Appendix
Operational Definitions of Variables

Dependent Variables

*Student-Faculty Contact*

**Quality of non-classroom interactions with faculty:** An individual's responses on a five-item scale that assessed the quality and impact of one's non-classroom interactions with faculty. Examples of constituent items were: "Since coming to this institution I have developed a close personal relationship with at least one faculty member," "My non-classroom interactions with faculty have had a positive influence on my personal growth, values and attitudes," and "My non-classroom interactions with faculty have had a positive influence on my intellectual growth and interest in ideas." Response options were: 5 = strongly agree, 4 = agree, 3 = not sure, 2 = disagree, and 1 = strongly disagree. Alpha reliability = .83.

**Faculty interest in teaching and student development:** An individual's responses on a five-item scale assessing students' perceptions of faculty interest in teaching and students. Examples of constituent items were: "Few of the faculty members I have had contact with are genuinely interested in students" (coded in reverse), "Most of the faculty members I have had contact with are genuinely interested in teaching," and "Most of the faculty members I have had contact with are interested in helping students grow in more than just academic areas." Response options were: 5 = strongly agree, 4 = agree, 3 = not sure, 2 = disagree, 1 = strongly disagree. Alpha reliability = .71.

*Cooperation Among Students*

**Instructional emphasis on cooperative learning:** An individual's responses on a four-item scale that assessed the extent to which the overall instruction received emphasized cooperative learning. Examples of constituent items were: "I am required to work cooperatively with other students on course assignments," "In my classes, students teach each other in groups instead of only having instructors teach," and "Instructors encourage learning in student groups." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .81.

**Course-related interaction with peers:** An individual's responses on a ten-item scale that assessed the nature of one's interactions with peers focusing on academic coursework. Examples of constituent items were: "I study with other students from my classes," "I tried to explain the material to another student or friend," and "I attempted to explain an experimental procedure to a classmate." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .79.
Active Learning/Time on Task

**Academic effort/involvement:** An individual's response on a 37-item, factorially derived, but modified scale that assessed one's academic effort or involvement in library experiences, experiences with faculty, course learning, and experiences in writing. The scale combined four, 10-item involvement dimensions from the CSEQ, minus three items that were incorporated into the Course-Related Interaction with Peers Scale described above. Examples of constituent items were: "Ran down leads, looked for further references that were cited in things you read," "Did additional readings on topics that were discussed in class," and "Revised a paper or composition two or more times before you were satisfied with it." Response options were 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .92.

**Number of essay exams in courses:** An individual's response to a single item from the CSEQ. Response options were: 1 = none, to 5 = more than 20.

**Emphasis on higher-order questioning techniques:** An individual's responses on a four-item scale that assessed the extent to which instructors asked questions in class that required higher-order cognitive processing. Examples of constituent items were: "Instructors' questions in class ask me to show how a particular course concept could be applied to an actual problem or situation," "Instructors' questions in class ask me to point out any fallacies in basic ideas, principles or points of view presented in the course," and "Instructors' questions in class ask me to argue for or against a particular point of view." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .80.

**Emphasis on higher-order examination questions:** An individual's responses on a five-item scale that assessed the extent to which examination questions required higher-order cognitive processing. Examples of constituent items were: "Exams require me to point out the strengths and weaknesses of a particular argument or point of view," "Exams require me to use course content to address a problem not presented in the course," and "Exams require me to compare or contrast dimensions of course content." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .77.

**Using computers for academic work:** An individual's response on a three-item scale indicating extent of computer use: "Using computers for class assignments," "Using computers for library searches," and "Using computers for word processing." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .65.

**Prompt Feedback**

**Instructor feedback to students:** An individual’s response on a two-item scale that assessed the extent to which the overall instruction received provided feedback on student progress. The items were: "Instructors keep me informed of my level of performance," and "Instructors check to see if I have learned well before going on to new material." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .70.
High Expectations

Course challenge/effort: An individual's responses on a six-item scale that assessed the extent to which courses and instruction received were characterized as challenging and requiring high level of effort. Examples of constituent items were: "Courses are challenging and require my best intellectual effort," "Courses require more than I can get done," and "Courses require a lot of papers or laboratory reports." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .64.

