First-Generation Status and Student Race/Ethnicity as Distinct Predictors of Student Involvement and Learning

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Using a national sample, student race/ethnicity was disaggregated into seven distinct groups (n = 643 per group) to identify unique effects of student race/ethnicity and first-generation on involvement and learning. First-generation status had a positive effect on student learning, but a negative effect on involvement. Effects by student race/ethnicity were mixed, revealing some dynamics similar to those for first-generation students and some that were unique to student race/ethnicity. Findings suggest specific programming implications based on student race/ethnicity and first-generation status.

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First-generation students comprise almost half of all college students today (Choy, 2001), yet their persistence to graduation is disproportionately lower than that of continuing-generation students (Chen & Carroll, 2005; Warburton, Bugarin, & Nuñez, 2001). Recent studies have highlighted the role of campus involvement in the success of first-generation students, with most results indicating that first-generation students are less involved in college experiences than their continuing-generation peers (Dennis, Phinney, & Chuateco, 2005; Lohfink & Paulsen, 2005; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Pike & Kuh, 2005). Pike and Kuh found that first-generation students were much less likely than their continuing-generation counterparts to be academically or socially engaged; they also had more negative perceptions of the college environment and were less likely to integrate their college experiences successfully. As a result, their learning gains were lower. Given Astin's (1993) assertion that college outcomes are related to the quality and frequency of student involvement in the college experience, findings of lower overall engagement in the college experience by first-generation students warrant further exploration.

There are a number of reasons for the lesser involvement in college experiences among first-generation students. Financial need may limit first-generation students' involvement in campus experiences, as they invest more time off campus to support themselves and their families. When compared with others, first-generation students are employed more hours, have lower incomes, and have more financial dependents than their continuing-generation counterparts (Inman & Mayes, 1999; Nuñez & Cuccaro-Alamin, 1998), leaving little time for involvement in many college experiences. The lower income levels among first-generation students result in two additional challenges. First, federal aid is not adequate to meet their needs as aid packages are becoming increasingly loan-based, and low-income students are often reluctant to take out a loan to meet their educational need (Levine & Nidiffer, 1996; Paulsen & St. John, 2002). Second, first-generation students may lack the appropriate information needed to access the aid available to them (Levine & Nidiffer) as their social circle is less likely to contain significant others whose life experience can assist them in negotiating the financial aid process (McDonough, 1997). This lack of information may be framed in terms of cultural capital, which references the extent to which one is comfortable and

familiar with the norms and culture of the institution. First-generation students likely have less access to information about higher education, particularly in terms of tacit information about how one negotiates the college experience. Additionally, they are more likely to feel like an outsider in higher education settings. Engagement with faculty and other university personnel may be especially beneficial for first-generation students as those people can provide the necessary information, perspective, values, and socialization that may compensate for cultural capital that was not available to first-generation students in their families and broader social networks prior to the college experience.

A second reason for lesser involvement in college experiences among first-generation students is that they are significantly more likely to commute rather than live on campus (Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996). Pike and Kuh (2005) found that commuting to campus, along with lower educational aspirations, explained much of the difference in involvement in the college experience between first-generation students and other students. For many first-generation students, particularly those from low-income families or those who have families of their own, living on campus is not a possibility. Thus, there must be other ways for them to become involved in the types of college experiences that are most predictive of learning gains.

A third reason for lesser involvement among first-generation students is that first-generation status influences educational aspirations, with first-generation students more interested in pursuing a degree for career purposes and focusing on applied majors, rather than theoretical majors (Terenzini et al., 1996). First-generation students are more likely to report that helping their families financially after college was a key motivating factor, viewing the degree as a means of gaining status and respect, bringing honor to the family, and contributing financially (Khanh, 2002). However, first-generation students perceive their parents to be less supportive and less encouraging about their decision to pursue higher education (Billson & Terry, 1982; Choy, 2001; Terenzini, Springer, Yaeger, Pascarella, & Nora 1996; York-Anderson & Bowman, 1991). This family dynamic may hinder the extent to which first-generation students engage in the college experience. London (1992) asserts that first-generation parents may not understand why their children need to invest in the college experi-

ence, stating that first-generation students are *"breaking*, not continuing, family tradition" by attending college (p. 63). Merullo (2002) describes it as a movement between two worlds, in which the student tries to weld the two worlds together. He argues that such efforts can take a toll on the student's academic pursuits, especially when agents from the institution are ineffective at helping students make those connections.

A final explanation for lesser involvement in college experiences may be that the characteristics of first-generation students are different from the dominant higher education culture; thus, first-generation students have to cross more cultural boundaries in order to engage in some college experiences (Rendón, 1996). When compared with continuing-generation students, first-generation students are more likely to be female (Terenzini et al., 1996), nonnative English speakers (Khanh, 2002), older, enrolled part-time (Terenzini et al., 1996), and from a lower family income level (Chen & Carroll, 2005). Student race/ethnicity is also related to first-generation status, as students of color make up 36% of first-generation students, but only 16% of continuing-generation students (Chen & Carroll, 2005). First-generation students of color must cross multiple boundaries related to race/ethnicity and social class on predominantly White campuses. Lohfink and Paulsen (2005) describe first-generation students as "inhabiting intersecting sites of oppression, based on race, class, and ethnicity" (p. 411).

