Intercollegiate Athletes and Effective Educational Practices:

Winning Combination or Losing Effort?

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Abstract

Scrutiny of intercollegiate athletics has intensified in recent years. Yet previous studies about the experience of student-athletes show that participation in intercollegiate sports has little influence on desirable outcomes of college. This study compares the engagement of student-athletes with those of non-athletes in effective educational practices. Contrary to many reports in the popular media, the findings from this study indicate that, on balance, student-athletes across a large number of colleges and universities do not differ greatly from their peers in terms of their participation in effective educational practices. In most instances, when differences do exist, they favor athletes.

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Intercollegiate athletics at colleges and universities have been referred to as "American higher education's 'peculiar institution.' Their presence is pervasive, yet their proper balance with academics remains puzzling" (Thelin, 1994, p. 1). For a host of reasons, scrutiny of this "peculiar institution" -- intercollegiate athletics -- has intensified in recent years. Such articles as "Jock Majors" (Suggs, 2003a) and "Grades and Money" (Suggs, 2003b) lament that academics and athletics are out of balance. The recent scandal at the University of Colorado (Jacobson, 2004) highlights the almost weekly reports of problems in athletic departments across the country. Calls for reforms (e.g., Bowen & Levin, 2003) are coming from inside and outside the academy as well as from the National Collegiate Athletics Association (NCAA) national office. Even federal legislation has been contemplated to bring intercollegiate athletics back into proper perspective.

Some of the most scathing and influential critiques of college athletics are by Shulman and Bowen (2001) and Bowen and Levin (2003). Their research suggests that student-athletes routinely receive preferential treatment in the admissions process and are more likely to be academically under-prepared than their peers. As a result, student-athletes earn lower grades in college. Additionally, they argue that institutions allow athletes to create their own subculture and that it flourishes, isolated and insulated from the larger campus culture.

The findings from other studies are somewhat less pejorative in terms of the effects of participating in intercollegiate athletics on the quality of the undergraduate experience. For example, competing in intercollegiate sports appears to have little influence on such college outcomes as learning for self-understanding, higher-order cognitive activities, and motivation to

succeed academically (Wolniak, Pierson, & Pascarella, 2001). Other studies reveal no differences between student-athletes and non-athletes with regard to cognitive development (Pascarella, Bohr, Nora, & Terenzini, 1995; Terenzini, Pascarella, & Blimling, 1996), grades in college (Hood, Craig, & Ferguson, 1992), or time devoted to studying or attending class (Richard & Aries, 1999). For example, Richards and Aries found no significant difference in GPA between athletes and non-athletes despite the fact that athletes entered college with significantly lower SAT scores. But other studies, like the work of Shulman and Bowen (2001) and Bowen and Levine (2003), report that student-athletes competing in Division III athletics at Ivy League institutions perform at lower levels academically than non-athletes. Such differences are less evident for female student-athletes and student-athletes in non-revenue generating sports (Pascarella et al., 1999) as compared to male student-athletes and athletes playing revenue-generating sports, such as football and men's basketball.

The NCAA suggests that "institutions are to provide an environment in which the athlete and the athletics program play an essential role in the student body" thereby creating social bonds between and among student-athlete and non-athlete (Howard-Hamilton & Sina, 2001. p. 41). Yet, concerns remain that participating in intercollegiate athletics may lead to social isolation (Riemer, Beal, & Schroeder, 2000; Wolf-Wendel, Toma, & Morphew, 2001). For example, spending time with teammates may strengthen bonds between athletes, but limit interaction with non-athletes (Wolf-Wendel, et al., 2001). Despite this possible isolation, numerous researchers have reported that athletes were often more satisfied and involved than their non-athlete peers (Astin, 1993; Pascarella & Smart, 1991; Ryan, 1989). In addition, the findings are mixed in terms of whether participating in athletics is negatively associated with self-understanding and openness to diversity (Wolniak, et al.,2001), or whether athletes interact

effectively with people from diverse backgrounds because “athletes compete with and against people from socioeconomic, racial and ethnic, and religious backgrounds other than theirs” (Wolf-Wendel, et al., 2001, p. 385).

Given their rigorous training and practice routines, it’s not surprising that student-athletes devote significantly more time to extracurricular activities than members of other groups and acquired valuable time management skills (Richards & Aries, 1999). Even so, in his study of NCAA Division III basketball players at a small, private, liberal arts college, Schroeder (2000) concluded that athletes were highly engaged in their academics, spending an average of 15 hours per week studying with the majority earning GPAs exceeding 3.0.