Number of textbooks or assigned readings: An individual's response on a single item from the CSEQ. Response options were: 1 = none, to 5 = more than 20.

Number of term papers or other written reports: An individual's response on a single item from the CSEQ. Response options were: 1 = none, to 5 = more than 20.

Scholarly/intellectual emphasis: An individual's responses on a three-item scale that assessed perceptions of the extent to which the climate of one's college emphasized: 1) the development of academic, scholarly, and intellectual qualities; 2) the development of esthetic, expressive, and creative qualities; and 3) being critical, evaluative, and analytical. Response options were on a semantic differential-type scale where 7 = strong emphasis and 1 = weak emphasis. Alpha reliability = .79.

Quality of Teaching

Instructional skill/clarity: An individual's responses on a five-item scale that assessed the extent to which the overall instruction received was characterized by pedagogical skill and clarity. Examples of constituent items were: "Instructors give clear explanations," "Instructors make good use of examples to get across difficult points," and "Instructors interpret abstract ideas and theories clearly." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .86.

Instructional organization and preparation: An individual's responses on a five-item scale that assessed the extent to which the overall instruction received was characterized by good organization and preparation. Examples of constituent items were: "Presentation of material is well organized," "Instructors are well prepared for class," and "Class time is used effectively." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .87.

Influential Interactions with Other Students

Quality of interactions with other students: An individual's responses on a seven-item scale that assessed the quality and impact of one's interactions with other students. Examples of constituent items were: "Since coming to this institution I have developed close personal relationships with other students," "My interpersonal relationships with other students have had
positive influence on my personal growth, attitudes and values," and "My interpersonal relationships with other students have had a positive influence on my intellectual growth and interest in ideas." Response options were: 5 = strongly agree, 4 = agree, 3 = not sure, 2 = disagree, and 1 = strongly disagree. Alpha reliability = .82.

**Non-course-related interactions with peers:** An individual's response on a ten-item scale that assessed the nature of one's interactions with peers focusing on non-class, or non-academic issues. Examples of constituent items were: "Talked about art (painting, sculpture, architecture, artists, etc.) with other students at the college," "Had serious discussions with students whose philosophy of life or personal values were very different from your own," and "Had serious discussions with students whose political opinions were very different from your own." Response items were 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .84.

**Cultural and interpersonal involvement:** An individual's response on a 38-item, factorially-derived, but modified scale that assessed one's effort or involvement in art, music, and theater, personal experiences, student acquaintances and conversations with other students. The scale combined items from five involvement dimensions of the CSEQ, minus eight items that were incorporated into the Non-Course-Related Interactions with Peers Scale described above. Examples of constituent items were: "Seen a play, ballet, or other theater performance at the college," "Been in a group where each person, including yourself, talked about his/her personal problems," "Made friends with students whose interests were different from yours," "Had conversations with other students about major social problems such as peace, human rights, equality, and justice," and "In conversations with other students explored different ways of thinking about the topic." Response options were: 4 = very often, 3 = often, 2 = occasionally, and 1 = never. Alpha reliability = .92.

**Independent Variables**

**Race/ethnicity:** A dummy variable coded: 1 = White/Caucasian, 0 = Students of color.

**Socioeconomic status:** A set of dummy variables (coded 1 or 0) indicating students’ socioeconomic status quartile. We derived the socioeconomic status variable by summing the standardized variables of parents’ income and the total of parents’ education. This interim variable was then standardized (i.e. turned into a z-score) and divided into four quartiles. Students in the lowest quartile serve as the reference category.
Control Variables

Controls for students pre-college characteristics

Gender: A dummy variable coded: 1 = female, 0 = male.

