Res High Educ (2014) 55:75–100
DOI 10.1007/s11162-013-9304-9

Examining the Effects of Stress and Campus Climate on the Persistence of Students of Color and White Students: An Application of Bean and Eaton's Psychological Model of Retention

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Received: 30 April 2012 / Published online: 2 July 2013

Abstract The current study examined the effects of stress and campus climate perceptions on the persistence decisions of students of color and White students using Bean and Eaton's (2000) Psychological Model of College Student Retention. A sample of first-year students ($N = 1{,}491$) at a predominantly White research university were survey enduring their second semester and their enrollment status was subsequently tracked after 2 years. Path analysis was conducted on the sample of students of color ($n = 548$) and White students ($n = 943$). Results indicated models that explained 27 % of the variance for students of color and 44 % of the variance for White students in persistence after 2 years of college. Among the initial 37 variables included in the models, 17 had significant direct and indirect effects on students' of color persistence including observing racism on campus, having comfortable academic interactions, stress related to the academic environment, and feelings about the campus environment. For White students, 13 variables had significant direct and indirect effects on persistence, including having opportunities for diverse peer interactions and comfortable academic interactions, stress related to the social environment on campus, and feelings about the campus environment. The discussion highlights the usefulness of the Bean and Eaton model for examining retention for students of color and White students.

Keywords Students of color · Persistence · Retention models · Stressors · Campus racial climate · Academic environment · Campus environment

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Introduction

Undergraduate student retention at four-year institutions is a complex phenomenon studied at great length among higher education researchers (e.g. Braxton 2000; Braxton et al. 2004; Seidman 2005; Tinto 1993). Although many models portray the interactions between students and their institutions in the decision to stay or leave college (Braxton 2000, 2003), scholarly attention has focused almost exclusively on Tinto's (1993) model of student departure (Braxton et al. 2004). Such limited focus on a single paradigm for understanding student persistence is curious given that retention and graduation rates have seen little improvement in the past two decades, with 79 % of first-year students returning for their second year of college, and 58 % of students graduating from four-year institutions in 6 years (Aud et al. 2012). Additionally, demographic shifts in the college-going population in the United States signify the growing need to consider persistence in ways that are relevant to the experiences of students of color, those who are the first in their family to attend college, and students from low-income families and other historically underrepresented groups (Hurtado and Carter 1997; Rendón et al. 2000; Tierney 1999). As Braxton noted in 2000, the time has come for educators to consider alternate models to deepen our understanding of the conditions that contribute to students' persistence decisions.

Several persistence frameworks have revised or extended Tinto's model to account for the psychological, economic, organizational, and cultural dimensions of students' backgrounds and campus environments (Braxton 2000). Many of these perspectives were theoretically rather than empirically derived, providing many opportunities for retention scholars and practitioners to test and refine student persistence models beyond the Tinto paradigm (Braxton 2000, 2003). One such model is the Psychological Model of College Student Retention (Bean and Eaton 2000, 2001/2002), which hypothesizes the influence of students' psychological responses to the college environment in their persistence decision. The psychological processes and outcomes specified in Bean and Eaton's (2000, 2001/2002) model include self-efficacy, coping strategies, and locus of control. Although Bean and Eaton (2000) encouraged researchers to test the model for refinement and clarification, it has received little scholarly attention, except for a proposed extension of the model that included racial identity development processes for understanding African American student persistence at predominantly White institutions (Rodgers and Summers 2008).

Stress as a Psychological Factor in Persistence

Following the publication of the psychological model of retention, Bean (2005) later noted that the degree to which students experienced stress in their college environment also influenced their persistence decisions. Data from the American College Health Association (ACHA) (2011) and the Higher Education Research Institute (HERI) (2011) point to the growing levels of stress and other emotional and mental health issues reported by college students. In 2010, more students than ever before entered college reporting lower levels of emotional health and higher levels of feeling overwhelmed (HERI 2011). One quarter of college students indicated that stress was a leading factor affecting their academic performance, with nearly 39 % reporting "more than average" overall stress within the past 12 months (ACHA 2011). Academics, family problems, relationships, and finances were some of the main issues students found difficult to handle (ACHA 2011). Students reporting high levels of emotional health were more likely to graduate from college than those who did not (DeAngelo et al. 2011), suggesting that psychological factors, including stress, play a role in student persistence (Bray et al. 1999).