While the harsh critiques of Shulman and Bowen (2001) and Bowen and Levin (2003) may apply to some athletic programs and institutions, not enough is known about the extent to which intercollegiate athletes devote time and energy to activities that are empirically linked to desired outcomes of college. Most of the previous work on the collegiate experiences of student-athletes focuses on a small segment of higher education drawing from elite Ivy League colleges or the experiences of athletes at only a small number of institutions. Thus, it is difficult to get a clear, definitive grasp of if, or the extent to which, intercollegiate athletes across a large number of colleges and universities may be shortchanged in terms of the quality of their undergraduate experience.

Purpose of the Study

This study uses a national sample of undergraduates to compare the engagement of student-athletes in effective educational practices with that of their non-athlete counterparts. Two research questions guide the study.

1. First, how do the educational experiences of student-athletes compare with those of non-athletes?
2. Second, does the level of competition (NCAA division, NAIA membership) relate to engagement in good practices in undergraduate education, perceptions of the campus environment, and self reported gains?

Methods

We use data from The National Survey of Student Engagement (NSSE) to compare the collegiate experiences of student-athletes with those of their non-athlete peers. The NSSE database is especially well-suited for this study because research on the college student experience indicates that students learn more when they are engaged at reasonably high levels in a variety of educationally purposeful activities (Astin, 1984; Kuh, Douglas, Lund, & Ramin-Gyurnek, 1994; Kuh, Schuh, Whitt & Associates, 1991; Pascarella & Terenzini, 1991; Tinto, 1987).

Student engagement represents activities traditionally associated with learning, such as reading and writing, preparing for class, and interacting with instructors about various matters (Kuh, 2001). Student engagement also includes other activities considered important outcomes of college, such as learning how to effectively collaborate with peers on problem solving tasks and working productively together in community service activities (Kuh, 2001). Thus, participating in educationally purposeful activities directly influences the quality of students' learning and their overall educational experience. In addition, Edgerton and Shulman (2002, p. 4) view engagement both a desired end in itself as well as an indirect indicator of learning (see also Shulman, 2002):

> We need to learn more about the forms and conditions of engagement that relate to student competence and commitment in arenas of practice. There are important

> questions, too, about engagement not as a means to an end (the premise of NSSE) but as an experience worth having in itself. We go to the symphony, after all, not to improve ourselves but to hear the music, to have the experience. Similarly, there are aspects of the college experience—participating in a seminar, for instance, or a role in student governance—that have a kind of value we have not yet learned to describe in detail or to document.

NSSE was specifically designed to assess the extent to which students are engaged in empirically derived good educational practices and what they gain from their college experience (Kuh, 2001). Although NSSE doesn't assess student learning outcomes directly the main content of the NSSE instrument, *The College Student Report*, represents student behaviors that are highly correlated with many desirable learning and personal development outcomes of college.

NSSE collects information directly from random samples of first-year and senior undergraduates at four-year institutions. Because of the potential bias introduced among athletes due to attrition to the senior year, this study focuses only on first-year students. Table 1 displays student-athlete status[1], gender, and athletic division for the sample used for the study. Included in the sample are 57,308 undergraduate students – 7,821 of whom were student-athletes and 49,407 who were non-athletes – who completed NSSE in the spring of 2003. Students from 395 different four-year colleges and universities were represented. Of these institutions, 107 are NCAA Division I, 93 are NCAA Division II, 145 are NCAA Division III, and 50 are NAIA schools.

Analysis

We conducted a series of hierarchical linear models (HLM) to explore the effects of being a student-athlete on the collegiate experience. The dependent variables fall into four categories: student engagement, perceptions of campus environment, self-reported gains, and grade point average. Student engagement is measured using three scales: (1) level academic

[1] Student-athletes are defined as anyone who responded yes to the following question: "Are you a student-athlete on a team sponsored by your athletics department?"

challenge, (2) student-faculty interactions, and (3) active and collaborative learning (see Appendix A for a listing of the constructs used as dependent variables in the models and the items contributing to each measure). The perceived campus environment category includes two measures: a supportive campus environment scale and an overall satisfaction with college scale. Students' gains in learning and intellectual development are represented by three scales: gains in personal and social development, gains general education knowledge, and gains in practical competencies. Our final set of models predicts student-reported grades[2].

