

The Student Element in Engagement

Joe Ludlum, Georgia Institute of Technology
Jonathan Gordon, Georgia Institute of Technology
Caroline Noyes, Georgia Institute of Technology
Denise Gardner, University of Georgia
Jan Davis-Barham, University of Georgia

Student engagement is a two-party endeavor: The institution provides the opportunities, and the student then chooses how (or if) they will connect. But how much of a role does each play in engagement, particularly at the beginning of college? To explore this question, two major research institutions used the National Survey of Student Engagement (NSSE) first-year student data to see how this measure of engagement relates to demographic traits and pre-college attitudes and experiences, as measured by the Cooperative Institutional Research Program (CIRP) freshman survey. The data was derived from a sample of 522 students from two research universities who had completed both the CIRP and the NSSE during the 2006-2007 academic year. The results indicate that involvement in certain high school activities and a propensity to read newspapers are good predictors of first year college engagement as measured by the five NSSE benchmarks.

Introduction

Across college campuses the conversation is similar: how can we improve student engagement in both the academic and co-curricular realms? This dialogue began in the 1970s as researchers began to focus on the intellectual and social benefits of a college education, but the conversation has taken on urgency in recent years as attention has shifted toward issues of effectiveness and accountability in higher education. Attention to rankings, governmental regulations, and public awareness through publications such as the Spellings Report (U.S. Department of Education, 2006) have led to an increased emphasis on documenting that students receive a quality education.

There is a tremendous amount of research on college student development showing that the time and energy students devote to educationally purposeful activities is the single best predictor of their learning and personal development (Astin, 1993; Pace, 1979; Pascarella & Terenzini, 1991, 2005). This body of research on student learning has concluded that students who are actively involved in academic and co-curricular activities gain more from their college experience than students who are not as involved. Astin's (1993) theory of student involvement is focused on assessing the impact of environmental experiences, and it lays out the basic set of measures necessary to evaluate engagement. Astin's concept of 'involvement' is manifested in Tinto's (1993) academic and social integration and institutional experiences elements. Both theories stress the importance of the academic and the non-academic experience.

The roots of Astin's involvement theory (1984) are in his 1975 and 1977 longitudinal studies of college dropouts, which identified factors in the college environment affecting persistence. The results showed that factors which contributed to persistence related to involvement, while factors which contributed to a student's dropping out indicated a lack of involvement. For example,

although the most pervasive positive effect on persistence was living on campus, involvement in almost any form of extracurricular activity (including social fraternities/sororities and athletics) also had a positive affect on persistence. While holding an on-campus part time job promoted persistence, holding down a full-time job off campus had a negative affect on persistence. Activities which prevented the student from identifying with the institution contributed to withdrawal from the institution. He found that almost all forms of student involvement are associated with greater than average changes in entering student characteristics. For Astin, as for others (e.g., Pace, 1979; Pascarella & Terenzini, 1991; Tinto, 1993), college student “development” is intimately related to the students’ actively participating in the learning process.

Over the years, Astin has refined his model of student development, and in 1993 he revisited his 1977 study, again using data from the Higher Education Research Institute’s Cooperative Institutional Research Program (CIRP) studies. The 1993 study identified six critical environmental variables: institutional characteristics, peer group, faculty, curriculum, major, financial aid, residence, and level of involvement. Again, he found that, regardless of type of institution, involvement in the academic experience is very important, especially with peers and with faculty in and out of class. In short, involvement (or engagement) helps explain how and why environmental variables affect student outcomes.

Impact of Previous Behavior

Prior to 1977, the dominant conception of the relationship between a person and the environment was unidirectional, with the environment acting upon the individual. This relationship is seen in the early work of Astin and others, as they sought to explain the effect of college on students. In 1978, however, Albert Bandura posited a more complex relationship consisting of multiple bidirectional relationships. Bandura (p. 346) labeled this association “reciprocal determinism” and noted that “behavior, internal personal factors, and environmental influences all operate as interlocking determinants of each other.”

Astin and others approached institutional “quality” from the perspective of the behaviorists, with the emphasis on structural and programmatic efforts on behalf of the institution to increase students’ level of involvement. More recently other researchers have begun to heed Bandura’s advice and focus on the input side of the equation when considering issues related to institutional quality. Obvious sources of “input quality” include scores on standardized tests as well as high school grade point average as predictors of student academic achievement (Camara & Echternacht, 2000; DeBerard, Scott, Spielmans, & Julka, 2004; Fleming, 2002; Hoffman, 2002), and involvement (Astin, 1993; Pritchard & Wilson, 2003). We also know from the literature that students’ previous behavior is a good predictor of future behavior (Camara, 2005), and researchers are beginning to develop instruments to measure these non-cognitive factors as admissions criteria (Thomas, Kuncel, & Crede, 2007).