Research examining the relationship between stress and persistence is limited to a handful of studies. Findings from these studies indicated varying and contradictory relationships between stress and persistence. General forms of stress negatively affected the persistence attitudes of students of color (Wei et al. 2011), and high levels of financial stress were associated with dropping out of college for at least one semester (Joo et al. 2008/2009). However, other research indicated that the stress associated with being a college student had no significant relationship to persistence for students (Pritchard and Wilson 2003), including students of color (Gloria and Ho 2003; Gloria et al. 1999), or had a positive effect on persistence among first-year students (Zajacova et al. 2005). A unique stressor for students of color at predominantly White institutions, race-related stress, had negative (Wei et al. 2011) or no effect (Neville et al. 2004) on their persistence decisions. Stress also affected students' academic performance, which is often a precursor to persistence decisions. Findings generally support the negative effects of stress on students' grades (Neville et al. 2004; Pritchard and Wilson 2003; Struthers et al. 2000), including financial stress (Joo et al. 2008/2009) and race-related stress (Greer and Chwalisz 2007; Smedley et al. 1993).

Effects of the Campus Climate on Persistence

Bean and Eaton's (2000) model highlights the role of the campus environment, which is theorized as having direct effects on students' psychological processes and outcomes. The campus racial climate represents a critical aspect of the college environment for students of color at predominantly White institutions (Hurtado et al. 1999). Perceptions of racial discrimination, stereotypes, and prejudice on campus, beliefs about institutional response to racial diversity issues, and interactions between and among racial/ethnic groups are dimensions of the campus environment that comprise the campus racial climate (Hurtado et al. 1999). Two decades of research consistently demonstrates that students of color perceive the campus climate more negatively than do White students, and students of color do, in fact, experience racial discrimination, prejudice, and stereotypes at predominantly White institutions (Harper and Hurtado 2007).

Negative perceptions of the campus racial climate contributed to important outcomes associated with persistence, including feelings of alienation and isolation among students of color (Solórzano et al. 2000; Yosso et al. 2009), and diminished sense of belonging and commitment to the institution (Hurtado and Carter 1997; Johnson et al. 2007; Nora and Cabrera 1996). Persistence decisions among students of color at predominantly White institutions were adversely affected by negative campus climate experiences (Cabrera et al. 1999; Eimers and Pike 1997; Museus et al. 2008; Nora and Cabrera 1996). Conversely, positive interactions across racial/ethnic groups were associated with greater institutional commitment (Milem et al. 2005) and persistence (Chang 1999). Such interactions are particularly beneficial at institutions with racially and ethnically diverse student populations and provide opportunities for meaningful cross-racial interactions (Chang 2007).

Although research consistently demonstrates that the effects of the racial climate are indirect (e.g. Cabrera et al. 1999; Chang 1999; Eimers and Pike 1997; Museus et al. 2008; Nora and Cabrera 1996), it is clear that campus climate perceptions do matter to the persistence decisions of students of color. However, less is known about the relationships between stress, the campus racial climate, and persistence. Findings from a single-institution study indicated that the campus climate had a mediator effect on stress and persistence among students of color at a predominantly White institution (Wei et al. 2011). Such limited empirical evidence signifies a need to examine the relationship among these

variables using a theoretical framework that considers the psychological factors related to students' persistence decisions.