In most studies of organizational or institutional effects, researchers must decide about the appropriate unit of analysis (Hu & Kuh, 2004; Raudenbush and Bryk, 2002). Should they build regression models by aggregating to the institution level, or should they attach institution-level characteristics to individuals? If researchers build models at the institution level, they are prone to the "ecologically fallacy," whereby individual differences are masked (Hu & Kuh, 2003; King, 1999; Kreft & deLeeuw, 1998). For example, an analysis based on colleges might reveal that students at small colleges are more engaged in effective educational practices than students at large colleges, while an analysis of small colleges might reveal that many students at large colleges are as engaged or more engaged than small college students. Because we are especially interested in the differential impact of individual institutions on the experiences of student-athletes, we must model "nested data structures." According to Raudenbush and Bryk (2002), HLM provides the only accurate way to estimate institutional and individual effects when analyzing nested data.

Research where institution-level characteristics are attached to an individual also is flawed (Ethington, 1997). First, it violates the general assumption of ordinary least squares

[2] Student responses to the following question: What have most of your grades been up to now at this institution? A, A-, B+, B, B-/C+, C/C-/or lower.

regression (OLS): observations are independent of one another. Second, it assumes that individuals within a group are affected identically by group-level characteristics. Finally, the inclusion of group-level variables into an OLS regression equation leads to poorly estimated standard errors and inaccurate numbers of degrees of freedom, increasing the likelihood of committing a Type II error (i.e., two variables are different from one another at a level of statistical significance, when they are not).

Using HLM overcomes the problems associated with unit of analysis by simultaneously modeling both individual and institutional effects. HLM models individual-level and group-level variables simultaneously, resulting in more accurate parameter estimates, making it possible to determine what is an individual-level effect or a group-level effect. Because these effects can be partitioned, each can be modeled with their respective characteristics.

HLM also allows the intercept to vary, thereby partitioning the variance between the institution and the student. In other words, we are able to accurately attribute the variance associated with the student and the variance associated with the institution. Additionally, if we suspect the experiences of student-athletes are different at different college campuses, we can allow the athlete slope to vary by institution. By allowing the student-athlete slope to vary, the coefficient for student-athletes then represents the average institutional difference between student-athletes and non-athletes. If the athlete effect varies significantly by institution, we can then model the average athlete differential with institutional characteristics.

For each of the dependent variables, we estimated separate models for men and women. In the first set of models, the within institution models (where we only model student characteristics), we examine whether student-athletes differ, on average, from their non-student-athlete peers on the outcomes of interest. We allow both the intercept and athlete slope to vary

but do not include any institutional controls that predict either the student-athlete slope or the intercept. The model controls for student characteristics (age, race, gender, transfer, grades, Greek, major, part-time status, residing on campus, parents' education)[3]. Table 2 shows the descriptive statistics of variables included in our models.

The second set of models represents average institutional differences (intercept), and in some cases the student-athlete slope, using institutional characteristics. At the institution level, we created dummy-coded variables for the four athletic divisions (Division I, Division II, Division III, and NAIA) to determine whether student experiences differ by division. Division III was designated as the omitted group. Due to constraints presented by multicollinearity between athletic division and other institutional characteristics (e.g., size, selectivity, Carnegie Classification), we include athletic division in the intercept and slope models.

The continuous independent and dependent measures are standardized in the models, meaning that the unstandardized coefficients in all of the tables represent effect sizes. An effect size is the proportion of a standard deviation change in the dependent variable as a result of a one-unit change in an independent variable. The larger the effect size the more likely the differences between groups represent performance that warrants serious discussion and, perhaps, intervention. Taking the advice of Rosenthal and Rosnow (1991) we consider an effect size of .10 or less to reflect a trivial difference, between .10 and .30 small, between .30 and .50 moderate, and greater than .50 large.

Results

Engagement in Effective Educational Practices

Table 3 presents the effect sizes and significance levels for the models predicting student engagement in effective educational practices. On average, student-athletes are as engaged in

[3] Because of missing data, we include SAT as a control only for models self-reported grades.

most educationally purposeful activities as their peers. Compared with male non-athletes, male student-athletes are as challenged academically, interact with faculty as frequently, and participate as often in active and collaborative learning activities. Female student-athletes are comparable on the academic challenge measure to their non-athlete peers. Although the effect sizes are small, female student-athletes are more likely to interact with faculty and participate in active and collaborative learning activities.

