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**Openness to Diversity and Challenge:
Assessment of Undergraduate Attitudes and Experiences
in the College of Agriculture at Kansas State University**

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Selected Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Providence, Rhode Island, July 24-27, 2005.

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Openness to Diversity and Challenge: Assessment of Undergraduate Attitudes and Experiences in the College of Agriculture at Kansas State University.

Abstract

This research used survey data to measure baseline levels of (1) openness to diversity and (2) diversity experience for students enrolled in the College of Agriculture at Kansas State University in Fall semester, 2004. The study also used regression analysis to identify and quantify the determinants of student openness to diversity and challenge and the level of experience with diversity. Regression results found that the determinants of openness to diversity and challenge included: experience with diversity, gender, size of hometown, enrolled credit hours, desire to obtain an advanced degree, outside work experience, and major field of study. Student experience with diversity was defined as a measure of the degree to which students have interacted with individuals who are different from themselves in race, ethnicity, philosophy of life, politics, religious beliefs, race, or a different country. The level of experience with diversity was found to be statistically associated with participation in courses and workshops in diversity, ethnicity, urban background, parent education levels, and desire to obtain an advanced degree, and major field of study. The major implication of the statistical results is that there is an opportunity to influence student openness to diversity and challenge, since: (1) experience with diversity was shown to be a highly statistically significant determinant of openness to diversity and challenge, and (2) the levels of diversity experience in the College of Agriculture were low. Therefore, enhanced programming for diversity appreciation and understanding as part of the university experience is likely to provide higher measurable levels of openness to diversity and challenge among students and graduates of the College. The identification of student characteristics associated with openness to diversity allows students, faculty, and administrators information useful for addressing the planning, implementation, and consequences of institutional diversity programming.

Openness to Diversity and Challenge: Assessment of Undergraduate Attitudes and Experiences in the College of Agriculture at Kansas State University.

The major objective of this research is to measure the level and determinants of openness to diversity and challenge and the level of diversity experience among enrolled students in the College of Agriculture at Kansas State University. Careful measurement and analysis of the extent to which students appreciate different perspectives, values, and ideas are crucial as we move rapidly toward an ethnically diverse and culturally pluralistic society. This research identified and quantified the determinants of student openness to diversity and challenge, and the level of experience with diversity, using data from an internet survey conducted in Fall semester, 2004. The determinants included (1) sociodemographic characteristics, (2) student background, (3) college experience, (4) living situation, and (5) exposure to diversity. The results provide a benchmark to measure attitudinal and behavioral changes over time, as well as information that could be used to develop diversity programs at Kansas State University.

A short number of survey questions based on previous literature addressed the degree to which students are open to cultural and racial diversity, diversity values, and openness to academic and personal challenges. Demographic information was also collected to allow for the statistical analysis of the determinants of diversity values, and openness to diversity and challenge. The results of the research allowed for the determination of a baseline level of openness to diversity and experience with diverse interactions for all students enrolled in the College of Agriculture at Kansas State University. Econometric analyses of the survey data provided (1) quantitative estimates of the impact of personal characteristics and college experiences on the level of openness to diversity, and (2) quantitative estimates of the determinants of the level of experience with diversity in college. The major implication of the

statistical results is that there is an opportunity to influence student openness to diversity and challenge, through implementation and promotion of diversity programming such as workshops and academic courses that enhance the appreciation and understanding of persons with different backgrounds, experiences, and beliefs.

Literature Review

The statistical model and research methodology used to investigate the level of openness and experience with diversity were based on an extensive literature. Astin (1993) provided a thorough summary and synthesis of previous literature. In this seminal work, Astin assessed what happens to students during the undergraduate experience, including personal and social changes. This encyclopedic work set the stage for research that explores the causes and consequences of openness to diversity and challenge.

Pascarella, et al. (1996) found that students who lived on campus, studied the most, and who were most engaged with their student peers tended to have the highest levels of openness to diversity. Pascarella, et al. (2001) explored the influence of diversity experiences on the development of critical thinking, examining the relationship between college experiences with other people and higher order thinking. Pascarella, et al. (2004) measured and evaluated the college experience and outcomes of first-generation college students, including openness to diversity and challenge, using a large sample of students who participated in the National Study of Student Learning (NSSL). The authors found no differences between first-generation and other students in a measure of openness to diversity and challenge.

In their classic book, Pascarella and Terenzini (1991) reported evidence from a great deal of earlier literature on how college affects attitudes and values about a wide diversity of issues

and events, including political, religious, cultural, aesthetic, and intellectual attitudes and values. Whitt et al. (2001) investigated the determinants of student openness to diversity and challenge in the second and third year of college. The results demonstrated that openness to diversity and challenge had a large impact on changes in student attitudes, beliefs, and actions in the direction of greater tolerance to individual differences. Hu and Kuh (2003) used responses from the College Student Experience Questionnaire (CSEQ) from over 53,000 undergraduate students enrolled in 124 American universities examine the effects of diversity experiences on desirable outcomes. Survey results demonstrated that white students had less contact with students from different backgrounds than nonwhite students. Interactions with persons of diverse backgrounds were found to have positive impacts on self-reported learning and personal development outcomes.