Purpose of the Study

Understanding the conditions that contribute to student persistence requires accounting for the unique campus environments that serve as the backdrop for students' experiences (Reason 2009). Thus, while large scale, multi-institutional studies advance our understanding of student persistence at a macro-level within and across institutional types, ultimately it is the micro-level conditions of specific campus communities where students make their persistence decisions, and where institutions design, implement, and assess appropriate programs and services (Reason 2009). The current single institution study investigates the persistence of students of color and White students 2 years after their initial enrollment at a predominantly White institution by examining the effects of campus environment experiences, including campus climate perceptions, as well as various types of stress on students' persistence decisions. Bean and Eaton's (2000) Psychological Model of Student Retention is the guiding framework used for this study in an effort to understand persistence beyond Tinto's (1993) paradigm, and to provide a theoretical context for understanding the effects of stress on persistence.

Theoretical Framework

Empirical examinations of the effects of stress on persistence have largely excluded the role of the college environment on student stress (Gloria and Ho 2003; Gloria et al. 1999; Neville et al. 2004; Pritchard and Wilson 2003; Zajacova et al. 2005) or suggested that stress effects how students perceive their campus environments (Wei et al. 2011). To understand how the college environment effects both student reports of stress and their persistence decisions, Bean and Eaton's (2000) Psychological Model of College Student Retention is used for the current study.

Bean and Eaton (2000, 2001/2002) depict a model in which all elements have both direct and indirect effects on persistence, and illustrate the interplay between various dimensions of the campus environment. The first element of the model indicates that as students enter college, they come with attitudes and beliefs about their abilities, previous academic and social experiences, and self-assessments about whether they will be successful in college. For the current study, students' demographic backgrounds and pre-college academic characteristics were also included in this portion of the model to account for any influence these dimensions may have on persistence, independent of students' campus experiences.

In the next step of the model, students' beliefs and attitudes influence the academic, social, and bureaucratic interactions they have with the institutional environment, and interactions with individuals (i.e., friends, family, or employers) that occur outside of the institution (Bean and Eaton 2000, 2001/2002). Given that the persistence decisions of students of color were of interest, constructs related to the campus racial climate were included as a dimension of student interaction with the institutional environment. The campus racial climate measures used in the current study focused on peer interactions within and between racial/ethnic groups, and experiences of racial discrimination on campus.

The key proposition of Bean and Eaton's (2000, 2001/2002) model is that students have various psychological responses to the campus environment. The psychological dimensions of students' college experience affect academic integration and achievement and

social integration (labeled as intermediate outcomes in the Bean and Eaton model), which in turn influence students' sense of institutional fit and commitment (attitudes), intentions to persist, and ultimately their actual persistence at the institution (behavior). Students' reported levels of stress in various areas (academic, financial, social, and family issues) and feelings about the campus and living environments represented the psychological factors used in the current study.

The original model sequence proposed by Bean and Eaton (2000, 2001/2002) was modified (see Fig. 1) to account for the time between students' participation in the current study and their actual persistence decisions 2 years later. In the model, intermediate outcomes (e.g., academic integration and performance) are situated between individuals' psychological processes and outcomes, and their attitudes and intentions. However, the intermediate outcome used in this study, academic performance, was officially measured at the conclusion of the academic term (i.e., semester). Thus, for the current study, students were asked about their intentions and attitudes prior to knowing their official grades and academic status for the academic term in which the data were collected. In keeping with the temporal design of the study, the model was also modified to account for previous collegiate academic performance prior to the respondent's participation in the current study. In the modified model, a measure of academic performance was situated between student entry characteristics and the institutional environment. Given the design of the survey and nature of the analytic technique used in the current study, it was not possible to account for the interplay between the various elements of the institutional environment as described by Bean and Eaton (2000), thus this aspect is omitted from the modified model in Fig. 1.

The research questions examined in this study are:

1. How do various forms of stress and campus racial climate perceptions affect the persistence decisions of students of color and White students two years after their initial enrollment in college?
2. To what extent does Bean and Eaton's (2000, 2001/2002) Psychological Model of College Student Retention explain the persistence decisions of students of color and White students?