The variance component for the student-athlete slope indicates whether the impact of being a student-athlete differs by institution. If the variance component for a slope is statistically significant, one can conclude that the impact of being a student-athlete is different because of the institution attended. Because none of the variance components for the student-athlete slope differ significantly from zero for student engagement, it appears that the nature and frequency of student-athlete engagement does not differ between institutions. This means, however, we cannot model the student-athlete slope. Note the instances where the coefficient for the student-athlete slope is statistically significant; this is the case for women on both active and collaborative learning and student faculty interaction). At the same time, the variance component is not statistically significant, which means that the impact of being an athlete on engagement in effective educational practices is similar across institutions.

Because the variance components for all of the model intercepts (institutional averages) are statistically significant, we then are able to model the average institutional engagement with institution-level variables, in this case athletic division. For both men and women, students at Division III schools report higher levels of academic challenge. Similarly, students at Division III schools interact with faculty more than students at Division I and Division II schools. Furthermore, men at Division I schools are statistically significantly less likely then men at

Division III schools to engage in active and collaborative learning activities. Women at Division I and Division II schools are less likely than women at Division III schools to participate in active and collaborative learning activities.

Some have suggested that for various reasons Division III athletes have a qualitatively different, more well-rounded educational experience than their counterparts attending schools that belong to other athletic divisions. The results from this study suggest that, in general, very few differences exist between the engagement of student-athletes and non-athletes on a given campus. However, because students at small residential liberal arts colleges (most of which are Division III schools) generally are more engaged than students at other types of institutions (Kuh, 2003; National Survey of Student Engagement, 2003), Division III their student-athletes are more likely to be engaged than student-athletes in other divisions.

Perceptions of Campus Environment

Similar patterns of results emerge from the supportive campus environment models (Table 4). Male and female student-athletes report that their campuses provide more academic and social support than do their non-athlete peers. In addition, female student-athletes are more satisfied with the overall college experience than female non-athletes. However, male student-athletes appear to be less satisfied than other men on their campus.

After examining the variance components for the student-athlete slope, it appears that the impact of being a student-athlete on support and satisfaction does not differ between institutions. However, because the variance components are significant for the intercepts, we are able to model them using athletic division. On average, both men and women at Division III schools report they receive more support compared with students at Division II and Division I schools.

Also, men and women at Division III schools are more satisfied with their overall college experience than their counterparts at Division II schools.

Self-reported Gains

Table 5 presents the results from the HLM analysis of self-reported gains. In general, both male and female student-athletes report greater gains than non-athletes, especially in the areas of personal/social development and practical competence. Male student-athletes report greater gains in general education than their non-athlete peers.

Once again, the gains of athletes do not differ significantly by institution. We are, however, able to model the intercepts (average institutional reports of gains). Few differences between athletic divisions emerge. Women at Division III schools report greater gains in personal/social development than women at Division I schools. Both men and women at Division III schools report greater gains in general education than students at Division I and II schools.

Grades

The final set of models predicts student self-reported grades. Male student-athletes report earning lower grades than their peers, and the effect of being a student-athlete on grades does differ significantly by institution. The student-athlete slope indicates that students at Division I schools have statistically significantly higher self-reported grades than students at Division III schools. Female student-athletes report similar grades as female non-athletes.

When we model average institutional grades (the intercept) for men, statistically significant differences emerge by athletic division. On average, men at Division II and NAIA schools report higher grades than men at Division III schools. In fact, the effects, .11 for Division II and .17 for NAIA, erase the negative effect (-.06) of being a student-athlete on grades.

Limitations

This study is limited in four ways. The first is related to the validity of the self-reported gains used in our models. As Pascarella (2001) and others point out, gain scores may be confounded by students' entering characteristics. However, Pike (1999) provides some evidence to suggest that gain scores are not significantly related to entering ability. A fair amount of research (Baird, 1976; Berdie, 1971; Pace, 1985; Pike, 1995; Pohlmann, 1974) has shown that self-reports are likely to be valid if (1) the information requested is known to the respondents, (2) the questions are phrased clearly and unambiguously, (3) the questions refer to recent activities, (4) the respondents think the questions merit a serious and thoughtful response, and (5) answering the questions does not threaten, embarrass, or violate the privacy of the respondent or encourage the respondent to respond in socially desirable ways (Kuh et al., 2001). The NSSE survey was designed to satisfy all of these conditions. Although the concerns about self-reported data are legitimate, the gains measures are only one of several sets of dependent variables used in this study.

Another limitation is the way in which the NSSE survey identifies student-athletes. Students respond to the question, "Are you a student-athlete on a team sponsored by your institution?" It is possible that some students participating in sports not sponsored by their institution (e.g., club sports) responded affirmatively to the question. However, given the size of our data set the impact of the error introduced by incorrect coding of athletes is likely to be minimal.