Milem and Umbach (2003) studied how student plans for involvement in diversity-related activities in college varied across race, personality type, and experience with diversity. The authors concluded that white students are the least likely to be prepared for diversity experiences and interaction in college. Students who selected social and artistic majors were more likely to plan to participate in diversity experiences, and personality has an influence on self-reported desire to engage in diversity experiences. Based on the foundation of these studies, the present research seeks to utilize survey data to measure student attitudes toward diversity, the degree to which personal and academic characteristics influence attitudes, and how much experience students in the College of Agriculture have with persons with backgrounds different from themselves.

Data

During Spring Semester 2004, an electronic survey was administered using the K-State Online Survey System, a software package that provides exceptional speed, accuracy, and high response rates. The electronic survey was sent to 1863 e-mail addresses of all enrolled undergraduate students in the College of Agriculture. Complete and usable responses were returned by 724 enrolled students, yielding a response rate equal to 38.83 percent. The measure of openness to diversity and challenge was taken from the College Student Experience Questionnaire (CSEQ, Kuh, et al. 2003). A short survey of eight questions taken from the CSEQ was utilized, following the previous work of Edison et al. (2004). These questions are listed in table 1. Survey respondents were asked to respond to the eight statements on a Likert scale from 1 = “Strongly Disagree” to 5 = “Strongly Agree.” These questions have been shown to be both reliable and valid in numerous surveys and an extensive literature (Kuh et al. 2003, Edison et al. 2001). Responses ranged between the lowest value (=1) and the highest value (5) for each question, and the average response across all eight questions equaled 3.57, indicating responses between “indifference” and “agreement” for the eight questions. Following previous research, the mean value of the Likert scale for the eight survey statements was used as a measure of undergraduate openness to diversity and challenge (OPEN), as reported in table 1.

The questions with the lowest reported levels of agreement (3.29) were, “I enjoy taking courses that challenge my beliefs and values,” and “Contact with individuals whose background (e.g. race, national origin, sexual orientation) is different from my own is an essential part of my college education.” These two questions are perhaps the most challenging, since they include direct statements of “challenge my beliefs and values” and “contact with... race, national origin, sexual orientation...” In summary, relatively low levels of openness to diversity and challenge

were reported by agricultural students. To better understand the relationship between the questions, correlation coefficients were calculated, and are reported in table 2. The coefficients range from 0.29 to 0.69, indicating similarity, but not uniformity, across questions. The average of the eight questions (OPEN) was highly correlated with each of the individual questions, with coefficients ranging from 0.69 to 0.77. This indicates that the average level of openness is representative of a student's overall level of openness to diversity and challenge. Therefore, the regression model developed below is for the average level of openness (OPEN).¹

Student experience with diversity was also measured with questions from the College Student Experiences Questionnaire (CSEQ). Following Hu and Kuh (2003) and Pascarella et al. (2001), seven statements were included to quantify student exposure to persons other than themselves, as listed in table 3. Following previous research, the mean value of the Likert scale from 1 = "Never" to 4 = "Very Often" for the seven survey statements was used as a measure of undergraduate openness to diversity and challenge. The average response for diversity experience questions ranged between 1.86 for, "Had serious discussions with students from a country different from yours," to 2.42 for, "Had serious discussions with students whose political opinions were very different from yours." This range of responses indicates that students who responded to the survey participated in the activities listed in table 3 "occasionally." It is likely that diversity programming could result in higher levels of reported diversity experience.

Following Hu and Kuh (2003), correlation coefficients are reported across each diversity experience question (table 4). The coefficients range from 0.27 to 0.71, closely mirroring those estimated by Hu and Kuh for over 53,000 students in 124 universities across the United States. This provides evidence of the reliability of the questions used to measure diversity experience. Each of the seven questions is highly correlated with the average (DIVX), with coefficients

ranging from 0.69 to 0.82, results very similar to those of Hu and Kuh (2003). Given this correspondence between questions, the average diversity experience variable (DIVX) is used as the dependent variable in the regression reported below (table 5).²

Empirical Model

To identify and quantify the determinants of the openness to diversity (OPEN) and experience with diversity (DIVX) in the College of Agriculture at Kansas State University, several groups of potential factors in the students' background were examined, as in equations (1) and (2):

$$\text{OPEN}_i = f(\text{DIVX}_i, \text{Diversity Experience, Personal Characteristics,} \quad (1) \\ \text{Demographic Variables, Academic Characteristics}).$$

$$\text{DIVX}_i = f(\text{Diversity Experience, Personal Characteristics,} \quad (2) \\ \text{Demographic Variables, Academic Characteristics}).$$

The two models are identical, with the exception of the diversity experience variable (DIVX). The openness to diversity model (OPEN) includes the measure of diversity experience (DIVX) as an independent variable, to capture the impact of experience with diversity on the level of openness to diversity.³ Two additional variables were included in the Diversity Experience category, including whether a student has taken a Diversity Course in Women's Studies, Latin American Studies, or African American Studies, and a variable to capture if the survey respondent has participated in a racial or cultural awareness Diversity Workshop. Summary statistics for the included variables are reported in table 5, together with the regression results.