Because a large portion of first-generation students are students of color, it is important to explore the way student race/ethnicity functions in combination with first-generation status. Research on involvement among students of color has consistently found that interactions with both peers and faculty predict learning (Anaya & Cole, 2001; Flowers, 2004; Hernandez, 2000; Mayo, Murguia, & Padilla, 1995). However, students of color view faculty as less approachable than White students do (Lundberg & Schreiner, 2004; Smith & Noel, 1996), and sometimes cite faculty relationships as sources of discouragement (Fries-Britt, 1998; Fries-Britt & Turner, 2001; Garrod & Larimore, 1997). Similar to some racial/ethnic groups of color, first-generation students interact with faculty less frequently and are less likely than continuing-generation students to view faculty as concerned about their success (Terenzini et al., 1996). Because a dispro-

portionate number of first-generation students are students of color, it is important to determine to what extent these barriers to positive interaction with faculty are a result of racial/ethnicity differences or first-generation status.

Studies using Astin's (1993) Involvement Theory have investigated effects on involvement in the college experience both for first-generation students and students of color, but these studies have not identified the unique contribution of first generation along with distinct race/ethnicity (defined more specifically than non-White). Thus, effects related to race/ethnicity may have been underestimated. Existing studies that have examined the role of race and first-generation status have put all non-White racial groups into one category, which overlooks distinctions among non-White racial and ethnic groups. The current study uses a sample with a large number of first-generation students of color to test a path framework that identifies the unique effects of race/ethnicity and first-generation status on involvement in the college experience and learning gained from that involvement. It is guided by the following research questions.

1. To what extent do student race/ethnicity and first-generation status predict involvement in college experiences?

2. What are the ways in which first-generation status and race/ethnicity predict learning both directly and indirectly through their contribution to involvement in college experiences?

Conceptual Framework

The conceptual framework upon which the path model is built is Astin's (1991) input-environment-outcome (I-E-O) model and his involvement theory that forms the foundation of that model (Astin, 1984). Astin's involvement theory and related I-E-O model posit that outcomes from the college experience are a result of student investment of time and energy in the college experience, although entering characteristics may mediate students' ability to invest deeply in that experience. Activities that draw student effort away from the college experience have a negative effect on gains, while investment of student effort in meaningful involvement, particularly with peers and faculty, contributes to the positive outcomes of their college experience.

However, those activities may be linked to social class and student race/ethnicity, such that students of color and first-generation students face unique challenges to their involvement in the college experience. Astin's (1984) theory has been critiqued for its assimilation/acculturation framework that underestimates the cost of involvement for minority students (Rendón, Jaloma, & Nora, 2000). In a similar manner, Tinto's (1994) student departure theory has been critiqued for its focus on minority student involvement at an individualist level, rather than as a collective, group issue (Tierney, 1992). Both of these theoretical models have addressed the cost of involvement with a focus on the individual's responsibility to ensure their success, rather than on the institution's responsibility to provide a more multiculturally affirming environment to ensure student success (Tierney, 1992).

Astin's (1993) model assumes that involvement depends primarily on student effort, but Rendón (1994) argues that nontraditional students are more likely to become involved when others from the institution invite their involvement. Her validation theory places greater responsibility in the hands of higher education faculty and staff for engaging students in the college experience. Her model affirms the role of dual socialization and biculturation that encourages students to enjoy simultaneous membership in multiple cultures, thus mitigating the cost of involvement to students from cultures that are nondominant in higher education. It is through this lens that the findings of this study will focus. In exploring the implications of our findings, we will emphasize the need for institutional agents to create opportunities in a way that validates the experience of first-generation students and students of color and embraces the cultural values they bring to the college experience.

Method

Participants

A stratified random sample of 4,501 undergraduate students from 4-year institutions who took the *College Student Experiences Questionnaire (CSEQ), Fourth Edition* (Pace & Kuh, 1998) between 1998 and 2001 was selected for this study. The strata were the seven racial/ethnic groups from which students self-identified, with 643 students in each group. The sample was drawn from a database of over 20,000 students

who were predominantly White. Because students of color are more likely to be first generation than White students (Choy, 2001), effects attributed to first-generation status could be a function of student ethnicity. To control for this, an even number of students (n = 643) from each of seven racial/ethnic groups were sampled randomly from the larger CSEQ dataset. This yielded a total sample of 4,501 students, with 643 students from each of the following racial/ethnic groups: African American, Asian/Pacific Islander, Mexican American, other Hispanic or Puerto Rican, Native American, White, and multiethnic.