Further support for this line of research comes from Astin and Oseguera (2003) who studied the graduation rates of 1994 freshmen using student characteristics and CIRP data, and found that over two-thirds of the variation in degree-completion rates among institutions was accounted for by differences in entering student characteristics, rather than in differences in the effectiveness of their retention programs. These results indicate that student ‘inputs’ such as academic preparation and other characteristics above and beyond high school GPA and college board

scores must be taken into account when comparing degree-completion rates and predicting retention rates.

Generational changes associated with the “millennials” also indicate that today’s college students are in some ways qualitatively different than their predecessors. HERI (2007) has reported that recent freshmen are more likely than previous freshmen to be better academically prepared for college, to rate their intellectual capabilities higher, to study less during their senior year in high school, and are more likely to have participated in community service and volunteer activities. If the behavioral characteristics of entering freshmen are having an independent effect on institutional outputs (aka “institutional quality”) as Astin and Oseguera (2003) found, then what effects are these changes in our incoming freshmen having on college engagement levels? As we consider students’ level of engagement, therefore, it seems logical to examine past behaviors to determine the level of influence and impact. The capacity for CIRP’s survey items to serve as predictors or control variables may have great value in helping institutions determine the degree to which institutional initiatives as well as student characteristics are affecting student development.

Instruments Used to Measure Student Involvement and Engagement

The Cooperative Institutional Research Program (CIRP), established in 1966, is a national longitudinal study of the American higher education system. With data collected from approximately 1,800 institutions, the annual report of the CIRP Freshman Survey provides annual demographic, behavioral, and attitudinal data on over 11 million students. At the national level, the survey is regarded as the most comprehensive source of information on incoming first year college students. At the local level, while institutions use their CIRP data in a variety of ways, there has been a new trend of institutions using this data as one aspect of a comprehensive assessment program (HERI, 2002), including using it as a pre-measure to the Your First College Year Survey, the College Senior Survey, or other senior surveys to assess change during the college years. (Oseguera, Gunty, Marquez, & Wernig, 2005).

The introduction of the National Survey of Student Engagement (NSSE) in 1998 marked the latest attempt over the past 30 years to measure the quality of undergraduate higher education in the U.S. The authors of NSSE created a survey that directly asked first year and senior students to evaluate the degree to which they were “engaged” in their college experience, believing that “characteristics of student engagement can serve as a proxy for quality” (NSSE, 2007a). The survey is conceptually grounded in the literature on student involvement, and the *College Student Report* provides data on items aggregated into five “benchmarks” of engagement: level of academic challenge (LAC), enriching educational experiences (EEE), student-faculty interaction (SFI), active and collaborative learning (ACL), and supportive campus environment (SCI).

The use of NSSE in higher education has expanded rapidly. In 2007, 610 colleges and universities administered the NSSE to their freshmen and seniors (NSSE 2007 annual report). The assertion that student engagement in academically beneficial activities as measured by the NSSE can serve as a proxy for institutional quality has caught the attention of state legislatures, accreditation agencies, the federal government, publications such as *U.S. News & World Report* and *USA Today*, and various associations such as NASULGC and AASCU.

Research Questions and Methodology

In an effort to better understand potential influences on student engagement, two public research institutions, the University of Georgia (UGA) and the Georgia Institute of Technology (GT) joined efforts to address three main questions: a) What are the associations between student profile and engagement; b) how much of engagement can be predicted by student traits and c) how much of this is stable between institutions?

Matching data from the summer 2006 administration of the CIRP Freshmen Survey with data from the spring 2007 NSSE, our research explores student demographic and behavioral/attitudinal traits at the start of the freshmen year and end-of-first-year engagement profiles. This initial look at pre-existing variables on one freshmen class will inform further research and help to develop predictive models of engagement. Combining the two institutions allowed for both an increase in available power, as well as an opportunity to try and develop a more general model of this association – independent of, or controlling for, the institutions. This study omitted foreign nationals from the data set as a partial control on the educational experiences of the students involved--i.e. they were educated in the United States' K-12 system. A full set of CIRP responses (2,930 for both schools combined) was used to generate the factors used as independent variables. A subset of 522 freshmen who completed both CIRP and NSSE was used to test the models.