One interesting and important result of this research is the level of diversity experience among students enrolled in the College of Agriculture at Kansas State University. Average

student experience with diversity, (DIVX) is equal to 2.18, indicating that survey respondents only “occasionally” had experiences with diversity listed in table 2. The mean value of diversity courses taken was 0.18, and only 11 percent of survey respondents had participated in a diversity workshop (table 5). These results emphasize the possibility of expanding diversity programming to provide more experiences with people from different backgrounds as part of the university experience.

Personal characteristics included in the model are Gender, Age, Marital Status, and Race. Fifty percent of the respondents were female, the mean age was 21.02 years, six percent were married, and seven percent were nonwhite. Respondent bias may be present, since the percent of nonwhite undergraduate students enrolled in the College is less than seven percent. Restated, nonwhites were more likely to respond to the survey than whites. It is difficult to discern the degree of bias among the other variables, if it is present.

Demographic variables include Community of Origin, Education Levels of Parents, Living Situation, and Time Allocation. Approximately 48 percent of the respondents came from a farm or ranch, and 14 percent came from cities of more than 50,000 people. Forty percent of enrolled students came from families where both parents had a college education, 31 percent had one parent with college education, and 30 percent had neither parent with a college education, or didn't know. Thirty-five percent of the sample lived in a location within walking distance of the University, and 31 percent drove to school. Residence Halls accounted for 19 percent of the respondents, and 13 percent lived in Greek Houses.⁴ Thirty percent of the students did not have a job. The average workload among those who did work was approximately 12 hours per week. The number of study hours per week was lower, at 9.61 hours per week. This is a fascinating and important result: agricultural students reported studying less than working, perhaps due to

the relatively open admission policy of the institution, or the focus on applied fields of study in the College. A large majority of students responding to the survey lived with other students (77 percent). Nine percent lived with a spouse or partner, 3 percent lived with children, 3 percent lived with parents, 3 percent lived with relatives, 5 percent lived with friends not enrolled in school, and 7 percent lived alone.

Academic characteristics include year in College, Enrolled Credit Hours, Transfer status, a desire to Seek an Advanced Degree, High School GPA, and Major Field of Study. More experienced students were more likely to respond to the survey: responses came from seniors (37 percent), juniors (26 percent), sophomores (18 percent), and freshmen (19 percent). This is an additional source of potential respondent bias, since greater levels of college experience were associated with a higher probability of response. Perhaps older students are more comfortable sharing information, or have more trust in the university computer system or administrators.

A plurality of students were enrolled in 12-14 credit hours (45 percent), and 35 percent were enrolled in 15-16 hours. A relatively high percentage (15 percent) was enrolled in 17 or more credit hours. Transfer students comprised 31 percent of the sample, and 48 percent were interested in seeking an advanced degree. The average self-reported high school grade point average was 3.58 on a four-point scale, with a range of between 1.88 and 3.88. The major field of study reflected of the survey sample reflects the population: the most frequent major reported was Animal Science (23 percent), followed by Pre-Vet Medicine (10 percent), and Agribusiness and Horticulture (9 percent each).⁵

Results

Results of the openness to diversity regression are reported in table 5. Reported t-statistics are corrected for heteroscedasticity (White). The regression explained approximately 13 percent of the variation in OPEN, as indicated by the adjusted R-square measure. The estimated coefficient of DIVX equaled 0.281, and had the highest level of significance of all included variables other than the intercept. This indicated that experience with diversity is positively associated with the openness to diversity and challenge. This result provides perhaps the most important implication of this research: that enhancing undergraduate experience in diversity through policies and programs is likely to improve the desired outcome of greater levels of understanding of people different than oneself among College of Agriculture students and graduates.

Females were more open to diversity and challenge than males, as the coefficient equal to 0.201 and high level of statistical significance indicates. Collinearity diagnostics report degrading collinearity was present between the intercept, age, and high school GPA (Belsley, Kuh, and Welch), which may account for the statistical insignificance of age. Students from small cities of 5,000 to 50,000 people were slightly more likely to be open to diversity and challenge relative to the default category of those respondents raised on a farm or ranch. This may be capturing the likelihood that larger towns provide more experience with diversity, and thus more openness to it. The other Community of Origin variables were insignificant, perhaps due to the inclusion of DIVX, which accounts for diversity experience, resulting in a lack of influence for the size of the hometown.

Interestingly, students who enrolled in 7-11 credit hours were more open to diversity than the default category of those enrolled in 12-14 hours. This may indicate a difference in personal

values and attitudes across students: students who take fewer classes may be less driven to success and goal-oriented than those who are enrolled in higher course loads. This result may reflect the findings of Milem and Umbach (2003) who reported that students who selected social and artistic majors were more likely to plan to participate in diversity experiences, and that personality plays an important role in attitudes toward diversity. This argument, however, should be conditioned by the results that students who enrolled in 17 or more credit hours were also associated with slightly higher levels of openness to diversity and challenge relative to the default category of enrollment in 12-14 hours.