As can be seen in Table 1, students in this sample were primarily from doctoral institutions and master's level institutions, with fewer from baccalaureate colleges. The sample included more women than men. About half of the students were 19 years or younger, 40% were aged 20 to 23, and about 10% were older than 23. A little under half of the students were the first in their families to enroll in college. First-generation status, defined as neither parent having graduated from college, varied by race/ethnicity, with a significantly greater proportion of Mexican-American students being first generation and a smaller proportion of White students being first generation, χ^2 (6, N = 4430) = 198.13, $p < .001$.

Instrument

The fourth edition of the *College Student Experiences Questionnaire* (CSEQ) (Pace & Kuh, 1998) was used for this study. The CSEQ is a 166-item instrument designed to assess where students expend effort related to their college experience and what they learn as a result of their college experience. The CSEQ relies entirely on students' self-report. Self-reports lack the internal validity of a pretest-posttest design (Pascarella, 2001). However, they are considered valid if the information given is known to the students and refers to recent activities, if the questions are phrased clearly and do not produce a social desirability effect, and if students consider the question worthy of a thoughtful response (Kuh et al., 2001; Pace, 1985). The CSEQ items satisfy these conditions; students are asked to recall only experiences that have occurred in the current school year, assessments of students' knowledge about the items indicate they understand the questions, and 95% of the students answer all of the questions on the instrument, indicating they are taking the questionnaire seriously (Kuh, Vesper,

Table 1
Demographic Characteristics of the Sample (n = 4501)

	All	African American (n = 643)	Asian/Pacif Islander (n = 643)	Mexican-American (n = 643)	Hispanic/ Puert.Ric. (n = 643)	Native American (n = 643)	White (n = 643)	Multiethnic (n = 643)
Student Characteristics								
First generation	1943	280	230	412	259	325	193	244
Men	1674	228	257	270	238	259	222	200
Women	2779	406	382	367	396	375	415	438
Institution Type								
Doctoral	2468	398	417	277	378	311	299	388
Master's	1151	143	125	178	126	231	217	131
Baccalaureate	882	102	101	188	139	101	127	124

Connolly, & Pace, 1997). Validity of the CSEQ is demonstrated through the high correlation between CSEQ self-report scores with grades (Pike, 1995) and with scores on achievement tests (Pascarella & Terenzini, 1991). The items on the CSEQ scales have been described as clear and well defined, with high face validity (Brown, 1985; DeCoster, 1989; McCammon, 1989; Mitchell, 1983) and well established reliability and validity (Kuh et al., 1997; Pace, 1987, 1992; Pace & Swayze, 1992). Reliability for all scales in the current study was assessed using Cronbach's alpha, with all variables demonstrating reliability greater than .74.

Variables

There were two final dependent variables, termed "endogenous variables" in path analysis language. The model estimates effects on those variables based on contributions of the other variables in the model. The endogenous variables were gains in academic learning and gains in personal learning. Gains in academic learning were measured by a composite variable consisting of the mean of 15 self-reported items (alpha = .87), such as understanding science, appreciation for the arts, and synthesizing ideas in writing. Gains in personal learning were calculated by averaging student scores on five items (alpha = .92), such as being a team player and managing one's time.

The independent variables used to predict the gains in academic and personal learning were 13 composite variables measuring frequency of involvement in activities and experiences primarily outside the classroom. Those variables included frequency of use of library resources, information technology, and other campus facilities such as the student union or recreational facilities; involvement in activities related to course learning, writing, and experiences with faculty; participation in activities related to the arts and sciences; participation in clubs and organizations; and interactions with other people around issues of personal support, difference, or topics of interest.

First-generation status and student race/ethnicity were included as predictor variables and were dummy coded (see Table 2). Students were considered first-generation if they did not have a parent who had graduated from college. The racial/ethnic groupings were African American, Asian/Pacific Islander, Native American, Mexican American, other Hispanic or Puerto Rican, and multiethnic. Students were considered multiethnic if they checked more than one race/ethnicity box. White was the omitted reference group.

Other student background characteristics functioned as control variables. These included age, academic major, year in college, part-time enrollment, sources of financial support, commuter status, gender, and educational aspirations. Working more than 20 hours per week either on or off campus for pay was treated as a background variable to test its effect on involvement and learning, based on previous findings that working has a particularly negative effect when students work many hours per week (Furr & Elling, 2000; Lundberg, 2004), which may be more common for first-generation students and students of color. Variables measuring institutional characteristics were also controlled and included Carnegie classifications and institutional selectivity, which was coded according to Barron's categories (Barron's Educational Series, 1996). See Table 2 for a complete description of all variables and their codes.