The demographics of the Fall 2006 freshman class at UGA and GT as well as the demographics of the CIRP-NSSE respondents are presented in Tables 1 and 2. The combined sample used for analysis was 60% female, 82% white/Caucasian, 76% Georgia resident, and 55% STEM majors.

Table 1. Fall 2006 Demographics for UGA & GT Freshmen

	University of Georgia (UGA)	Georgia Tech (GT)
First-time Freshmen (N)	5059	2594
Gender (%)		
Male	37.7	70.0
Female	62.3	30.0
Ethnicity (%)		
Asian	7.2	18.8
African-American	7.4	6.9
Hispanic	2.5	4.6
Native American/Alaskan Native	0.4	0.2
Multiracial	2.5	0.6
Caucasian	79.5	68.9
State Residency (%)		
Out-of-State	14.9	39.1
GA resident	85.1	60.9
Citizenship (%)		
U.S. Citizen	96.1	91.1
Resident Alien	3.2	5.1
Alien, Non-Resident	0.7	3.9
Major (%)		
Non-STEM	85.8	18.3
STEM	14.2	81.7
SAT Verbal (mean)		
	611	648
SAT Math (mean)		
	616	695

The dependent variables are the five NSSE Benchmarks: Level of Academic Challenge (LAC), Active and Collaborative Learning (ACL), Student Faculty Interaction (SFI), Enriching Educational Experiences (EEE), and Supportive Campus Environment (SCE).¹ The predictor variables used come from two sources: Pre-existing (background) data and CIRP survey data.

The background data is primarily information that would be readily available to any institution prior to admissions. Specific variables used here are gender and ethnicity (dummy coded into Asian and Black/Hispanic variables). Prior research has found that the impact of engagement

¹ Individual survey items from the NSSE were also considered, primarily two of the summary items: ‘how would you rate your entire educational experience at this institution’ (overall rating) and ‘If you could start over again, would you go to the same institution you are now attending?’ (attend same college). However, these models performed poorly and are not included in this study.

differs between students with high and low SAT scores (Carini, Kuh, & Klein, 2006). Thus, we also included SAT Verbal and SAT Math quartile ranking as independent variables. SAT Quartiles were chosen rather than raw SAT scores to minimize collinearity issues.

Two additional variables were included as potential controls. Institution was dummy coded to allow for engagement differences between schools. Because engagement can differ as much, if not more, between programs than between institutions (Chatman, 2007) we introduced a control for major, broadly categorized into STEM and non-STEM majors.

	University of Georgia (UGA)	Georgia Tech (GT)	Total
First-time Freshmen (N)	220	302	522
Gender (%)			
Male	30.0	47.4	40.0
Female	70.0	52.6	60.0
Ethnicity (%)			
Asian	6.4	11.9	9.6
African-American	5.0	3.6	4.2
Hispanic	1.8	3.6	2.9
Native American/Alaskan Native	0.0	0.3	0.2
Multiracial	2.3	0.3	1.2
Caucasian	84.4	80.1	81.9
State Residency (%)			
Out-of-State	14.1	30.8	23.8
GA resident	85.9	69.2	76.2
Major (%)			
Non-STEM*	73.3	25.8	45.6
STEM	26.7	74.2	54.4
SAT Verbal (mean)	631	650	643
SAT Math (mean)	630	689	667

A major challenge posed by this project was managing the large amount of data available from the CIRP survey--over 200 individual items. The range of items and the size of our sample made it necessary to identify the most relevant elements from CIRP for inclusion as independent variables. In examining items within question blocks, some questions appeared to address similar concepts and issues. To minimize the likely multicollinearity caused by this, we elected to create scales based on factor analysis of the 2006 CIRP respondents from both institutions. We chose to base these scales on all CIRP respondents (not just those who subsequently completed the NSSE) since this group was more representative of the general population.