Third, we cannot determine the sport(s) in which the athlete respondents participated. Thus, we are unable to compare the experiences of athletes competing in revenue-generating or non-revenue generating sports. Some previous research (Pascarella, Bohr, Nora, & Terenzini,

1995; Pascarella, Truckenmiller, Nora., Terenzini, Edison, & Hagedorn, 1999) suggests that there are significant differences in the experiences of athletes in non-revenue and revenue generating sports.

Finally, given that cross-sectional data are used in this study, we are unable to control for self selection. Perhaps athletes and non-athletes who matriculate at Division III colleges are more predisposed to seek out campuses where they are surrounded by people who are highly engaged. Some of the divisional differences we see may be due, in part, to a self-selection bias. While not likely, it is possible and warrants a cautionary note.

Discussion and Implications

Much has been made recently about the Bowen and Levin (2003) report that student-athletes do not experience campus life in the same qualitatively beneficial ways as do their non-athlete peers. This infers, then, that athletes do not engage in effective educational practices at the same level as other students and, therefore, are not likely to gain as much from college. Results from this study do not support such a sweeping conclusion. Rather, our findings indicate that student-athletes are at least as engaged overall, and in some areas are more engaged, compared with their non-athlete peers. In addition, student-athletes report that they perceived their campus environment to be more supportive of their academic and social needs, and they report making greater gains since starting college in several areas. This pattern of findings corroborates other recent research into the collegiate experiences and outcomes associated with being a student athlete (Pascarella et. al, 1995, 1999; Wolniak et. al 2001)

Of special interest are the results that illuminate the impact of being an athlete at different types of institutions. Where differences exist between athletes and non-athletes, the impact of being an athlete, on average, is the same across all types of institutions in our study. In only one

instance, that being grades earned by male athletes and non-athletes, did the impact of being a student athlete have a statistically significant effect that differed across institutions.

Interpreting institutional effects and athlete status is more complicated when we consider average institutional engagement, campus support, and gains. The experiences of athletes appear to differ only slightly from their non-athlete counterparts. At the same time, the differences in average institutional scores on several measures may point to differences in the experiences of athletes that may be associated with the athletic division affiliation of their school. Because all students at Division III schools are -- on average -- more engaged, feel more supported, and report greater gains than their peers at other types of schools, it stands to reason that athletes at Division III institutions will also be more engaged than students (both athletes and non athletes) at other types of institutions.

Given the great variation in most aspects of student life, it is almost certain that some student-athletes on a given campus are short changed in non-trivial ways in terms of what they put into and get out of college (Umbach & Kuh, 2004). This is more likely to be the case for men and student athletes at larger institutions where arguably athletics requires a greater commitment of time, both in and out-of-season. Unfortunately, the NSSE database in 2003 did not make it possible to identify the primary or secondary sports of the student-athletes. Perhaps in subsequent years we will find systematic differences between student-athletes in the high and low profile areas, such as football and fencing respectively.

Implications

The findings from this study provide a different picture of student-athletes than the one typically presented in the national media. Most of the recent discussions have emphasized the problems that athletes create or suffer from. Many of the deleterious effects are associated with

Division I revenue generating sports. Granted, our results indicate that male athletes may earn slightly lower grades than their peers. At the same time, they appear to have similar or perhaps better educational experiences than their non-athlete counterparts in other ways. This same pattern of neutral or positive findings hold for women as well, as female athletes are more engaged, report greater gains, feel more supported, and earn similar grades to their non-athlete women. This is not to say that abuses do not occur or that athletes in certain sports or competing for certain institutions are not shortchanged. Certainly, deplorable conditions exist within intercollegiate athletic programs, just as the do in research laboratories, fraternity and sorority houses, and classrooms (the latter evidence by the widespread reports of cyber-plagiarism (National Survey of Student Engagement, 2003). However, it would be a mistake to tar all athletes and institutions that host athletic programs with the same brush of ignominy.

The debate about the proper role of athletics and student success should be about more than grades and class rank. Some our findings point to concerns, especially the lower grades reported by male athletes. Even after controlling for pre-college achievement (SAT), male athletes earn lower grades. Although our data suggest the trend is national, the gap between male athletes and male non-athletes is greatest at Division III and NAIA schools. We caution against over interpreting these differences, but do recommend further study as to the causes of lower grades.