Table 2
Description of Variables

Dependent Variable	Definition
Academic learning	Composite variable using the mean of 15 items using self report to asses how much the student has gained in the following areas: understand art, enjoy literature, broad general education, understand importance of history, knowledge about other parts of the world, aware of different philosophies, write clearly, present ideas through speaking, use computers, analyze quantitative problems, think analytically, put ideas together, understand science, understand new development in science, aware of consequences of new applications of science (alpha = .87). Measured with 4-point scale, 1 = little, 4 = very much
Personal learning	Composite variable using the mean of items: developing one's own values, understanding self, ability to get along with others, function as a team player, developing good health habits (alpha = .92). Measured with 4-point scale, 1 = little, 4 = very much
Background Variable	**Definition**
First generation	Dummy variable in which 1 = first generation, no parent graduated from college 0 = not first generation, at least one parent graduated from college
Race/ethnicity	Dummy variables coded 0 = no, 1 = yes for the following racial/ethnic groups: African American, Asian/Pacific Islander, Mexican American, multiethnic, Native American, and other Hispanic or Puerto Rican. White was the omitted reference group.
Gender	Male = 1, female = 2
Advanced degree plans	Plan to enroll for an advanced degree, coded 1 = no, 2 = yes
Commute	Commute to campus, coded 0 = no, 1 = yes
Class level	Year in postsecondary education, coded 1 = freshman/ first year, 2 = sophomore, 3 = junior, 4 = senior
Academic major	Coded into two categories: theoretical = 1, applied = 0. Majors considered theoretical were biological/life sciences, ethnic, cultural studies, foreign languages and literature, history, humanities, liberal studies, mathematics, multidisciplinary studies, physical sciences, agriculture, social sciences, visual and performing arts. Majors considered applied were business, computer sciences, education, engineering, health-related fields, parks, recreation and leisure studies, preprofessional, and public administration. Undecided majors were coded as missing data.

Part-time enrollment	Coded 0 = enrolled in 11 or more units, 1 = enrolled in less than 11 units
Source of financial support	Six items, using a 6-point scale to assess the extent to which the student receives financial support from the following sources: self, parents, spouse or partner, employer, scholarships and grants, and loans. The scale is coded 1 = none, 2 = very little, 3 = less than half, 4 = about half, 5 = more than half, 6 = all or nearly all
Hours working	Two variables assessing how many hours per week the student works on or off campus, coded 1 = none, 2 = 1–10 hours, 3 = 11–20 hours, 4 = 21–30 hours, 5 = 31–40 hours, 6 = more than 40 hours
Institutional selectivity	Based on Barron's selectivity criteria, coded 1 = noncompetitive, 2 = less competitive, 3 = competitive, 3.5 = competitive+, 4 = very competitive, 4.5 = very competitive+, 5 = highly competitive, 5.5 = highly competitive+, 6 = most competitive
Master's level institution	Master's institution according to Carnegie classification. Coded 0 = not master's level, 1 = master's level
Doctoral institution	Doctoral institution according to Carnegie classification. Coded 0 = not doctoral level, 1 = doctoral level
Public institution	Coded 0 = not public, 1 = public

Involvement Variable	**Definition**
All involvement variables are composite variables using mean scores on items to create a mean on the composite. They all measured frequency of engagement in particular behaviors using a Likert Scale with 1 = never, 2 = occasionally, 3 = often, 4 = very often.	
Library	Eight items measuring frequency of library use (alpha = .80)
Computers	Nine items measuring frequency of computer and information technology usage (alpha = .79)
Campus facilities	Eight items measuring frequency of using buildings, rooms, athletic fields, and campus centers (alpha = .74)
Course learning	Eleven items measuring frequency of completing course assignments, taking notes, contributing to classroom activities, integrating learning from multiple courses, and explaining information either in writing or oral form (alpha = .82)
Writing	Seven items measuring frequency of engagement in writing papers, asking for feedback about writing, using writing tools, and asking for help writing (alpha = .77)
Faculty interaction	Ten items measuring frequency of interaction with faculty members outside the classroom around issues of coursework, career, or personal interest (alpha = .88)