Standardized measure of academic ability: An individual’s response to a question asking for their ACT Composite or SAT total score. SAT scores were converted to an ACT score.

Self-reported secondary school grades: An individual’s response to the question: “What is your best estimate of your grade point average in high school?” (Coded: 1 = D+ or lower, 2 = C, C−; 3 = B−, C+; 4 = B; 5 = A−, B+; 6 = A).

High school involvement: An individual’s Fall 1992 score on an 7-item scale that measured the student’s involvement in studying, socializing with friends, talking with teachers outside of class, exercising or playing sports, studying with friends, volunteer work, and extracurricular activities. Alpha reliability = .76.

High school work: An individual’s Fall 1992 report of time spent working for pay while in high school. (Coded: 1 = Never, 2 = Occasionally, 3 = Often, 4 = Very Often).

Pre-college academic motivation: An individual’s Fall 1992 score on an eight-item, Likert-type scale (5 = strongly agree to 1 = strongly disagree) assessing motivation for academic work and learning. The scale items were based on existing research on academic motivation (e.g., Ball, 1977). Examples of constituent items are: “I am willing to work hard in a course to learn the material even if it won’t lead to a higher grade,” “When I do well on a test, it is usually because I was well-prepared not because the test was easy,” “In high school I frequently did more reading in a class than was required simply because it interested me,” and, “In high school I frequently talked to my teachers outside of class about ideas presented during class.” Alpha reliability = .65.

Number of dependent children of the respondent: An individual’s report of how many dependent children they had. (Coded 1 = None, 2 = 1, 3 = 2, 4 = 3, 5 = more than 3).

College choice: An individual’s Fall 1992 response to the question: “Is this college your: first choice, second choice, third choice, or less than third choice?” (Coded: 1 = first choice 0 = other choice).

Pre-college plans to obtain a graduate degree: An individual’s response to the question: “What is the highest academic degree you intend to obtain in your lifetime?” Coded 1 = Master’s degree or above, 0 = bachelor’s degree or below. The measure was employed in the prediction of all end-of-first-year outcomes.
Appendix (continued)

Controls for Institutional type

Research university: 1 = student attends a research university, 0 = otherwise.

Regional university: 1 = student attends a regional university, 0 = otherwise.

Historically Black college: 1 = student attends a historically black college, 0 = otherwise.

Community college: 1 = student attends a community college, 0 = otherwise.

Liberal arts college: 1 = student attends a liberal arts college, 0 = otherwise. (Reference group).

Controls for other first-year academic and non-academic experiences

Credit hours: A continuous variable that represented the number of credit hours completed.

On-campus residence: Dummy variable coded: 1 = lived on-campus, 0 = lived off campus and commuted.

Hours worked per week on campus: Average number of hours of on-campus work per week during the school year, Coded 1 = none to 9 = more than 35.

Hours worked per week off campus: Average number of hours of off-campus work per week during the school year, Coded 1 = none to 9 = more than 35.

Arts and humanities courses taken: Cumulative number of college courses taken through the 1st, 2nd, or 3rd years in art history, art appreciation, studio art, dance, theater, music appreciation, music performance, composition of writing, English literature, foreign language, humanities, philosophy, linguistics, classics, or religious studies.

Social sciences courses taken: Cumulative number of college courses taken through the first year in anthropology, audiology/speech pathology, child and family services, communications, economics, geography, history, political science, psychology, sociology, or social work.

Mathematics courses taken: Cumulative number of college courses taken through the first year in pre-algebra, algebra, calculus, statistics, computer science, geometry, matrix algebra, accounting, or business math.

Natural sciences and engineering courses taken: Cumulative number of college courses taken through the first year in astronomy, biology, botany, chemistry, physics, geology, zoology, microbiology, or engineering.

Technical/pre-professional courses taken: Cumulative number of college courses taken through the first year in drawing, drafting, architectural design, criminology, education, agriculture, business, physical therapy, pharmacy, physical education, nursing, or computer programming.