Principal factor extraction with Direct Quartimin² Rotation was used on the 2,930 CIRP respondents from both Institutions. Results of broad factor analysis led us to focus on two question blocks for this study: activities in the past year (26 items) and future plans/expectations (18 items). Initial solutions produced six factors from Activities in the Past Year, and five factors for Future Plans/Expectations. Of these, we selected eight factors to include in analysis. These factors are presented in Table 3.³

Table 3. CIRP Factors			
Item Group	Factor	Chronbach's Alpha	Contributing Items
Past:	Engagement	.56	Performed volunteer work, Performed community service as part of a class, Studied with other students, Asked a teacher for advice after class, Voted in a student election, Participated in organized demonstrations
Past:	Inhaled	.62	Drank beer, Drank wine or liquor, Smoked cigarettes, Came late to class
Past:	News Hound	.71	Read a newspaper for: National and global news, Read a newspaper for: Local news and information, Used the Internet: To read news sites, Read a newspaper for: Schoolwork
Past:	Faith & Values	.42	Discussed religion, Attended a religious service, Discussed politics
Past:	Disaffected	.33	Felt depressed, Felt overwhelmed by all I had to do, Was bored in class, Used the Internet: To read blogs
Future:	Optimism	.45	Transfer to another college before graduating (<i>Reversed</i>), Make at least a B average, Be satisfied with your college
Future:	Uncertain	.57	Change career choice, Change major field, Need extra time to complete your degree requirements
Future:	Work	.58	Get a job to help pay for college expenses, Work full-time while attending college

² Direct Quartimin (Direct Oblimin with delta = 0) rotates for simplified factors with minimal cross-loadings. This method allows for fairly large correlations between factors. Factors were extracted based on eigenvalues and scree plot, with an eye towards solutions where the extracted factors made sense. Inclusion of a variable within a factor was dependent on having at least a .4 loading in the structure matrix.

³ Separate analyses were also run for Hours Per Week in the Past Year, Self-Ratings, Goals, and Political Views. Hours Per Week factors turned out to be highly parallel to the Past Activities set, Self-Ratings and Goals were not relevant to the outcomes, and Political Views did not settle into a stable set of factors. It should be noted that factor and variable selection was performed as a blend of theory and data-driven exploration. We are confident that this yielded a suitable set of independent variables for the models. However, a different set of predictors could be derived from the data.

Scales were derived from each factor by taking the mean of the contributing items, which kept the scale on the same response range as the original questions (1-3 for Past scales, and 1-4 for Future scales). Students needed to have answered roughly 75% of the items (no more than one missing for most scales) to calculate a scale score.

Three derived factors were excluded from analysis based on technical and content issues. The final Past Acts factor was dropped based on fairly low coherence – both numerically and conceptually. This included if a student had *played a musical instrument, socialized with someone of another racial/ethnic group, tutored another student, and was a guest in a teacher's home* in the past year. Similarly, a Future Plans factor which consisted of the likelihood they would *join a social fraternity or sorority and play varsity/intercollegiate athletics* in the next year was dropped as a factor. However, exploratory analysis showed significant correlations between these two factors and engagement outcomes. Since it appeared that at least some items in these factors were making a relevant contribution, these items were included as separate variables in the model. A third factor, Future Participation Plans, showed a strong overlap with the Past Engagement factor. Because of the potential problems with collinearity when including both measures, only one of the two was retained. We decided utilize Past Engagement, as it generally had stronger associations to the NSSE benchmarks. Past participation as a construct is also more adaptable, as behavior is something that can be observed or verified independent of CIRP, or other self-report instruments.

The association between student background, CIRP responses, and the NSSE benchmarks was tested using an Ordinary Least Squares (OLS) regression approach. This allowed us to explore both the overall ability to predict NSSE Benchmark outcomes, as well as the relative importance of individual components. We opted to use a two-part approach to the models. First, Institution was entered into the model. In a broad sense, any effects of the background and CIRP items would be controlled for institutional differences. This was followed by a stepwise regression, allowing variables to enter based on the most significant association with the dependent variables ($p = .05$ or less). Items could be removed in subsequent steps if they failed to maintain a level of significance greater than $p = .01$. However, this did not occur in the models.³

Results

A summary of the OLS regression models is presented in Table 4 below. Predictors are presented as unstandardized beta weights, or how much a one-unit change on the predictor increases or decreases the associated benchmark. For the CIRP scales, this means a one-point shift requires an increase in several items. Conversely, each point change on a single question changes the benchmark by a fraction of the scale coefficient, depending on the number of items in the scale.

³ While theory guided our selection of variables, our approach in employing stepwise regression was to create a 'best fit' model. Given the exploratory nature of this research, we believe this is the most appropriate course of action. It may be possible that theoretically important or interesting elements were excluded from the models, simply because they had little impact on our measured outcomes.

