather than specific influence from each environmental factor. In the model, the all-inclusive mediation were represented by the indirect effects of expectation on actual engagement. We found most of the indirect effects were trivial and often not statistically significant at .05 level, implying that as for the three aspects of student engagement, student-faculty interaction, collaborative learning, and discussion with diverse others, an institution's Carnegie type and student's perceived supportiveness of the campus does not affect the association of expected and actual engagement.

[Table 4 about here]

Limitations

Clearly, findings from this study are limited by the fact that the student participants were from four-year degree-granting higher education institutions that voluntarily participated in both BCSSE 2014 and NSSE 2015 projects. These institutions, although had certain representativeness of Carnegie classification types, may share some features in an unknown way such as these institutions might be more caring about students' learning and have more school policies in supporting student engagement on campus when comparing with non-participating

U.S. higher education institutions. If that had been the case, we would have found some relation between the supportive campus environment and the association of expected and actual engagement by including institutions with varied level of support for student learning.

The current exploration was confined to the measures available in the dataset. Both BCSSE and NSSE are moderately short. Although the instruments have satisfying reliability and validity (nsse.indiana.edu), the current study only covered three aspects of students' expected and actual engagement, student-faculty interaction, collaborative learning, and discussion with diverse others. These aspects to the best represent three important aspects of interpersonal interactions on campus. The other important aspects of incoming college students' expectation may include students' anticipations around their learning, such as time spent on reading per week, self-training of learning skills, etc. Future studies may include these important aspects in studying students' expectation and make comparison with students' expectation of their interpersonal interactions.

At last, measurement methods may also hinder the detection of varied expectation levels among students. BCSSE and NSSE surveys used four-Likert scales in their question items. The actual time and effort planned to and actually spent on each of the items were unknown. Although at the individual level the impact of response scale may be evened as both the expected and actual engagement were measured on the same scale, the limited range was a barrier to distinguish students' expectation levels and variations.

Discussion

Freshman myth is a formation often cited to address the phenomenon that new college students often have unreasonably high expectations about themselves or colleges and universities that cannot be met in reality. The current study is an investigation of the relationship between

incoming college students' expected and actual engagement in the first academic year. Specifically, we focused on three aspects of student engagement, including student-faculty interaction, collaborative learning, and discussion with diverse others.

Before examining the relationship of expected and actual engagement, we first noticed two crucial dimensions of new college students' expectation, the grand average and the variation. An individual's grand average of all the engagement aspects is comparable to the individual student's expectation level. This measure has been the focus of the freshman myth related research. The prior discussion was around whether new students have extremely high expectations about themselves or college (Jackson et al., 2000; Stern, 1966). Our results showed that students' expectation levels have a considerable range. The optimistic anticipation is not universal as stated in some studies (Stern, 1966).

Another dimension of expectation, the variation of expectation, was rarely mentioned in prior studies. Here we use the statistical term to represent to what extent students distinguish their expectations in varied aspects (see Function 1). The assumption is, if a student has a greater variation in his/her expectations, he/she may have a clearer picture of what and how he/she will do during the college career. The variation in individuals' respective responses only counted 20% of the total variance, the left was between-individual variance. In another word, an individual's expectations on the three scale of all twelve measures did not vary much. This finding can be explained as a halo effect of students' excitement or anxiety about going to college that generally influences students' expectations (Pike, 1999). It may be also due to the fact that most new college students do not have a clear picture of what their college learning and life will look like.

We also considered whether the association of expected and actual engagement depends on a higher education's institutional environment. Here we explored both an institution's

structural characteristics, represented by the basic Carnegie Classification and a student's perceived sub-environment, the supportiveness of a campus. In building the framework, we also took into account the impact of student backgrounds on expected engagement. Accordingly, the relationship of expected and actual engagement was explored within different average and variant levels of expectation, while controlling students' backgrounds and institutions' environmental characteristics.