Method

This study was conducted at a predominantly White, selective, research university located in the northern section of the United States. The institution enrolls approximately 14,000 undergraduate students, with 29 % students of color and 56 % women. A study was implemented by the institution's research and assessment office to understand how campus environment perceptions and experiences contributed to the persistence of students of color. The survey was developed after conversations with a variety of student, faculty, and staff groups across campus, and reviews of the literature on campus climate and previous climate surveys conducted at the institution. Survey items were reviewed by the aforementioned campus groups and piloted with a small group of students. The final survey instrument included seven topical areas: experiences in the classroom, experiences in the major, interactions with peers on campus and in the living environment, campus environment perceptions, institutional practices related to diversity, reasons for choosing and remaining enrolled at the institution, and sources of stress and support at the institution. Demographic information was collected from study participants, including race/ethnicity,

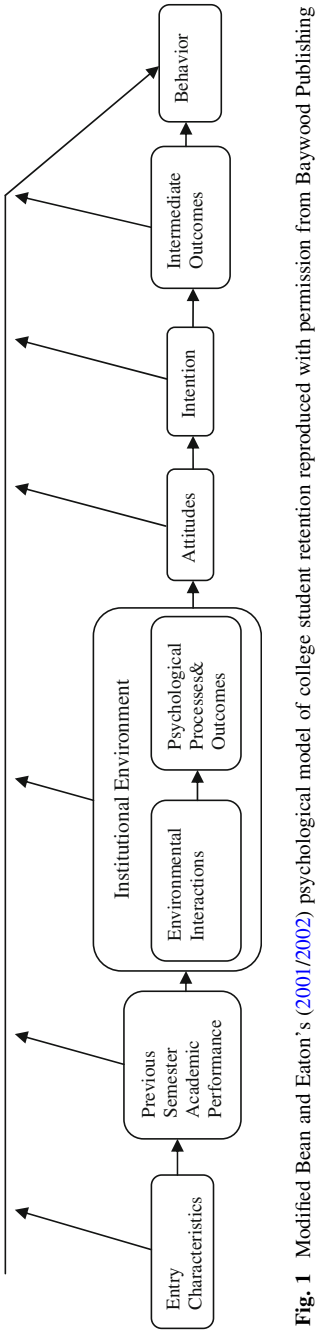

Fig. 1 Modified Bean and Eaton's (2001/2002) psychological model of college student retention reproduced with permission from Baywood Publishing

gender, sexual orientation, parental levels of education, if English was the primary language spoken at home, and if respondents were international students. Completion of the survey was expected to take 15–20 min.

The survey population consisted of all degree-seeking undergraduates who were enrolled as of mid-spring semester 2010 and were 18 years of age or older, totaling 12,856 students. An invitation to participate in the online survey was sent to students via email, which included a link and unique passcode for accessing the survey. While the online survey remained open, the effort to increase the response rate was made by distributing a paper version of the survey to students living in the residence halls. A unique passcode was stamped on each survey. Surveys were collected by residence hall staff in sealed envelopes and returned to the researchers. Reminders to participate in the survey were sent from the research and assessment office prior to distributing the paper survey, and several email reminders to encourage participation were sent from the school/college home to students' majors and several offices that provide services to underrepresented student groups (e.g. multicultural affairs office; education opportunity program office). The survey was advertised on campus via posters, fliers, and table tents displayed in the dining halls, library, and computer clusters to encourage student participation in the study. There were no incentives provided for students to participate in the study, and responses to the survey were collected until the end of March 2010. The online response rate for the survey was 10 %, while the response rate for the paper version was 52 %, for an overall response rate of 29 %, totaling 3,761 respondents.

Sample

From the overall sample of 3,761, a sub-sample of first-year students was identified for the current study and analyzed. Of the 3,136 first-year students surveyed, 1,837 (59 %) responded. Population and respondent distributions on institutional measures including gender, race/ethnicity, and first-generation status were similar. Gender showed the largest disparity, as females represented 57 % of all first-year students and 62 % of respondents (Table 1).