Table 2, continued

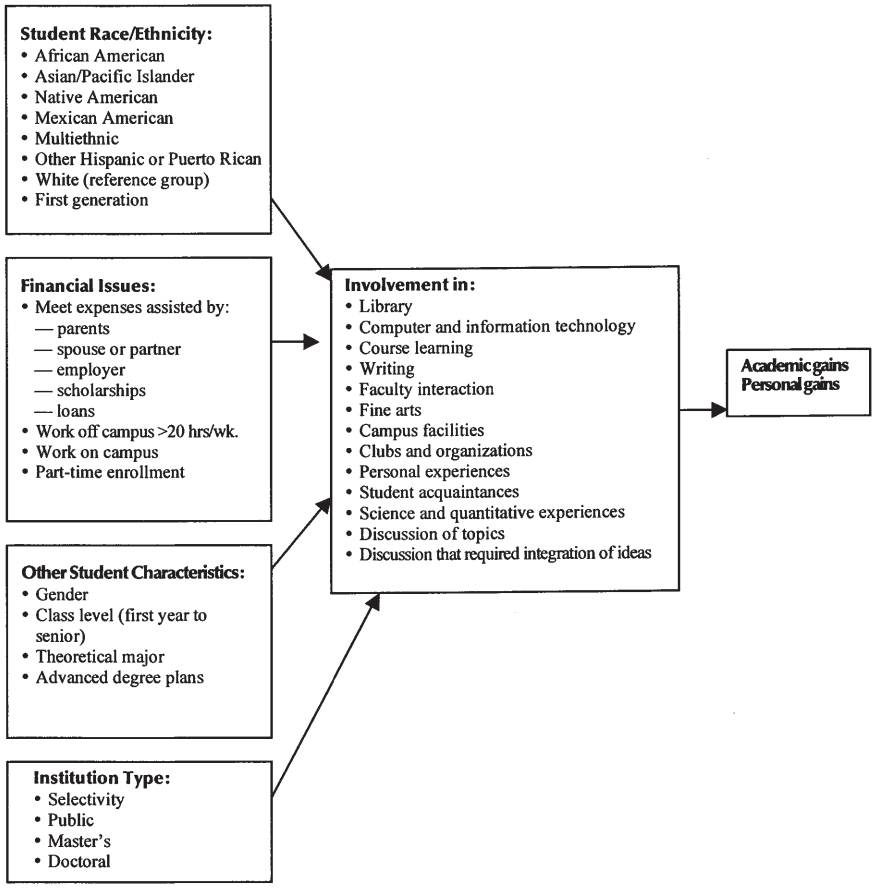
Fine arts experiences	Seven items measuring frequency of attendance at fine arts events, reading about art, participating in art, or discussing the arts with other people (alpha = .85)
Clubs and organizations	Five items measuring frequency of participation or leadership in a student or community organization (alpha = .84)
Personal experiences	Eight items measuring frequency of engaging with other people or books around concepts or ideas that included personal reflection (alpha = .84)
Science and quantitative experiences	Ten items measuring frequency of engaging in scientific experiments, learning scientific information, or using mathematical concepts, formulas and principles (alpha = .92)
Student acquaintances	Ten items measuring frequency of discussion with students who were different from themselves or becoming acquainted with students whom they considered different from themselves (alpha = .91)
Discussion of topics	Ten items measuring frequency of discussing topics including social issues, religion, ideas, the arts, science, current events, technology, social issues, political and economic issues (alpha = .87).
Information in conversations	Six items measuring frequency of discussing concepts related to courses or reading that caused the student to see a new perspective or integrate ideas with one another (alpha = .85)

Data Analysis

Multiple linear regression was used to test the path between student and institutional background characteristics, involvement, and learning (see Figure 1). Before beginning the analysis, the data were examined for outliers and missing data were deleted pairwise. The path was tested for each of the measures of learning (personal learning and academic learning). First, each of the dependent variables was regressed onto the involvement variables and background variables. Next, the involvement variables that predicted learning were regressed onto background variables to identify the path through which the background variables, particularly first-generation status and student race/ethnicity, predict learning. Only variables with significant correlation coefficients ($p < .05$) were included in the model. Decompositions of bivariate covariation were calculated to determine the fit of the

model; these show the original covariation. Direct, indirect, and total effects; and noncausal or residual effects unaccounted for in the model are also shown. Tolerance was set at .30 to limit multicollinearity. The proposed path is below.

Figure 1
Proposed Path



Results

First-generation status had a negative effect on four of the involvement domains: effort invested in course learning, frequency of attending fine arts events, experiences with student acquaintances, and involvement in scientific experiences (see Table 3). Students' race/ethnicity had mostly positive effects on their involvement in college experiences for all racial groups except multiethnic students. African American, Native American, Mexican American, and other Hispanic or Puerto Rican student ethnicity all had only positive effects on involvement in college experiences. African American student ethnicity predicted frequent use of campus facilities, library, writing experiences, interaction with faculty, involvement in student organizations, and interacting frequently with student acquaintances. Mexican American and other Hispanic or Puerto Rican student ethnicity also predicted involvement with student acquaintances. Native American race/ethnicity predicted increased involvement in scientific experiences. Asian or Pacific Islander ethnicity significantly predicted greater involvement in computer and science experiences, but lesser involvement in course learning experiences. Students who self-identified as multiethnic displayed a different pattern of involvement than any other race/ethnicity group. Multiethnic status was a negative predictor of involvement in five domains: library use, computer use, writing, use of campus facilities, and involvement with student acquaintances. Standardized regression coeffiecients predicting involvement by first generation and student race/ethnicity are listed in Table 3.

Effects of student involvement are only important insofar as they predict learning. Thus, the more important question is how the effect of first-generation status and student race/ethnicity on involvement predicts student learning. Indirect effects capture this contribution. Tables 4 and 5 show these effects. Despite the significant and mostly positive effect of student race/ethnicity on involvement, only multiethnic race/ethnicity had a direct effect on academic learning gains (negative), but each of the student race/ethnicity variables had small indirect effects (see Table 4).