Another crucial outcome of this study is the finding that undergraduate students who desire to seek an advanced degree were significantly more open to diversity than those students who did not have a desire to further their education beyond the undergraduate level. This result complies with the conventional wisdom that institutions of higher education are more open to people of all backgrounds, and students who desire to remain at the university may be attracted to this environment.

Students who do not have a job were more open to diversity than students who worked. However, among those students who did work, openness to diversity was associated with greater hours of work per week. These results could reflect higher socioeconomic standing for those who do not have to work while enrolled in college, and greater experience with other people for those who work more hours. A great deal of experience with, and appreciation for, people different from oneself is gained through on-the-job experience.

Students who lived with friends not enrolled in college were less open to diversity and challenge than those students who lived with other students. Although the estimated coefficient is only slightly different from zero, the result could reflect the values of an academic institution

are biased toward inclusiveness and respect for diversity, relative to the nonacademic population. Several major fields of study were found to be more open to diversity and challenge than the default major, Animal Science: General Agriculture (0.21) Agricultural Economics (0.19), Agribusiness (0.16), Agricultural Communications (0.22), Milling Science (0.24), Horticulture (0.20), and Horticultural Therapy (0.59). The estimated coefficient for Horticultural Therapy is the largest magnitude for all variables other than the intercept, and may reflect a desire to learn about, work with, and help people different from oneself, as characterized by students enrolled in Horticultural Therapy.

Results of the diversity experience (DIVX) regression also appear in table 5, where the adjusted R-square of 0.11 is reported. Not surprisingly, Diversity Courses and Workshops were positively associated with DIVX. This result could reflect: (1) greater appreciation of diversity experience results in participation in workshops and enrollment in courses (self-selection), (2) courses and workshops result in an increase in interactional diversity experiences, as reflected in the DIVX questions listed in table 3, or (3) some combination of (1) and (2). While it is not possible to assign the direction of causality among diversity courses and workshops and diversity experience, it is possible to conclude that the courses and workshops are correlated with greater levels of openness to diversity and challenge through the diversity experience variable. While courses and workshops are not statistically significant in the OPEN regression, they are important and significant determinants of the attitudes of students toward interactional diversity experiences, as captured by DIVX. Since this variable is an important determinant of OPEN, we can conclude that the provision and promotion of more diversity programming is likely to lead to a measurable, positive impact on openness to diversity and challenge among students and graduates of the College of Agriculture at Kansas State University.

Freshmen and juniors were associated with lower levels of diversity experience relative to seniors. These results could reflect that academic experience and university life lead to greater levels of diversity interactions and experience, one of the goals of many educators at the university level. Nonwhite and urban students had higher levels of diversity experience than white and nonurban students. Students with parents who did not have a college degree had higher levels of diversity experience than those students with both parents holding a college degree. Students enrolled in less than 6 credit hours had lower levels of experience with diversity than those students who enrolled in 12-14 hours. As in the OPEN regression, students seeking an advanced degree were much more likely to be associated with higher levels of self-reported experience with diversity. Students who lived in Greek Houses had greater levels of diversity experience, contrary to the common criticism of the Greek system that it is homogeneous and conformist. Students who lived with nonstudent friends had higher levels of diversity experience, perhaps because their roommates being different from themselves.

Several major fields of study were associated with levels of diversity experience greater than Animal Science: Agriculture Technology Management (0.21) Agricultural Communications (0.23), Bakery Science (0.54), Milling Science (0.42), Horticulture (0.19), and Horticultural Therapy (0.59), Pre Vet Medicine (0.15) and Park Resources (0.11). These differences may be accounted for by (1) the level of diversity characterized in the students enrolled in each major, (2) the personality types, values, and attitudes of students who enroll in each major, or (3) a combination of (1) and (2).

An important research result that will be extended and discussed in the research report is that freshmen had lower levels of diversity experience, relative to sophomores, juniors, and seniors. This finding was statistically significant. However, there were no statistically

discernable differences between freshmen and others in openness towards diversity. Interestingly, college students appear to gain exposure and experience with people who are different from themselves while enrolled at college. This interaction and experience is an objective of higher education for many institutions and individuals involved in higher education. However, greater time spent at college does not appear to directly facilitate any discernable changes in attitudes about diversity and challenge. However, to the extent that enrollment in college is associated with activities that lead to greater diversity experience, more open attitudes can occur through greater levels of interactional experience with diversity. Further research is necessary to investigate each of the specific statements about openness to diversity and experience with diversity to uncover the specific nature of these important results.

Conclusions

Overall, the regression results demonstrate: (1) openness to diversity can be quantified, (2) potential changes in openness can be measured and tracked over time, and (3) there are statistically significant factors that influence a student's openness to diversity. Therefore, this study indicates that future research could be used to assess and evaluate student attitudes toward diversity and the success of diversity programming in institutions of higher education.