In addition to contributing to the discussion on the intercollegiate athletics, our findings may be useful to high school athletes in their college choice process. They can take comfort in the fact that whatever college they choose, their experiences probably will not differ greatly from other students on their campus.

Finally, it is incumbent on colleges and universities to learn more about the experiences of their student-athletes and determine whether they are taking part in educationally sound activities and benefiting in desired ways from college at levels commensurate with their non-athlete peers. After all, we know a good deal about how student-athletes perform on the playing field. We should also keep score as to the quality of their educational activities elsewhere on campus (Umbach & Kuh, 2004).

Conclusion

For such a popular topic, it's surprising that there is so little evidence at the national level about what student-athletes do during college and how their behavior compares to other students. For example, until recently we knew almost nothing about how athletes spend their time when not on the playing fields and courts. Contrary to many reports in the popular media, the findings from this study indicate that, on balance, student-athletes across a large number of colleges and universities do not differ greatly from their peers in terms of their participation in effective educational practices. In most instances, when differences do exist, they favor athletes. That is a very different picture than what is routinely presented in the popular press.

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Table 1. Students by athlete status and athletic division

	Men			Women			Overall		
Athletic Division	Non-athlete	Athlete	Total	Non-athlete	Athlete	Total	Non-athlete	Athlete	Total
Division I	6,697	588	7,285	12,267	811	13,078	18,964	1,399	20,363
Division II	3,495	493	3,988	6,869	688	7,557	10,364	1,181	11,545
Division III	4,780	2,041	6,821	11,025	2,475	13,500	15,805	4,516	20,321
NAIA	1,475	347	1,822	2,879	378	3,257	4,354	725	5,079
Total	16,447	3,469	19,916	33,040	4,352	37,392	49,487	7,821	57,308
Division I	91.9%	8.1%	100.0%	93.8%	6.2%	100.0%	93.1%	6.9%	100.0%
Division II	87.6%	12.4%	100.0%	90.9%	9.1%	100.0%	89.8%	10.2%	100.0%
Division III	70.1%	29.9%	100.0%	81.7%	18.3%	100.0%	77.8%	22.2%	100.0%
NAIA	81.0%	19.0%	100.0%	88.4%	11.6%	100.0%	85.7%	14.3%	100.0%
Total	82.6%	17.4%	100.0%	88.4%	11.6%	100.0%	86.4%	13.6%	100.0%

Table 2. Descriptive statistics for variables included in models

	First-Year Students			
	Minimum	Maximum	Mean	Std. Deviation
Athlete	0.000	1.000	0.137	0.344
African American	0.000	1.000	0.069	0.253
Native American	0.000	1.000	0.005	0.068
Asian Pacific American	0.000	1.000	0.049	0.217
Latino/a	0.000	1.000	0.040	0.196
Other race/ethnicity	0.000	1.000	0.004	0.066
Female	0.000	1.000	0.647	0.478
Greek	0.000	1.000	0.115	0.320
Transfer	0.000	1.000	0.045	0.208
Full-time	0.000	1.000	0.978	0.145
Live on campus	0.000	1.000	0.772	0.420
parental education	-2.044	2.056	0.000	1.000
Age	-1.107	19.709	0.000	1.000
SAT	-4.026	2.823	0.000	1.000
Major - Realistic	0.000	1.000	0.024	0.153
Major - Investigative	0.000	1.000	0.290	0.454
Major - Artistic	0.000	1.000	0.085	0.279
Major - Enterprising	0.000	1.000	0.236	0.424
Major - Conventional	0.000	1.000	0.022	0.148
Major - Other	0.000	1.000	0.261	0.439

Table 3. Coefficients[4] for level-two models predicting student engagement in effective educational practices

	Academic Challenge				Student Faculty Interaction				Active and Collaborative Learning			
	Men		Women		Men		Women		Men		Women	
	Within	Full	Within	Full	Within	Full	Within	Full	Within	Full	Within	Full
Intercept	-0.02	-0.02	0.00	0.00	0.03 *	0.03 *	0.04 **	0.04 **	0.02	0.02	0.03 +	0.03 *
Division I		-0.16 ***		-0.17 ***		-0.16 ***		-0.18 ***		-0.13 **		-0.18 ***
Division II		-0.24 ***		-0.25 ***		-0.08 *		-0.10 **		-0.06		-0.11 **
NAIA		-0.15 **		-0.19 ***		-0.06		-0.02		0.04		0.05
Athlete slope	0.00	0.00	0.02	0.03	0.00	-0.01	0.05 **	0.05 **	0.03	0.03	0.03 *	0.03 *
Division I												
Division II												
NAIA												
Variance Components												
Intercept	0.06 ***	0.06 ***	0.07 ***	0.06 ***	0.05 ***	0.04 ***	0.06 ***	0.05 ***	0.07 ***	0.07 ***	0.08 ***	0.07 ***
Athlete Slope	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Level-1	0.88	0.88	0.88	0.88	0.92	0.92	0.92	0.92	0.89	0.89	0.90	0.90