Our results suggest that understanding the freshman myth is more complicated than simply comparing expectations to actual behaviors. Instead, our results provide evidence that the variation in expectations matters: *entering college students who had more varied expectations were more likely to fulfill their expected engagement in the first academic year*. In addition, in most situations in speaking of expectation level and variation in expectations, the association of expected and actual engagement is statistically significant and positive. This is consistent with prior studies by Gonyea and colleagues (Gonyea et al., 2006; Gonyea et al., 2008). Yet, since the current study was about students' expectation about their own engagement, while Gonyea and colleagues explored the expected campus environment, the effects of expectation on actual engagement were stronger than findings of their studies.

Our findings on the relationship of expected and actual engagement have both research and practical meaning. For future research of student expectations, variations in the expectation items shall be a vital characteristic to explore. Our limitation in measurement inspires future studies to apply more fine-grained scales in measuring students' expected effort and time, which may find greater variation in students' expectations. Our findings are also meaningful for future educational administration. Generally speaking, senior high school students shall be encouraged to have bright prospect of going to college and anticipate active engagement on higher education

campuses. The optimistic anticipations, although in many cases cannot match reality (Yorke &

Vaughan, 2013), still work as self-motivation for the new college students and have a positive

impact on the transition from high school to college.

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Table 1.
Descriptive Statistics (N=8,759)

Variables	Min.	Max	Mean	SD
Std.Exp. Ask another student to help…	-2.39	1.55	0.00	1.00
Std.Exp. Explain material to students	-2.34	1.87	0.00	1.00
Std.Exp. Prepare for exams by discussing with other students	-2.84	1.22	0.00	1.00
Std.Exp. Work with other students on projects…	-2.69	1.32	0.00	1.00
Std.Exp. Talk about career plans with a faculty member	-2.27	1.50	0.00	1.00
Std.Exp. Work with a faculty member on activities…	-1.93	1.76	0.00	1.00
Std.Exp. Discuss academic performance with faculty..	-2.27	1.61	0.00	1.00
Std.Exp. Discuss course topics with faculty outside of class	-2.07	1.75	0.00	1.00
Std.Exp. Discuss with people of another race or ethnicity	-3.23	0.95	0.00	1.00
Std.Exp. Discuss with people of a different economic background	-3.26	0.98	0.00	1.00
Std.Exp. Discuss with people of other religious beliefs	-2.99	0.99	0.00	1.00
Std.Exp. Discuss with people with other political views	-2.92	1.00	0.00	1.00
Std. Act. Ask another student to help…	-1.99	1.56	0.00	1.00
Std. Act. Explain material to students	-2.23	1.52	0.00	1.00
Std. Act. Prepare for exams by discussing with other students	-1.76	1.43	0.00	1.00
Std. Act. Work with other students on projects…	-2.05	1.54	0.00	1.00
Std. Act. Talk about career plans with a faculty member	-1.52	1.87	0.00	1.00
Std. Act. Work with a faculty member on activities…	-0.89	2.33	0.00	1.00
Std. Act. Discuss academic performance with faculty..	-1.19	2.15	0.00	1.00
Std. Act. Discuss course topics with faculty outside of class	-1.38	2.06	0.00	1.00
Std. Act. Discuss with people of another race or ethnicity	-2.58	0.92	0.00	1.00
Std. Act. Discuss with people of a different economic background	-2.70	0.93	0.00	1.00
Std. Act. Discuss with people of other religious beliefs	-2.45	0.94	0.00	1.00
Std. Act. Discuss with people with other political views	-2.37	1.00	0.00	1.00
Std. Supportive Environment	-3.01	1.52	0.00	1.00