Table 4. OLS Multiple Regression on NSSE Benchmarks
Unstandardized Coefficients (Std. Error)

	Level of Academic Challenge (LAC)	Active and Collaborative Learning (ACL)	Student Faculty Interaction (SFI)	Enriching Educational Experiences (EEE)	Supportive Campus Environment (SCE)
Institution	3.12* (1.27)	5.50*** (1.49)	-1.64 (1.70)	2.23* (1.13)	0.22 (1.67)
Past: Engagement (6 Items)	7.49*** (1.79)	5.26* (2.17)	7.52** (2.43)	5.49** (1.62)	
Past: Inhaled (4 Items)					-6.48** (2.27)
Past: News Hound (4 Items)	6.13*** (1.28)	3.02* (1.50)	5.22** (1.67)	2.56* (1.16)	6.00*** (1.60)
Past: Faith and Values (3 Items)		4.08* (1.65)		3.98** (1.28)	
Past: Disaffected (4 Items)	-3.51* (1.67)	-4.84* (1.93)			-8.06*** (2.27)
Past: Tutored		4.02*** (1.09)	4.35** (1.24)		
Future: Optimism (3 Items)		-3.45* (1.64)			4.84* (1.92)
Future: Uncertain (3 Items)					3.26* (1.41)
Future: Work (2 Items)		2.22* (1.05)	3.32** (1.20)		
Future: Varsity Athletics				1.40* (0.58)	
Ethnicity: Black/Hispanic			6.65* (2.79)		8.99** (2.77)
Constant	28.39 (4.94)	14.67 (9.30)	-10.34 (6.39)	-0.80 (4.38)	43.85 (10.84)
R2	0.140	0.17	0.167	0.131	0.135
Adj. R2	0.131	0.152	0.154	0.119	0.119
F Value (df)	15.40*** (4, 378)	9.57*** (8, 374)	12.57*** (6, 375)	11.37*** (5, 377)	8.40*** (7, 374)
Condition Index (Model)	20.5	44.7	22.1	21.7	41.1
N	382	382	381	382	381

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

The percentage of total variance explained by the models range from 11.9 percent (EEE and SCE) to 15.4 percent (SFI). The control variable—Institution—was significant in three of the five models (LAC, ACL and EEE). Two of the scales—Past Engagement and Past News Hound—are particularly noteworthy. Past Engagement was a significant variable in four of the models, and News Hound was significant in all five models. The Past Engagement factor included engagement activities within the context of high school (asking a teacher for advice after class) as well as a cluster of “civic engagement” items (volunteer work, community service, voting in student elections, and participating in organized demonstrations). The positive coefficients from the model reveal that the more students engage in this cluster of activities, the higher their reported engagement in their first year of college. For example, for each Past Engagement scale unit increase, there is a 7.52 increase in the benchmark score for Student Faculty Interaction, and a 7.49 increase in the benchmark for Level of Academic Challenge.

Even more noteworthy is the effect of the News Hound factor on reported engagement. For example, for each unit change in this scale, there is an increase of 6.13 for Level of Academic Challenge benchmark, 5.23 for Student Faculty Interaction, and 6.00 for Supportive Campus Environment. This factor is comprised of four tightly related items (reading a newspaper for national/global news, local news, and for schoolwork, and reading news sites on the Internet; Chronbach’s Alpha=.71). These activities seem to play a considerable role in student engagement as measured by the NSSE.

Students who reported higher levels of Disaffection in high school (feeling depressed, overwhelmed with work, and bored in class) report lower levels of Level of Academic Challenge, Active and Collaborative Learning, and particularly Supportive Campus Environment. Indeed for each scale increase in Disaffection, the SCE benchmark declines by 8.06 points. SCE is also significantly impacted by cigarette and alcohol use (as measured by the factor Inhaled).

The factor Faith and Values, which comprises discussions of politics and religion, as well as attendance at religious services, is positively linked with Active and Collaborative Learning and Enriching Educational Experiences. Meanwhile, having tutored another student in high school is associated with higher benchmark scores in ACL and Student Faculty Interaction. Students intending to work while in college (to help pay for college costs) report slightly higher ACL and SFI benchmarks.

Student expectations about their college career seem to play a role in engagement as well. For example, students who express Optimism in the CIRP survey (expect to make a B average in college, expect to be satisfied with college, and don’t expect to transfer) report a higher Supportive Campus Environment. However, these students also report lower levels of Active and Collaborative Learning. Another anomalous finding is that students who express Uncertainty (more likely to change major or career choice, and need more time to complete their degree requirements) also report higher SCE benchmarks. One possible explanation is that this group of students is more likely to seek out career counseling and other forms of academic advising and support.