The process of crafting a dataset for analysis was driven by several considerations. One of these involved the collection of students' racial and ethnic identity information. Students were provided an opportunity to self-identify their racial/ethnic identity using 11 broad racial/ethnic categories (e.g., Black/African American, Latino/Hispanic) as well as specific sub-categories within each of the broad categories (e.g., there were 17 ethnic categories included under the broad category of Asian American/Asian). Students could check all applicable categories. If a student checked none of the categories, information was obtained from institutional student records. In forming the student of color and White groups, some categories were excluded from the analysis because they could not be meaningfully assigned. Omitted groups included Arab/Arab American, those who indicated their race as "other," and respondents who selected "prefer not to respond" on the survey or whose racial/ethnic group information was not available from institutional records. International students were also omitted from the analysis.

Students were also asked to report their gender; if they did not, then information from institutional student records was substituted. Students who did not identify as female or male, or preferred not to respond, were excluded from the analysis due to small numbers. First-generation college student status was collected from the survey or, if missing, was obtained from information on the student's Free Application for Federal Student Aid (FAFSA) via institutional student records. Finally, only students who persisted or withdrew

Table 1 Population, respondents, and sample

Variable	First-year population[a]		Respondents[a]		Final sample[a,b]	
	N	%	*N*	%	*N*	%
Gender						
Female	1798	57.3	1130	61.5	938	62.9
Male	1338	42.7	707	38.5	553	37.1
Race/ethnicity						
American Indian	20	0.6	10	0.5	9	0.6
Asian American/Asian	309	9.9	205	11.2	180	12.1
Black/African American	251	8.0	132	7.2	99	6.6
Hawaiian/Pacific Islander	6	0.2	3	0.2	2	0.1
Hispanic/Latino	254	8.1	160	8.7	110	7.4
Multiracial	39	1.2	33	1.8	148	9.9
Non-Resident Alien	165	5.3	80	4.4		
Unknown	287	9.2	161	8.8		
White	1805	57.6	1053	57.3	943	63.3
First-generation						
No	2764	88.1	1593	86.7	1196	80.2
Yes	372	11.9	244	13.3	295	19.8

[a] Institutional data

[b] Survey data

from the institution on a voluntary basis were included in the study. Students who were withdrawn by the institution were omitted from the study because their departure was not voluntary, therefore it would be difficult to examine the influence of stress and the campus environment on their persistence decisions. The final sample of 1,491 students for analysis consisted of 1 % American Indian/Alaskan Native ($n = 9$), 12 % Asian-American/Hawaiian/Pacific Islander ($n = 182$), 7 % Black/African-American ($n = 99$), 7 % Hispanic/Latino ($n = 110$), 10 % Multiracial ($n = 148$), and 63 % White ($n = 943$). The distribution of gender was 63 % ($n = 938$) female and 37 % ($n = 553$) male, while 20 % ($n = 295$) were first-generation college students.

Composite Variable Scale Construction

Data from the survey contained a large number of items pertinent to Bean and Eaton's (2000, 2001/2002) model, making it necessary to reduce the data through factor analysis and explore the supposition that the items reflected latent constructs. Factor analyses were conducted separately for White students and students of color due to the possibility that the relationship between survey items and latent constructs—and the content of those latent constructs—might vary across these groups, and because a full-sample analysis would be weighted heavily by White students' responses. The procedures for principal component analysis using orthogonal varimax rotation were used for simplicity of factor interpretation, based on guidelines set forth by Tabachnick and Fidell (2007). For each racial/ethnic group, the number of factors retained was determined through inspection of eigenvalues and proportion of variance explained. Items with a factor loading of 0.45 or greater were retained. Factors were then compared across the two groups to identify factors with

identical sets of items loading on it. A common factor structure across the groups allowed for meaningful cross-group analyses. Scales for each common factor were obtained by calculating the mean of the standardized items that loaded on the factor. Finally, each factor's internal consistency reliability was measured. Factors, their reliabilities, and item factor loadings are shown in the Appendix Table 4.

Variables in the Study

The variables used in the study were a combination of data obtained from the survey and institutional student records. The unique passcode generated for every student identification number allowed survey responses to be linked with student data from the institutional records system. Measures of students' interactions, perceptions, attitudes, and intentions were taken from survey data. Measures of students' academic performance and persistence were obtained from institutional student records, and merged with the student survey data. Table 2 provides a description of the variables included in the study.