	%
Sex	
Female	70.6
Male	29.4
Race	
American Indian or Alaska Native	0.4
Asian	6.1
Black or African American	7.1
Hispanic or Latino	8.8
Native Hawaiian or Other Pacific Islander	0.2
White	68.8
Two or more races	8.6
Parents' education	
Did not finish high school	4.0
High school diploma/G.E.D.	14.2
Attended college but did not complete degree	11.0
Associate's degree (A.A., A.S., etc.)	9.9
Bachelor's degree (B.A., B.S., etc.)	31.0
Master's degree (M.A., M.S., etc.)	22.6
Doctoral or professional degree (Ph.D., J.D., M.D., etc.)	7.3

Table 1. (*Continued*)

	%
Carnegie Classification	
Research University	41.9
Master University	45.4
Bachelor Colleges	12.7

Table 2.
Expectation Variation Group by Students' Background Characteristics (%) (N= 8,759)

		Low V	Mid-Low V	Mid-High V	High V
		25.4	*25.4*	*24.9*	*24.3*
Sex	Female	25.4	24.1	25.6	24.9
	Male	25.6	28.5	23.2	22.7
Race/Ethnicity	American Indian or Alaska Native	14.7	38.2	11.8	35.3
	Asian	27.4	22.6	23.7	26.3
	Black or African American	22.3	21.2	24.7	31.8
	Hispanic or Latino	25.9	24.5	26.1	23.5
	Native Hawaiian	47.4	15.8	21.1	15.8
	White	26.1	26.4	24.8	22.8
	Two or more races	20.7	23.7	26.5	29.1
Parents' educational level	Did not finish high school	28.6	24.6	26.9	19.8
	High school diploma/G.E.D.	27.9	25.7	23.3	23.1
	Some higher ed but didn't get degree	26.3	24.9	22.9	26.0
	Associate's degree (A.A., A.S., etc.)	25.3	25.3	23.6	25.7
	Bachelor's degree (B.A., B.S., etc.)	25.8	24.2	26.9	23.2
	Master's degree (M.A., M.S., etc.)	23.6	26.6	24.1	25.7
	Doctoral or professional degree	22.0	27.6	25.9	24.5
Chi-Square Tests		χ^2	df	Sig.	
	Sex	21.41	3	<.001	
	Race/Ethnicity	63.25	18	<.001	
	Parents' educational level	32.35	18	.020	

Table 3.
Expectation Average Group by Students' Background Characteristics *(%) (N= 8,759)*

		Low A	MidLow A	MidHigh A	High A
		24.8	*26.5*	*24.7*	*24.0*
Sex	Female	22.7	25.6	26.2	25.4
	Male	29.8	28.7	21.0	20.6
Race/Ethnicity	American Indian	14.7	29.4	32.4	23.5
	Asian	25.0	29.7	22.4	22.9
	Black or African American	16.2	22.2	24.7	36.9
	Hispanic or Latino	21.1	22.6	25.5	30.8
	Native Hawaiian	21.1	21.1	15.8	42.1
	White	26.5	27.3	24.6	21.6
	Two or more races	22.8	25.3	25.9	26.0
Parents' educational level	Did not finish high school	28.3	22.9	20.7	28.0
	High school diploma/G.E.D.	24.5	24.0	24.6	26.9
	Some higher ed but didn't get degree	24.5	25.7	25.1	24.6
	Associate's degree (A.A., A.S., etc.)	24.2	26.4	26.7	22.7
	Bachelor's degree (B.A., B.S., etc.)	25.3	27.5	24.0	23.2
	Master's degree (M.A., M.S., etc.)	24.7	27.5	25.6	22.2
	Doctoral or professional degree	23.2	27.8	23.2	25.7
Chi-Square Tests		χ^2	df	Sig.	
	Sex	80.88	3	<.001	
	Race/Ethnicity	125.39	18	<.001	
	Parents' educational level	26.79	18	.083	

Table 4.