Many of the demographic and admission variables did not enter the models. SAT verbal and Math were not factors, nor was gender or STEM major. Ethnicity did play a role in two of the models. Black and Hispanic students reported higher levels of Student Faculty Interaction and a Supportive Campus Environment--a salutary finding in light of the efforts on both campuses to address minority recruitment and retention.

Finally, it should be noted that a degree of multicollinearity exists in these models. This issue particularly affects the models for ACL and SCE. We intend to address this problem in the future by including the results of future CIRP and NSSE surveys. By raising the sample size, we hope to lower the standard error surrounding the parameter estimates.

Discussion

Since the 1970s there has been a growing body of literature examining the relationship between students' level of engagement with their college and the various effects of that engagement on student "success." George Kuh and his colleagues are the most recent theorists to have taken up the cause with their development of the NSSE and its various offshoots. Astin (1977, 1993), Kuh (2003), Pascarella & Terrenzini (1991, 2005) and others have argued that students benefit from an educational environment that engages in good practices such as: encouraging contact between faculty and students; encouraging and promoting active learning; communicating high expectations; emphasizing time on task; encouraging prompt feedback; and developing reciprocity and cooperation among students (Chickering & Gamson, 1991). The emphasis in much of the discussion about the importance of students engaging with the college, however, has been on how the college/university should be structured, what services should be provided, and what requirements should be made of faculty and students in order to get students to increase their level of engagement with the college. What is missing is Bandura's (1978) idea of reciprocal determinism: in addition to what colleges can do to increase student behaviors or engagement, *what characteristics are incoming students bringing to the table and which of these influence their engagement behaviors?* The primary purpose of this study, therefore, was to examine the relationship between student responses on the CIRP freshmen survey (incoming characteristics) with their engagement as measured by the responses on the five NSSE benchmarks.

CIRP asks two general sets of questions, one set directed at past behaviors during the senior year of high school and one set directed at anticipated future behaviors and expectations of the college experience. Generally speaking, factors relating to past activity loaded into the models before future plans entered. This supports the notion that past behavior is perhaps more salient to the ratings on the NSSE benchmarks than are anticipated future behavior. That is, students who already have a history of engagement in high school will likely continue those patterns of behavior and demonstrate engagement with their college, at least during their first year. As Emirbayer and Mische (1998) propose, these results may simply be a reflection of the fact that when confronted with a new situation people continue to do what they have been doing in order to maintain their sense of self. Extrapolating from a general sense of personal agency to the transition from high school to college, our research supports the idea that students continue to engage in behaviors that have been "working" for them.

Four NSSE benchmarks (LAC, ACL, SFI, and EEE) were predicted by past participation acts such as volunteering, performing community service, asking a teacher for advice, voting, and participating in demonstrations. In some ways the connection between past acts and perceived level of academic challenge at the end of the first year of college is not surprising, because students who report higher levels of cognitive reasoning on Bloom's taxonomy and greater expenditure of effort in high school should arrive at college with better work habits and be prepared to exert more effort on academic tasks (Pace, 1982). In addition, many questions on the ACL benchmark as well as the SFI and EEE benchmarks reflect similar activities to what students have already reported doing in high school. For example, the ACL benchmarks contain questions that relate to tutoring others students, participation in community based projects, discussions with faculty members outside of class, and working with other students on projects. Student-Faculty interaction includes questions related to discussing grades or assignments with an instructor, talking about career plans with a faculty member, and working with faculty members on outside projects (research, committees, etc.). The Enriching Educational Experiences benchmark again hits on themes related to community and civic engagement, communications with classmates and faculty members, and participation in co-curricular activities.

Another set of high school behaviors which affected the ratings of all five NSSE benchmarks at the end of the freshman year was what we termed "news hound." These are the students who report that they regularly read the newspaper and/or use the internet to read news sites. According to the Pew Research Center (2006), while newspaper readership continues to decline, roughly 29 percent of 18 to 29 year olds read (either in print or online) a newspaper on any given day. While younger people are less likely to read a newspaper, readership rates in the 18-29 age group have remained steady for the previous decade even as overall readership has declined. A chief benefit to reading a newspaper every day is a greater awareness and inclination to talk with others about politics and current events (Koch, 1994, O'Sullivan, 1993). Thus, our findings that students who reported reading newspapers (either in print or on-line) during high school reported higher levels of engagement on each of the NSSE benchmarks at the end of their first year of college is perhaps not surprising.