Table 3
Significant Standardized Coefficients for First-Generation Status and Student Race/Ethnicity on Involvement and Learning (n = 4501)

	African American (n = 643)	Native American (n = 643)	Asian/Pacific Islander (n = 643)	Mexican American (n = 643)	Other Hispanic (n = 643)	Multiethnic (n = 643)	First Generation (n = 1943)
Involvement							
Library	.051*					-.050*	
Computers			.068*			-.068**	
Course learning			-.116***				-.051*
Writing	.058*					-.069**	
Faculty	.053*						
Art, music, theater							-.107***
Facilities	.051*					-.049*	
Clubs	.078**					-.050*	
Student acquaintances	.058*			.077**	.056*		-.051*
Science		.072**	.084**				-.050*
Learning							
Personal learning				.080**		-.057*	
Academic gains						-.052*	.045*

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

Table 4
Effects of First-generation Status and Student Race/Ethnicity on Academic Gains (n = 4501)

Variable	Direct	Indirect	Total	Covariation	Noncausal
First Generation	.045	-.016	.029	-.017	-.046
African American		.017	.017	0	-.017
Asian/Pacific Island		.011	.011	-.006	-.017
Multiethnic	-.052	-.010	-.062	-.058	.004
Native American		.012	.012	-.022	-.034

p <.05 for all variables

The pattern was only slightly varied when the outcome variable was personal learning gains (see Table 5). Mexican American race/ethnicity had both a direct effect and a small indirect effect on personal learning gains through increased involvement in conversations with student acquaintances. Multiethnic status had both a direct negative effect and an indirect negative effect on personal learning gains through its negative effect on involvement in clubs, engagement in writing, and use of the library, computers, and campus facilities. The other race/ethnicity effects were all indirect and quite small (see Table 5).

First-generation status involved some different dynamics. Despite lower levels of involvement by first-generation students, first-generation status contributed positively to academic gains. In the original bivariate correlation which did not control for other student background characteristics, first-generation status correlated negatively with academic learning gains. [some kind of transition sentence or phrase needed here]First-generation status had a positive direct effect on academic learning gains. Based on the variables in this model, first-generation status hindered students primarily through their less frequent involvement in course learning activities and in science and quantitative experiences. There was a small and negative indirect effect of first-generation status on personal learning gains (see Table 5).

Table 5
Effects of First-generation Status and Student Race/Ethnicity on Gains in Personal Learning (n = 4501)

Variable	Direct	Indirect	Total	Original Covariation	Noncausal
First Generation		-.009	-.009	-.007	.002
African American		.015	.015	.025	.010
Asian/Pacific Islander		-.007	-.007	-.037	-.030
Mexican American	.080	.006	.086	.027	-.059
Multiethnic	-.059	-.018	-.077	-.070	.007
Other Hispanic		.004	.004	-.003	-.007

$p < .05$ for all variables

Limitations

Students were chosen randomly from each of seven racial/ethnic groups in the larger database, but the CSEQ database is not a random sample of college students. Institutions choose to administer the CSEQ primarily for reasons of assessment and evaluation of their own campus, but institutions are not chosen randomly from the universe of all colleges and universities. Thus, students from institutions in this study may overrepresent institutions interested in assessment of their efforts, engagement of students, or improving the college experience. Because socioeconomic status was not a variable measured in this study, the effects attributed to first-generation student status may be due to differences in income level. Sources of financial support and hours spent working off campus were controlled, but future studies should explore the specific contribution that family income makes to patterns of involvement and reported learning gains.

Discussion

Students of color and first-generation students share some common experiences and face some common obstacles, but their involvement on campus and its contribution to their learning includes dynamics that are distinct to particular groups.

First Generation

First-generation students are less involved in course learning, fine arts experiences, science/quantitative experiences, and involvement with other students who were different; yet they report greater academic learning gains. Perhaps their limited involvement "pays off" better than it does for continuing-generation students. This greater benefit from involvement is consistent with Pascarella, Pierson, Wolniak, & Terenzini's (2004) findings that first-generation students gained more from their involvement in academic endeavors than their peers did. Pascarella et al. suggest that while first-generation students may enter college with less cultural capital, academic experiences in college may contribute to cultural capital in ways that benefit first-generation students more than continuing-generation students who already possess that cultural capital.

Because first-generation students are less involved in several areas, efforts to boost that involvement would seem to enhance their learning even more. Involvement in course learning may offer the most promise for fruitful intervention, given the lower level of involvement of first-generation students in this area. Moreover, this is the one variable that led to increases in both personal and academic learning for first-generation students. This domain includes quality of interaction with course material, taking notes, class participation, working collaboratively on course assignments, and integration of ideas from individual classes. Narrative accounts of first-generation students describe challenges that first-generation students face as they interact in a culture that is different from their own, full of rules and norms that feel quite foreign (London, 1996; Rendón, 1996). As a result, students may be more reticent in the classroom. The definition of "course learning" used in this study involves several public displays of knowledge, such as contributing to class discussions and explaining information orally. For students who already feel that they may not belong, public expression can be especially daunting. Faculty and student affairs professionals must recognize this possibility and restructure active learning opportunities so that students can safely collaborate with others in ways that minimize personal risk. Likewise, programs targeting first-generation students should teach skills that foster active participation in the classroom and collaboration with others.