Effects of Expected on Actual Engagement by Average- Variance Groups

Groups	Collaborative Learning			Student-Faculty Interaction			Discussion with Diverse Others		
	Total	Indirect	95%CI of Indirect	Total	Indirect	95%CI of Indirect	Total	Indirect	95%CI of Indirect
Low Avg.-Low V.	0.21**	0.01	[0.00,0.05]	0.22*	0.04	[0.01, 0.07]	0.11*	0.02	[0.00, 0.05]
Low Avg.-Mid-Low V.	0.34***	0.02	[0.00,0.04]	0.32***	0.06	[-0.01, 0.41]	0.25***	0.04	[0.01, 0.06]
Low Avg.-Mid-High V.	0.43*	0.01	[-0.04,0.52]	0.48*	-0.01	[-0.06, 0.01]	0.26	0.03	[-0.01, 0.51]
Low Avg.-High V.	0.31*	0.08	[-0.05,0.43]	0.50**	0.04	[-0.04, 0.34]	0.35**	0.04	[-0.06, 0.34]
Mid-Low Avg.-Low V.	0.02	-0.02	[-0.10,0.02]	0.23**	0.02	[0.00, 0.07]	0.04	-0.01	[-0.09, 0.03]
Mid-Low Avg.-Mid-Low V.	0.00	-0.02	[-0.05,0.00]	0.25***	-0.01	[-0.03, 0.01]	0.18*	0.03	[0.00, 0.08]
Mid-Low Avg.-Mid-High V.	0.19**	0.01	[-0.01,0.03]	0.19***	-0.01	[-0.06, 0.07]	0.08	-0.02	[-0.05, -0.01]
Mid-Low Avg.-High V.	0.23***	-0.01	[-0.02,0.01]	0.26***	0.00	[-0.03, 0.02]	0.30***	0.00	[-0.04, 0.02]
Mid-High Avg.-Low V.	0.03	-0.01	[-0.04,0.04]	-0.06	0.00	[-0.02, 0.03]	0.07	-0.04	[-1.70, 0.01]
Mid-High Avg.-Mid-Low V.	0.11	0.01	[-0.02,0.06]	0.15	-0.01	[-0.02, 0.00]	0.21***	0.03	[0.00, 0.09]
Mid-High Avg.-Mid-High V.	0.10*	0.00	[-0.02,0.01]	0.08*	0.00	[-0.25, 0.06]	0.33***	0.00	[-0.02, 0.02]
Mid-High Avg.-High V.	0.16***	-0.01	[-0.02,0.00]	0.17***	0.00	[-0.02, 0.02]	0.21***	0.00	[-0.02, 0.01]
High Avg.-Low V.	0.09	-0.02	[-0.04,0.02]	0.16***	0.07	[-0.01, 0.18]	0.21***	0.02	[-0.01, 0.05]
High Avg.-Mid-Low V.	0.27**	0.02	[-0.03,0.07]	0.26**	0.00	[-0.02, 0.03]	0.18**	0.03	[0.00, 0.10]
High Avg.-Mid-High V.	0.04	-0.01	[-0.04,0.00]	0.10**	0.05	[0.01, 0.09]	0.23***	0.00	[-0.02, 0.02]
High Avg.-High V.	0.11	0.01	[-0.02,0.05]	0.27**	0.00	[-0.04, 0.05]	0.34***	0.01	[-0.02, 0.04]

*** $p<.001$; ** $p<.01$; * $p<.05$

Appendix A.

Engagement Scales

Student-faculty Interaction Scale:

(1) Talk about career plans with a faculty member;

(2) Work with a faculty member on activities other than coursework;

(3) Discuss your academic performance with a faculty member;

(4) Discuss course topics, ideas, or concepts with a faculty member outside of class.

Collaborative Learning Scale:

(1) Ask another student to help you understand course material;

(2) Explain course material to one or more students;

(3) Prepare for exams by discussing or working through course material with other students;

(4) Work with other students on course projects or assignments.

Discussion with Diverse Others Scale:

(1) People of a race or ethnicity other than your own;

(2) People from an economic background other than your own;

(3) People with religious beliefs other than your own;

(4) People with political views other than your own.