There was also a relationship between reported levels of faith and values engagement in high school (i.e., they reported discussing religion and politics, and attending religious services) and reported engagement on the NSSE benchmarks for Active & Collaborative Learning and Enriching Educational Experiences. Again, these results are not particularly surprising because of the historical social outreach mission of many religious organizations. Both of these benchmarks contain questions related to community-based projects, tutoring, volunteerism, and discussions of politics and religion.

Not all past behaviors are predictive of engaged behavior as measured by the NSSE benchmarks. Incoming first-year students who reported that during their senior year in high school they had felt depressed, felt overwhelmed, or were bored in class were at the end of their first year less likely to report that they had engaged in college activities which were contained in the ACL benchmark (e.g., asking questions in class, working with other students on projects, discussing ideas from your readings or classes). They were also less likely to perceive their institution as providing a supportive campus environment. The perceptions of a supportive college campus

environment (SCE) were also negatively affected by whether students had, in high school, used alcohol and tobacco, or were occasionally or frequently late to class.

The CIRP also asks new first-year students to make certain predictions about their college experiences, although the benchmarks were not as well predicted by anticipated future acts as they were by reported past acts. Students who reported that they were optimistic about their college future were more likely to expect to make at least a B average, expected to be satisfied with their college, and were less likely to report that they planned on transferring. These students were more likely to indicate on the NSSE that the campus environment was supportive. There is considerable evidence that this “sense of belonging” is related to relationships with faculty, other students, and with the larger institutional community itself and is necessary for optimal social, emotional, and cognitive development (Baumeister & Leary, 1995; Osterman, 2000; Ostrove & Long, 2007; Pittman & Richmond, 2007), findings which echo the earlier works of both Dewey (1997) and Vygotsky (1997). Ultimately, as Tinto (1993) aptly demonstrated, for first year students, the development of a sense of belonging is critical in their decisions concerning persistence. In this study, the fact that underrepresented minority students also reported good student-faculty interaction and a supportive campus environment offers support for the continued emphasis on educational and social support activities directed towards this population, and perhaps an extension of these programs to other groups.

Conclusions

In higher education, there is virtually unanimous agreement that engaged students are most likely to succeed academically. This certainty has evolved beyond the academy and into public policy, as evidenced by the growing chorus of media, accreditors, legislators, and federal and state education agencies requesting evidence of student engagement—often as measured by student responses to surveys such as CIRP, YFCY, CSEQ and NSSE. As more and more institutions of higher education work to comply with these requests, it bears revisiting the idea that engagement is truly a two-way street. Colleges and universities provide an environment in which students can develop intellectually, socially, and spiritually. At the same time, students bring to the table distinct traits that can mitigate or exacerbate the efforts of campuses to foster student development. Our research attempts to bring the student back into the engagement picture by using pre-college behaviors as measured by a commonly administered survey—the CIRP Freshmen Survey—to predict college habits of engagement as measured by NSSE. Our results show that a modest, but significant contribution to student engagement patterns are to be found in activities during high school as well as the attitudes students bring with them to college. While the specific findings reported here are not intended to generalize beyond our institutions, we expect that this methodology applied in different institutional settings should return interesting and meaningful results. As we continue to collect both CIRP and NSSE data, we would like to further explore the linkages between engagement as measured by CIRP and longer-term engagement, such as that manifested by college seniors through NSSE. Given the growing demand for evidence of institutional effectiveness as measured by student engagement, having a clear understanding of the limits of what the institution can control and what it cannot becomes essential.