First-generation students' lesser involvement with student acquaintances reflects less access to interactional diversity, as the variable measures the extent to which students engage with acquaintances who are different from themselves. Interactional diversity has been established as a strong contributor to critical thinking (Pascarella, Palmer, Moye, & Pierson, 2001), gains in learning (Hu & Kuh, 2003), and openness to diversity (Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996). The new finding from the current study is that first-generation students are engaging in these activities less frequently than other students and their lesser involvement has a negative effect on their learning. Pike and Kuh's (2005) recent study of first-generation student engagement found that living off campus and having different educational aspirations were the major contributors to differences in engagement patterns, but both of those variables were controlled in this study. Thus, the lesser involvement of first-generation students with others who are different from themselves does not reflect the con-

straints of lesser access to student acquaintances as a result of living off campus, working more hours, or attending college on a part-time basis. If their lesser interaction *stems* from the sense that they feel like outsiders in the higher education environment (London, 1996; Rendón, 1996), then efforts to validate first-generation students and their background might result in their greater interaction with others.

Race/Ethnicity

African American, Native American, and other Hispanic students are investing time and effort in the college experience, but perhaps not enjoying the same benefits that their first-generation counterparts enjoy in terms of gains in academic learning. An opposite pattern emerged for multiethnic students, as they were less involved in campus experiences and reported fewer learning gains both in terms of academics and personal learning. This pattern suggests that efforts to boost involvement among multicultural students will also enhance their learning. Particularly fruitful areas of focus for increasing the involvement of multiethnic students would be with the library and computers in the academic realm, and with campus facilities and clubs and organizations in the student affairs realm.

Mexican-American status was the only race/ethnicity that had a direct positive effect on personal learning gains. Mexican-American students displayed the strongest levels of involvement with students who were different from themselves and were most likely to engage in discussions with others who were different. This dynamic is opposite of that for first-generation students who engage less frequently with others who are different from themselves. This is one example of how first-generation status and student race/ethnicity are distinct features of a student's college experience.

The negative effect of Asian/Pacific Islander race/ethnicity status on course learning is similar to that of first-generation students. Thus, programs to boost the engagement of first-generation students in public discourse in the classroom may also be relevant to Asian/Pacific Islander students. However, such a recommendation raises the question of whether public expression of learning is culturally appropriate for Asian/Pacific students (Kodama, McEwen, Liang, & Lee, 2001).

Implications for Practice

Because the results of this study indicate that first-generation student status and student race/ethnicity status contribute uniquely to students' involvement patterns and subsequent learning gains, institutions cannot assume that addressing the needs of first-generation students will concomitantly address the needs of students of color. Even among students of color, it is not possible to create a "one size fits all" approach; each race/ethnic group appears to have its own unique needs.

The disturbing pattern seen in this study is similar to the one seen in Lundberg and Schreiner's (2004) study of faculty interaction by student race/ethnicity; that is, most students of color are investing more time in the types of experiences that Astin (1991) theorized would lead to learning gains, but are not benefiting as much from that involvement as White students do. A focus on the *quality* of interactions that students of color have with faculty and peers, rather than simply on the frequency of those interactions, may produce greater learning gains for students of color.

First-generation students' involvement patterns can be a particular focus for institutions, as their involvement in certain college experiences appears to benefit their learning in important ways. One way that institutions could address issues of active involvement in course learning is through summer bridge programs and first-year experience courses. Assisting faculty to understand the needs and challenges of first-generation students and informing them as to the numbers of first-generation students on their campus could lead to first-year courses and experiences that explicitly teach the value of active learning and collaboration with others. Teaching faculty and staff about the need to invite students to be engaged in this way may be especially beneficial for first-generation students, especially if such engagement can be done in a way that validates multiple cultures and values (Rendón, 1994).

Because first-generation students are entering an environment that is foreign to them, and do not bring considerable social or cultural capital with them into that environment, programs that explicitly articulate the types of behaviors and involvement patterns that lead to

greater learning gains hold particular promise. Programs serving first-generation students, such as federal TRIO programs, can offer a "safer" environment for participation as students realize they are in a community of others similar to themselves.

Efforts to boost interactional diversity among first-generation students may include forums, workshops, and planned encounters with diverse others during established first-generation support programs. Because such interactional diversity boosts learning for students in general, such programming need not be targeted solely to first-generation students, however. Campus-wide programming that fosters engagement with others who are different from oneself will benefit the campus population in general, but first-generation students in particular.