[4] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education
***p<.001, **p<.01, *<p.05, +p<.10

Table 4. Coefficients for level-two models predicting student perceptions of campus environment[5]

	Supportive Campus Environment				Satisfaction			
	Men		Women		Men		Women	
	Within	Full	Within	Full	Within	Full	Within	Full
Intercept	0.02	0.02	0.01	0.02	-0.04 **	-0.04 **	-0.03 *	-0.03 *
Division I		-0.20 ***		-0.26 ***		0.00		-0.03
Division II		-0.14 ***		-0.15 ***		-0.12 ***		-0.10 **
NAIA		-0.05		0.02		-0.04		-0.01
Athlete slope	0.05 *	0.05 *	0.08 ***	0.08 ***	-0.04 *	-0.04 *	0.04 **	0.04 **
Division I								
Division II								
NAIA								
Variance Components								
Intercept	0.05 ***	0.05 ***	0.07 ***	0.06 ***	0.05 ***	0.05 ***	0.06 ***	0.06 ***
Athlete Slope	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00
Level-1	0.90	0.90	0.09	0.89	0.90	0.90	0.90	0.90

[5] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education

***p<.001, **p<.01, *<p.05, +p<.10

Table 5. Coefficients for level-two models predicting student self-reported gains[6]

	Personal/social				General Education				Practical Competencies			
	Men		Women		Men		Women		Men		Women	
	Within	Full	Within	Full	Within	Full	Within	Full	Within	Full	Within	Full
Intercept	0.00	0.00	0.00	0.00	0.01	0.01	-0.01	-0.01	-0.05 **	-0.05 **	0.04	0.00
Division I		-0.01		-0.05 +		-0.13 ***		-0.13 ***		-0.03		-0.04
Division II		-0.03		-0.07 *		-0.13 ***		-0.12 ***		-0.04		-0.05
NAIA		-0.01		0.01		-0.08 +		-0.04		-0.02		-0.01
Athlete slope	0.08 ***	0.08 ***	0.05 ***	0.05 ***	0.03 *	0.03 *	0.02	0.02	0.04 *	0.04 *	0.06 ***	0.06 ***
Division I												
Division II												
NAIA												
Variance Components												
Intercept	0.04 ***	0.04 ***	0.04 ***	0.04 ***	0.04 ***	0.04 ***	0.05 ***	0.04 ***	0.04 ***	0.04 ***	0.04 ***	0.04 ***
Athlete Slope	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Level-1	0.92	0.92	0.93	0.93	0.91	0.91	0.92	0.92	0.89	0.89	0.92	0.92

[6] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education
***p<.001, **p<.01, *<p.05, +p<.10

Table 6. Coefficients for level-two models predicting student self-reported grade point average[7]

	Men		Women	
	Within	Full	Within	Full
Intercept	0.06 ***	0.06 ***	0.06 ***	0.06 ***
Division I		0.04		-0.05
Division II		0.11 **		0.11 *
NAIA		0.17 **		0.18 **
Athlete slope	-0.07 **	-0.06 *	-0.02	-0.02
Division I		0.09 +		
Division II		0.07		
NAIA		-0.01		
Variance Components				
Intercept	0.05 ***	0.05 ***	0.08 ***	0.08 ***
Athlete Slope	0.02 *	0.02 *	0.00	0.00
Level-1	0.78	0.78	0.75	0.75

[7] Level one controls (included in both blocks) - age, race, gender, transfer, live on campus, athlete, greek, major, full-time, parents' education