The results of this research provide a large amount of quality information on openness to diversity and challenge among currently-enrolled students in the College of Agriculture. This baseline information provides a foundation upon which to build a longitudinal study to measure changes in values of diversity openness over time. The regression results demonstrate a number of statistically significant determinants associated with openness to diversity and challenge, including: experience with diversity interaction (DIVX), gender, size of hometown, enrolled

credit hours, desire to obtain an advanced degree, outside work experience, and major field of study. The identification of student characteristics associated with openness to diversity allows students, faculty, and administrators information useful for addressing future institutional diversity programming objectives.

Student experience with diversity, a measure of the degree to which students have interacted with individuals who are different from themselves in race, ethnicity, philosophy of life, politics, religious beliefs, race, or a different country. The level of experience with diversity was found to be statistically associated with participation in courses and workshops in diversity, ethnicity, urban background, parent education levels, and desire to obtain an advanced degree, and major field of study.

The major implication of the statistical results is that there exists an opportunity to influence student openness to diversity and challenge in the College of Agriculture at Kansas State University, since: (1) experience with diversity was shown to be a highly statistically significant determinant of openness to diversity and challenge, and (2) the levels of diversity experience in the College of Agriculture were low. Therefore, enhanced programming for, and promotion of, diversity appreciation and understanding as part of the university experience is likely to provide higher measurable levels of openness to diversity and challenge among students and graduates of the College. The identification of student characteristics associated with openness to diversity allows students, faculty, and administrators information useful for addressing the planning, implementation, and consequences of institutional diversity programming.

Notes

- ¹Separate regressions were estimated using each of the eight openness to diversity questions (table 1) as the dependent variables. Results were qualitatively similar to those presented in table 5 for the average variable, OPEN.
- ²Separate regressions were estimated using each of the seven diversity experience questions (table 2) as the dependent variables. Results were qualitatively similar to those presented in table 5 for the average variable DIVX.
- ³The variable DIVX is considered to be predetermined, or exogenous allowing for the inclusion as an independent variable in the OPEN regression without simultaneity bias.
- ⁴The variable “other” was omitted from the regression analysis, as it is not possible to interpret the estimated coefficient. The variable is listed in table 5 for completeness.
- ⁵For each group of categorical variables, the variable with the highest frequency of responses was omitted from the regressions as the default category. These omitted default variables are: Senior, Farm/Ranch, Both Parents College, 12-14 credit hours, House/Walk Distance, Other Students, and major in Animal Science (table 5).

References

- Astin, A. (1993). *What Matters in College: Four Critical Years Revisited*. San Francisco, CA: Jossey-Bass.
- Belsley, D., E. Kuh, and R.E. Welsch (1980). *Regression Diagnostics*. New York: John Wiley and Sons.
- Edison, M.I., E.T. Pascarella, P.T. Terenzini, and A. Nora (2001). "Influences on Students' Openness to Diversity and Challenge in the Second and Third Year of College." *Journal of Higher Education*, 72, 172-204.
- Hu, S. and G. D. Kuh. (2003). "Diversity Experiences and College Student Learning and Personal Development." *Journal of College Student Development*, 44, 320-334.
- Kuh, G.D., R.M. Gonyea, K.E. Kish, R. Muthiah, and A. Thomas (2003). *College Student Experiences Questionnaire: Norms for the 4th Edition*. Bloomington, IN: Indiana University Center for Postsecondary Research and Planning.
- Milem, Jeffrey, and P.D. Umbach. (2003) "The Influence of Precollege Factors on Students' Predispositions Regarding Diversity Activities in College." *Journal of College Student Development*, 44, 611-624.
- Pascarella, E. T., Edison, M., Nora, A., Hagedorn, L.S., & Terenzini, P. T. (1996). "Influences On Students' Openness to Diversity and Challenge in the First Years of College." *Journal of Higher Education*, 67, 174-195.
- Pascarella, E. T., Palmer, B., Moye, M., and Pierson, C. (2001). "Do Diversity Experiences Influence the Development of Critical Thinking?" *Journal of College Student Development*, 42, 257-271.

- Pascarella, E. T., Pierson, C.T., Wolniak, G.C., and Terenzini, P.T. (2004). "First-Generation College Students: Additional Evidence on College Experiences and Outcomes." *Journal of Higher Education*, 75, 249-284.
- Pascarella, E.T., and Terenzini, P.T. (1991). *How College Affects Students: Findings and Insights from Twenty Years of Research*. San Francisco: Jossey Bass.
- White, H. (1980). "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." *Econometrica*, Vol 48, 817-838.
- Whitt, E. J., Edison, M. I., Pascarella, E. T., Terenzini, P. T., & Nora, A. (2001). "Influences on Students' Openness to Diversity and Challenge in the Second and Third Years of College." *Journal of Higher Education*, 72(2), 172.