Conclusion

Programs for first-generation students must focus on engaging them more frequently with diverse others and with course learning activities that involve collaborating with others and expressing their ideas. Because such activities may be threatening to first-generation students, institutions must be creative about fostering such activities in a supportive environment that minimizes public risk to students. Additionally, faculty and staff must work to initiate invitations for such involvement by validating students' experience and the value they bring to the institution. Aside from multiethnic students, students of color are involved in the college experience at levels equal to or greater than others, but their involvement does not seem to "pay off" as might be expected. Further investigation into the ways in which students of color experience involvement and how they view its contribution to their learning would enhance an understanding of the way involvement contributes to the success of students of color.

McDonough (1997) argues that quantitative models such as the one in this study are in danger of emphasizing individual attributes as causes of inequity in higher education, while overlooking the role of the higher education institution. The responsibility for creating campus climates that are engaging for all students rests squarely on the institution. The findings that involvement functions differently for stu-

dents based on race/ethnicity and first-generation status builds a case for further study of the unique and combined effects of first-generation status and student race/ethnicity. Identifying areas where students are less invested than others is one step toward enhancing the learning opportunities for those students. Further research could investigate the reasons for the disparity in involvement, focusing on changes in higher education policy, structure, and practice that could lead to a higher quality of involvement that makes the college experience more beneficial to all students.

APPENDIX 1

Decomposition of Bivariate Covariation Between Significant Predictors and Gains in Academic Learning

Variable	Direct	Indirect	Total	Original Covariation	Noncausal
First Gen and Race/Ethnicity					
First Generation	.045	-.016	.029	-.017	-.046
African American		.017	.017	0	-.017
Asian/Pacific Island		.011	.011	-.006	-.017
Multiethnic	-.052	-.010	-.062	-.058	.004
Native American		.012	.012	-.022	-.034
Other Students Characteristics					
Woman	-.049	-.002	-.051	-.057	-.006
Commute		-.035	-.035	-.017	.018
Advanced degree plans		.096	.096	.133	.037
Theoretical major	.052	.033	.085	.134	.049
Year in college	.084	.070	.154	.127	-.027
Financial					
Meet expenses: self		.021	.021	-.013	-.034
Meet expenses: parents		.049	.049	-.017	-.066
Meet expenses: spouse		.010	.010	000	-.010
Meet expenses: scholarships		.045	.045	.042	.003
Meet expenses: loans		.004	.004	.040	.036
Meet expenses: other sources	-.042	.021	-.021	.024	.045
Work >20 hours/week		-.005	-.005	-.033	-.028
Enroll part-time		-.012	-.012	.027	.039
Institutional Characteristics					
Selectivity	.095	.025	.120	.115	-.005
Master's institution		-.019	-.019	-.061	-.042
Doctoral	-.057	-.028	-.085	-.017	-.068
Public		.003	.003	-.115	-.112
Involvement in:					
Library	.099		.099	.331	.222
Computers and info technology	.049		.049	.335	.286
Campus facilities	.051		.051	.296	.245
Course learning	.054		.054	.418	.364
Writing	.079		.079	.335	.256
Art, music, and theater	.046		.046	.279	.233
Science experiences	.167		.167	.339	.172
Conversation topics	.120		.120	.444	.324
Information in conversations	.141		.141	.457	.316
Faculty interaction	.072		.072	.403	.331

APPENDIX 2

Decomposition of Bivariate Covariation Between Significant Predictors and Gains in Personal Learning

Variable	Direct	Indirect	Total	Original Covariation	Noncausal
Background					
First Generation		-.009	-.009	-.007	.002
African American[a]		.015	.015	.025	.010
Asian/Pacific Island		-.007	-.007	-.037	-.030
Mexican American	.080	.006	.086	.027	-.059
Multiethnic	-.059	-.018	-.077	-.070	.007
Other Hispanic		.004	.004	-.003	-.007
Woman		-.011	.011	.042	.031
Commute		-.043	-.043	-.057	.014
Advanced degree plans		.052	.052	.078	.026
Theoretical major	-.052	.008	-.044	.004	.040
Year in college	.081	.032	.113	.077	-.036
Meet expenses: self		.004	.004	-.015	-.019
Meet expenses: parents		.027	.027	-.010	-.037
Meet expenses: scholarships		.004	.004	.045	.041
Meet expenses: loans		.003	.003	.074	.071
Meet expenses: other sources		.008	.008	.023	.015
Work >20 hours/week		-.015	-.015	-.051	-.036
Selectivity		.031	.031	.037	.006
Master's institution		-.011	-.011	-.002	.009
Doctoral		-.027	-.027	-.047	-.020
Public		.011	.011	-.074	-.085
Frequency of Use					
Library					
Computers and info technology	.056		.056	.263	.207
Campus facilities	.181		.181	.306	.125
Course learning	.092		.092	.358	.266
Writing	.070		.070	.306	.236
Personal experiences	.105		.105	.350	.245
Student acquaintances	.070		.070	.295	.225
Information in conversations	.131		.131	.367	.236

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