***p<.001, **p<.01, *<p.05, +p<.10

APPENDIX A

CONSTRUCTS AND VARIABLES	QUESTION RESPONSE SETS
Student Engagement	
Level of Academic Challenge (a=.73-.75)	
Hours per week preparing for class (studying, reading, writing, rehearsing, and other activities related to your academic program)	0, 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, More than 30
Worked harder than you thought you could to meet an instructor's standards or expectations	Very often, often, sometimes, never
Number of assigned textbooks, books, or book-length packs of course readings during the current school year	None, 1-4, 5-10, 11-20, more than 20
Number of written papers or reports of 20 pages or more during the current school year	None, 1-4, 5-10, 11-20, more than 20
Number of written papers or reports between 5 and 19 pages during the current school year	None, 1-4, 5-10, 11-20, more than 20
Number of written papers or reports of fewer than 5 pages during the current school year	None, 1-4, 5-10, 11-20, more than 20
Coursework emphasizes: Analyzing the basic elements of an idea, experience, or theory	Very much, quite a bit, some, very little
Coursework emphasizes: Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	Very much, quite a bit, some, very little
Coursework emphasizes: Making judgments about the value of information, arguments, or methods	Very much, quite a bit, some, very little
Coursework emphasizes: Applying theories or concepts to practical problems or in new situations	Very much, quite a bit, some, very little
Campus environments emphasize: Spending significant amounts of time studying and on academic work	Very much, quite a bit, some, very little
Active and Collaborative Learning (a=.61-.63)	
Asked questions in class or contributed to class discussions	Very often, often, sometimes, never
Made a class presentation	Very often, often, sometimes, never
Worked with other students on projects during class	Very often, often, sometimes, never
Worked with classmates outside of class to prepare class assignments	Very often, often, sometimes, never
Tutored or taught other students (paid or voluntary)	Very often, often, sometimes, never
Participated in a community-based project as part of a regular course	Very often, often, sometimes, never
Discussed ideas from your readings or classes with others outside of class (students, family members, coworkers, etc.)	Very often, often, sometimes, never
Student Faculty Interaction (a=.73-75)	
Discussed grades or assignments with an instructor	Very often, often, sometimes, never
Discussed ideas from your readings or classes with faculty members outside of class	Very often, often, sometimes, never
Received prompt feedback from faculty on your academic performance (written or oral)	Very often, often, sometimes, never
Talked about career plans with a faculty member or advisor	Very often, often, sometimes, never
Perceptions of the Campus Environment	
Supportive Campus Environment (a=.76-.79)	
Campus Environments Emphasize: Providing the support you need to help you succeed academically	Very much, quite a bit, some, very little
Campus Environments Emphasize: Helping you cope with your non-academic responsibilities (work, family, etc.)	Very much, quite a bit, some, very little
Campus Environments Emphasize: Providing the support you need to thrive socially	Very much, quite a bit, some, very little
Quality: Relationships with other students	1=Unfriendly, unsupportive, sense of alienation; 7=friendly, supportive, sense of belonging
Quality: Relationships with faculty members	1=Unavailable, unhelpful, unsympathetic; 7=Available, helpful, sympathetic
Quality: Relationships with administrative personnel and offices	1=Unhelpful, inconsiderate, rigid 7=Helpful, considerate, flexible
Satisfaction (a=.75-.78)	
How would you evaluate your entire educational experience at this institution?	Excellent, good, fair, poor
If you could start over again, would you go to the same institution you are now attending?	Excellent, good, fair, poor

CONSTRUCTS AND VARIABLES	QUESTION RESPONSE SETS
Gains in Learning and Intellectual Development	
Gains in Personal and Social Development (a=.80-.81)	
Contributed to: Developing a personal code of values and ethics	Very much, quite a bit, some, very little
Contributed to: Understanding people of other racial and ethnic backgrounds	Very much, quite a bit, some, very little
Contributed to: Understanding yourself	Very much, quite a bit, some, very little
Contributed to: Improving the welfare of your community	Very much, quite a bit, some, very little
Contributed to: Learning effectively on your own	Very much, quite a bit, some, very little
Contributed to: Working effectively with others	Very much, quite a bit, some, very little
Gains in General Education (a=.79-.82)	
Contributed to: Writing clearly and effectively	Very much, quite a bit, some, very little
Contributed to: Speaking clearly and effectively	Very much, quite a bit, some, very little
Contributed to: Thinking critically and analytically	Very much, quite a bit, some, very little
Contributed to: Acquiring broad general education	Very much, quite a bit, some, very little
Gains in Practical Competence (a= .76-.79)	
Contributed to: Acquiring job or work-related knowledge and skills	Very much, quite a bit, some, very little
Contributed to: Using computing and information technology	Very much, quite a bit, some, very little
Contributed to: Analyzing quantitative problems	Very much, quite a bit, some, very little
Contributed to: Solving complex real-world problems	Very much, quite a bit, some, very little