Table 1. Descriptive Statistics of Openness to Diversity Questions.¹

| <u>Variable</u> | <u>Variable Description</u> | <u>Mean</u> | <u>S.D.</u> | <u>Min.</u> | <u>Max.</u> |
|-----------------|---|-------------|-------------|-------------|-------------|
| OPEN1 | “I enjoy having discussions with people whose ideas and values are different from my own.” | 3.78 | 0.90 | 1 | 5 |
| OPEN2 | “The real value of a college education lies in being introduced to different values.” | 3.49 | 0.99 | 1 | 5 |
| OPEN3 | “I enjoy talking to people who have values different from mine because it helps me understand myself and my values better.” | 3.78 | 0.91 | 1 | 5 |
| OPEN4 | “Learning about people from different cultures is a very important part of my college education.” | 3.49 | 1.05 | 1 | 5 |
| OPEN5 | “I enjoy taking courses that challenge my beliefs and values.” | 3.29 | 0.99 | 1 | 5 |
| OPEN6 | “The courses I enjoy the most are those that make me think about things from a different perspective.” | 3.59 | 0.98 | 1 | 5 |
| OPEN7 | “Contact with individuals whose background (e.g. race, national origin, sexual orientation) is different from my own is an essential part of my college education.” | 3.29 | 1.09 | 1 | 5 |
| OPEN8 | “I enjoy courses that are intellectually challenging.” | 3.83 | 0.99 | 1 | 5 |
| OPEN | Average of eight openness to diversity questions. | 3.57 | 0.74 | 1 | 5 |

¹Number of observations equals 724. Survey responses: 1 = “Strongly Disagree,” 2 = “Disagree,” 3 = “Neither Agree nor Disagree,” 4 = “Agree,” 5 = “Strongly Agree.”

Table 2. Correlations Coefficients of Openness to Diversity Questions.

| | <u>OPEN</u> | <u>OPEN1</u> | <u>OPEN2</u> | <u>OPEN3</u> | <u>OPEN4</u> | <u>OPEN5</u> | <u>OPEN6</u> | <u>OPEN7</u> | <u>OPEN8</u> |
|-------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| OPEN | 1.00 | 0.75 | 0.70 | 0.77 | 0.79 | 0.74 | 0.75 | 0.77 | 0.69 |
| OPEN1 | | 1.00 | 0.43 | 0.61 | 0.49 | 0.50 | 0.51 | 0.44 | 0.53 |
| OPEN2 | | | 1.00 | 0.53 | 0.50 | 0.45 | 0.44 | 0.54 | 0.29 |
| OPEN3 | | | | 1.00 | 0.51 | 0.51 | 0.51 | 0.45 | 0.51 |
| OPEN4 | | | | | 1.00 | 0.51 | 0.49 | 0.69 | 0.45 |
| OPEN5 | | | | | | 1.00 | 0.52 | 0.51 | 0.41 |
| OPEN6 | | | | | | | 1.00 | 0.48 | 0.53 |
| OPEN7 | | | | | | | | 1.00 | 0.38 |
| OPEN8 | | | | | | | | | 1.00 |

¹Number of observations equals 724. Variable definitions appear in table 1.

Table 3. Descriptive Statistics of Diversity Experience Questions.¹

| <u>Variable</u> | <u>Variable Description</u> | <u>Mean</u> | <u>S.D.</u> | <u>Min.</u> | <u>Max.</u> |
|-----------------|---|-------------|-------------|-------------|-------------|
| DIVEXP1 | “Became acquainted with students whose race or ethnic background was different from yours.” | 2.41 | 0.77 | 1 | 4 |
| DIVEXP2 | “Became acquainted with students from another Country.” | 2.09 | 0.77 | 1 | 4 |
| DIVEXP3 | “Had serious discussions with students whose philosophy of life or personal values were very different from yours.” | 2.19 | 0.88 | 1 | 4 |
| DIVEXP4 | “Had serious discussions with students whose political opinions were very different from yours.” | 2.42 | 0.96 | 1 | 4 |
| DIVEXP5 | “Had serious discussions with students whose religious beliefs were very different than yours.” | 2.25 | 0.93 | 1 | 4 |
| DIVEXP6 | “Had serious discussions with students whose race or ethnic background was different from yours.” | 2.08 | 0.87 | 1 | 4 |
| DIVEXP7 | “Had serious discussions with students from a country different from yours.” | 1.86 | 0.82 | 1 | 4 |
| DIVEXP | Average of seven diversity experience questions. | 2.18 | 0.64 | 1 | 4 |

¹Number of observations equals 724. Survey responses are: 1 = “Never,” 2 = “Occasionally,” 3 = “Often,” and 4 = “Very Often.”

Table 4. Correlation Coefficients for Diversity Experience Questions.

| | <u>DIVX</u> | <u>DIVX1</u> | <u>DIVX2</u> | <u>DIVX3</u> | <u>DIVX4</u> | <u>DIVX5</u> | <u>DIVX6</u> | <u>DIVX7</u> |
|-------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| DIVX | 1.00 | 0.73 | 0.71 | 0.75 | 0.69 | 0.75 | 0.82 | 0.78 |
| DIVX1 | | 1.00 | 0.63 | 0.41 | 0.31 | 0.37 | 0.65 | 0.54 |
| DIVX2 | | | 1.00 | 0.37 | 0.27 | 0.32 | 0.51 | 0.71 |
| DIVX3 | | | | 1.00 | 0.56 | 0.60 | 0.49 | 0.46 |
| DIVX4 | | | | | 1.00 | 0.57 | 0.44 | 0.36 |
| DIVX5 | | | | | | 1.00 | 0.55 | 0.43 |
| DIVX6 | | | | | | | 1.00 | 0.65 |
| DIVX7 | | | | | | | | 1.00 |

¹Number of observations equals 724. Variable definitions appear in table 2.