References

- Astin, A. W. (1975). *Preventing students from dropping out*. San Francisco: Jossey-Bass.
- Astin, A. W. (1977). *Four critical years*. San Francisco: Jossey-Bass.
- Astin, A.W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25, 297-307.
- Astin, A. W. (1993). *What matters in college?: Four critical years revisited*. San Francisco: Jossey-Bass.
- Astin, A. W. and Oseguera, L. (2003). *Degree Attainment Rates at American Colleges and Universities*. Los Angeles: Higher Education Research Institute.
- Bandura, A. (1978). The self system in reciprocal determinism. *American Psychologist*, 33(1), 344-358.
- Baumeister, R. F. & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3). 497-529.
- Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, 47(1). 1-32.
- Camara, W. J., & Echternacht, G. (2000). The SAT I and high school grades: Utility in predicting success in college. *The College Board Research Notes*, RN-10, 1–12.
- Camera, W. J. (2005). Broadening criteria of college success and the impact of cognitive predictors. In Camara, W. J. & Kimmel, E. W. (Eds.), *Choosing students: Higher education admissions tools for the 21st century* (pp. 53-79). Mahwah, NJ: Lawrence Erlbaum Associates
- Chatman, S. (2007). Institutional Versus Academic Discipline Measures of Student Experience: A Matter of Relative Validity. CSHE.8.07. (May 2007). Available at <http://cshe.berkeley.edu/publications/docs/ROP.Chatman.AcadDisciplines.6.5.07.pdf>
- Chickering, A.W., and Gamson, Z.F. (1991). Applying the Seven Principles for Good Practice in Undergraduate Education. *New Directions for Teaching and Learning*, no. 16. San Francisco: Jossey-Bass Inc.
- DeBerard, M. S., Spielmans, G. I., & Julka, Deana L., (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal*, 38(1). Retrieved May 16, 2008, from the ERIC database.
- Dewey, J. (1997). *Experience and education*. New York, NY: Free Press
- Emirbayer, M. & Mische, A. (1998). What is agency? *American Journal of Sociology*. 103(4). 962-1023.
- Fleming, J. (2002). Who will succeed in college? When the SAT predicts Black students' performance. *Review of Higher Education*, 25(3), 281–296.

- Hoffman, J. L. (2002). The impact of student cocurricular involvement on student success: Racial and religious differences. *Journal of College Student Development*, 43(5), 712–739.
- Koch, N. S. (1994). The effect of The New York Times on college students' political information and behavior. *Social Science Journal*, 31(1). 29-38.
- Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change*, 35(2). 24-32.
- National Survey of Student Engagement (2007). *Experiences that matter: Enhancing student learning and success*. Bloomington: IN
- National Survey of Student Engagement (2007a). *About NSSE: Our origins and potential*. Retrieved May 16, 2008 from <http://nsse.iub.edu/html/origins.cfm#background>
- Oseguera, L., Gunty, M.L., Marquez Hall, S. & Wernig, S.R. (May 2005). 2005 MISSION: Improve higher education. The CIRP Freshman Survey, YFCY, & CSS: Using Longitudinal Data to Assess Student Change and Development in College Student Learning and Outcomes. Panel presented at the annual forum of the Association for Institutional Research, San Diego, CA, May 2005.
- Ostrove, J. M., & Long, S. M. (2007). Social class and belonging: Implications for college adjustment. *The Review of Higher Education*, 30(4). 363-389.
- O'Sullivan, M. J. (1993). Teaching undergraduate community psychology: Integrating the classroom and the surrounding community. *Teaching of Psychology*, 20(2). 80-83.
- Pace, C. R. (1979). *Measuring outcomes of college*. San Francisco: Jossey-Bass.
- Pace, C. R. (1982). *Achievement and the quality of student effort*. Paper presented at the meeting of the National Commission on Excellence in Education, Washing, DC. Retrieved on May 16, 2008, from the ERIC database.
- Pascarella, E.T., & Terenzini, P.T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.
- Pascarella, E.T., & Terenzini, P.T. (2005). *How college affects students: Volume 2: A third decade of research*. San Francisco: Jossey-Bass.
- Pew Research Center for the People and the Press (2006, July 30). *Online papers modestly boost newspaper readership*. Retrieved May 16, 2008 from <http://people-press.org/reports/display.php3?ReportID=282>
- Pittman, L. D., & Richmond, A. (2007). Academic and psychological functioning in late adolescence: The importance of school belonging. *Journal of Experimental Education*, 75(4). 270-290.
- Pritchard, M. E., & Wilson, G. S. (2003). Using emotional and social factors to predict student success. *Journal of College Student Development*, 44(1), 18–28.

Pryor, J. H., Hurtado, S., Saenz, V. B., Santon, J. L., & Korn, W. S. (2007). *The American Freshman: Forty Year Trends, 1996-2006*. Los Angeles: Higher Education Research Institute.

Thomas, L.L., Kuncel, N. R., & Crede, M (2007). Noncognitive variables in college admissions: The case of the non-cognitive questionnaire. *Educational and Psychological Measurement*, 67(4). 635-657.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). USA: The University of Chicago Press.

U.S. Department of Education, *A test of leadership: Charting the future of U.S. higher education*. Washington, D.C., 2006.

Vygotsky, L. S. (1997). *Educational psychology*. Boca Raton: St. Lucie Press.