Table 5. Summary Statistics of Variables in Diversity Regressions.¹

| Variable | Mean | S.D. | Min. | Max. | Open to Diversity Est. Coeff.(t-stat) | | Diversity Experience Est. Coeff.(t-stat) | |
|---------------------------------|-------|------|------|------|--|-----------|---|-----------|
| Dependent Variables | | | | | | | | |
| OPEN | 3.57 | 0.74 | 1 | 5 | -- | -- | -- | -- |
| DIVX | 2.18 | 0.64 | 1 | 4 | -- | -- | -- | -- |
| Intercept | -- | -- | -- | -- | 2.337 | (5.88)*** | 1.366 | (3.98)*** |
| Diversity Experience | | | | | | | | |
| DIVX | 2.18 | 0.64 | 1 | 4 | 0.281 | (5.76)*** | -- | -- |
| Diversity Course | 0.18 | 0.61 | 0 | 4 | -0.025 | (-0.51) | 0.067 | (1.56)* |
| Diversity Workshop | 0.11 | 0.32 | 0 | 1 | 0.052 | (0.57) | 0.188 | (2.65)*** |
| Year in College | | | | | | | | |
| Freshman | 0.19 | 0.40 | 0 | 1 | 0.024 | (0.26) | -0.149 | (-1.80)** |
| Sophomore | 0.18 | 0.38 | 0 | 1 | -0.077 | (-1.00) | -0.032 | (-0.46) |
| Junior | 0.26 | 0.44 | 0 | 1 | -0.083 | (-1.27) | -0.085 | (-1.43)* |
| Senior | 0.37 | 0.48 | 0 | 1 | -- | -- | -- | -- |
| Personal Characteristics | | | | | | | | |
| Female | 0.50 | 0.50 | 0 | 1 | 0.201 | (3.40)*** | 0.054 | (1.07) |
| Age in Years | 21.02 | 3.62 | 17 | 50 | 0.010 | (1.12) | 0.006 | (0.62) |
| Married | 0.06 | 0.24 | 0 | 1 | -0.053 | (-0.30) | -0.048 | (-0.30) |
| Nonwhite | 0.07 | 0.25 | 0 | 1 | -0.114 | (-0.87) | 0.310 | (3.04)*** |
| Community of Origin | | | | | | | | |
| Farm/Ranch | 0.48 | 0.50 | 0 | 1 | -- | -- | -- | -- |
| Rural Area | 0.14 | 0.35 | 0 | 1 | 0.027 | (0.34) | 0.060 | (0.81) |
| Town <5000 people | 0.10 | 0.30 | 0 | 1 | 0.082 | (0.79) | 0.068 | (0.80) |
| City 5-50K people | 0.14 | 0.35 | 0 | 1 | 0.160 | (1.99)* | 0.039 | (0.52) |
| Urban >50K people | 0.14 | 0.35 | 0 | 1 | -0.003 | (-0.03) | 0.141 | (1.81)** |
| Parent Education | | | | | | | | |
| No College | 0.29 | 0.45 | 0 | 1 | 0.041 | (0.64) | 0.096 | (1.60)* |
| Both Parents College | 0.40 | 0.49 | 0 | 1 | -- | -- | -- | -- |
| Father College Deg. | 0.12 | 0.32 | 0 | 1 | 0.048 | (0.57) | -0.069 | (-0.91) |
| Mother College Deg. | 0.19 | 0.39 | 0 | 1 | 0.030 | (0.42) | -0.075 | (-1.24) |
| Don't Know | 0.01 | 0.05 | 0 | 1 | -0.363 | (-1.19) | 0.462 | (1.17) |
| Enrolled Credit Hours | | | | | | | | |
| <6 hours | 0.03 | 0.18 | 0 | 1 | -0.084 | (-0.59) | -0.207 | (-1.47)* |
| 7-11 hours | 0.02 | 0.14 | 0 | 1 | 0.404 | (2.60)*** | -0.022 | (-0.10) |
| 12-14 hours | 0.45 | 0.50 | 0 | 1 | -- | -- | -- | -- |
| 15-16 hours | 0.35 | 0.48 | 0 | 1 | 0.074 | (1.24) | 0.011 | (0.21) |
| >17 hours | 0.15 | 0.36 | 0 | 1 | 0.112 | (1.52)* | -0.036 | (-0.53) |
| Academic Characteristics | | | | | | | | |
| Transfer Student | 0.31 | 0.46 | 0 | 1 | 0.020 | (0.34) | -0.024 | (-0.45) |
| Seek Adv. Degree | 0.48 | 0.50 | 0 | 1 | 0.230 | (3.79)*** | 0.257 | (4.85)*** |
| High School GPA | 3.58 | 0.38 | 1.88 | 3.88 | -0.016 | (-0.20) | 0.083 | (1.30)* |

(continued)

Table 5. Summary Statistics of Variables in Diversity Regressions (continued).¹

| Variable | Mean | S.D. | Min. | Max. | Open to Diversity Est. Coeff.(t-stat) | Diversity Experience Est. Coeff.(t-stat) |
|---|-------|-------|------|------|--|---|
| <i>Living Situation: Location</i> | | | | | | |
| Residence Hall | 0.19 | 0.39 | 0 | 1 | -0.032 (-0.36) | 0.070 (0.87) |
| Greek House | 0.13 | 0.33 | 0 | 1 | 0.079 (0.88) | 0.105 (1.38)* |
| House/Walk Distance | 0.35 | 0.48 | 0 | 1 | -- -- | -- -- |
| House/Drive Distance | 0.31 | 0.46 | 0 | 1 | -0.031 (-0.47) | -0.068 (-1.16) |
| Other | 0.06 | 0.23 | 0 | 1 | 0.146 (1.22) | 0.024 (0.21) |
| <i>Time Allocation</i> | | | | | | |
| No Job | 0.30 | 0.46 | 0 | 1 | 0.129 (1.73)** | -0.045 (-0.71) |
| Work Hours/Week | 11.96 | 11.48 | 0 | 40 | 0.008 (2.69)*** | 0.002 (0.79) |
| Study Hours/Week | 9.61 | 6.17 | 2.50 | 30 | 0.005 (1.19) | 0.004 (0.91) |
| <i>Living Situation: Roomates and Housemates</i> | | | | | | |
| Live Alone | 0.07 | 0.26 | 0 | 1 | -0.078 (-0.67) | 0.010 (0.11) |
| Other Students | 0.77 | 0.42 | 0 | 1 | -- -- | -- -- |
| Spouse/Partner | 0.09 | 0.28 | 0 | 1 | -0.141 (-1.05) | -0.063 (-0.43) |
| Children | 0.03 | 0.18 | 0 | 1 | -0.072 (-0.41) | -0.017 (-0.10) |
| Parents | 0.03 | 0.18 | 0 | 1 | -0.074 (-0.55) | 0.079 (0.59) |
| Relatives | 0.03 | 0.17 | 0 | 1 | 0.102 (0.90) | -0.072 (-0.71) |
| Nonstudent Friends | 0.05 | 0.21 | 0 | 1 | -0.163 (-1.38)* | 0.159 (1.38)* |
| Other | 0.02 | 0.14 | 0 | 1 | -- -- | -- -- |
| <i>Major Field of Study</i> | | | | | | |
| General Agriculture | 0.02 | 0.12 | 0 | 1 | 0.209 (1.28)* | 0.039 (0.32) |
| Ag Economics | 0.07 | 0.26 | 0 | 1 | 0.185 (1.73)** | 0.087 (1.05) |
| Agribusiness | 0.09 | 0.29 | 0 | 1 | 0.160 (1.58)* | -0.026 (-0.32) |
| Animal Sciences | 0.23 | 0.42 | 0 | 1 | -- -- | -- -- |
| Ag Tech Management | 0.05 | 0.21 | 0 | 1 | -0.127 (-0.91) | 0.207 (1.63)* |
| Agronomy | 0.08 | 0.27 | 0 | 1 | 0.001 (0.01) | -0.001 (-0.02) |
| Ag Communications | 0.05 | 0.22 | 0 | 1 | 0.220 (2.30)** | 0.225 (1.91)** |
| Food Science | 0.03 | 0.18 | 0 | 1 | -0.017 (-0.14) | 0.095 (0.67) |
| Bakery Science | 0.03 | 0.16 | 0 | 1 | -0.121 (-0.71) | 0.540 (2.84)*** |
| Feed Science | 0.02 | 0.14 | 0 | 1 | -0.041 (-0.23) | -0.007 (-0.05) |
| Milling Science | 0.03 | 0.18 | 0 | 1 | 0.235 (1.65)** | 0.416 (2.73)*** |
| Horticulture | 0.09 | 0.28 | 0 | 1 | 0.201 (1.83)** | 0.190 (1.93)** |
| Horticultural Therapy | 0.01 | 0.08 | 0 | 1 | 0.587 (2.44)*** | 0.589 (2.82)*** |
| Golf Course Mgt. | 0.03 | 0.16 | 0 | 1 | -0.044 (-0.27) | 0.068 (0.50) |
| Pre-Vet Medicine | 0.10 | 0.31 | 0 | 1 | -0.078 (-0.81) | 0.146 (1.73)** |
| Park and Resouces | 0.05 | 0.21 | 0 | 1 | -0.004 (-0.03) | 0.179 (1.36)* |
| Other Major | 0.01 | 0.06 | 0 | 1 | -0.025 (-0.14) | -0.169 (-0.68) |
| Root MSE | | | | | 0.68 | 0.61 |
| R-Square | | | | | 0.20 | 0.17 |
| Adjusted R-Square | | | | | 0.13 | 0.11 |
| F-value | | | | | 3.07*** | 2.67*** |

¹Reported t-statistics are heteroscedastic-consistent (White). Collinearity diagnostics report degrading collinearity present between the intercept and age (Belsley, Kuh, and Welch).