Student entry characteristics included demographic information about gender, race/ethnicity, and status as a first-generation college student, as well as background information about high school grade point average, math and verbal SAT scores, financial need, and the extent to which respondents felt prepared for the academic demands and the social environment when they started college. In accordance with the longitudinal nature of this study, students' academic progress was assessed at the end of the first semester of college. Academic progress was measured by semester grade point average and the number of credits earned. Institutional policy indicates that students are making satisfactory academic progress at the end of the first semester if they had at least a 2.0 GPA and earned at least 12 credits.

Students' interactions within the institutional environment included several measures of their classroom, residence hall, and social experiences. Campus support program participation identified whether respondents participated in one or more of several programs designed to support various student populations on campus. These programs included residential learning communities; a state and federally funded education opportunity program for students who are first-generation college students and/or from low-income families; a science and engineering program for underrepresented students; a leadership development program for first-year students of color; and programs providing academic support for inter-collegiate athletes, including those receiving athletic scholarships. Classroom experiences were assessed using composite measures of respondents' reported comfort with various types of academic interactions with faculty and students. Composite measures of the campus racial climate included respondents' observations of racism directed at students of color by faculty and peers on campus; frequency of interactions with peers from the respondent's own racial/ethnic group and with peers from different racial/ethnic groups; availability of opportunities for interaction with peers from diverse racial/ethnic groups; and the extent to which respondents' learned about racial/ethnic groups, felt the importance of spending time with racial/ethnic group peers, and gained greater commitment to their racial/ethnic identity since coming to college.

Students' psychological processes and outcomes were captured by respondents' reported levels of stress and feelings about the campus and living environments. Several composite variables were used to measure different types of stress related to academic skills, the academic environment, social difficulty, finances, and family life. How students felt about the campus environment were composite measures of the extent to which respondents described the campus as friendly, supportive, respectful, and sensitive; and felt

Table 2 Variables in the study

Variable	Possible values	White students				Students of color				P^a
		N	%	Mean	SD	*N*	%	Mean	SD	
Entry characteristics										
High School GPA[b]	0–4.33			3.70	0.41			3.58	0.39	***
SAT Math Score[b]	0–800			604.7	67.4			575.5	92.4	***
SAT Verbal Score[b]	0–800			586.4	70.7			543.6	77.6	***
Financial Need[b]	Dollar amount based on FAFSA form			22249	19729			36563	18464	***
Academic Demands Preparedness[c]	1 = Very unprepared to 4 = very prepared			3.15	0.73			2.94	0.78	***
Social Environment Preparedness[c]	1 = Very unprepared to 4 = very prepared			3.03	0.78			2.84	0.81	***
Environmental factors										
Support Program Participation[b]	Learning Communities	198	21.0			175	31.9			***
	Opportunity Program	5	0.5			38	6.9			***
	STEM Program	0	0			9	1.6			***
	Leadership Development	0	0			34	6.2			***
	Inter-collegiate Athletics	53	5.6			13	2.4			**
	Scholarship Athletics	12	1.3			2	0.4			ns
	Program participation (one or more programs)	200	21.2			219	40.0			***
	No participation	743	78.8			329	60.0			***
Academic Progress 1st Semester[b]	Unsatisfactory Progress	22	2.3			38	6.9			***
	Satisfactory Progress	921	97.7			510	93.1			***
Peer Interactions—own racial group[c]	1 = Never to 5 = Very Often			4.17	0.73			3.56	1.03	***
Peer Interactions—other racial group[c]	1 = Never to 5 = Very Often			3.47	0.94			3.58	0.98	*
Observed Racism on Campus[s]	1 = Never to 5 = Very Often			1.53	0.73			1.71	0.71	***
Comfortable Academic Interactions[s]	1 = Never to 5 = Very Often			4.03	0.65			3.84	0.69	***
Opportunities for Diversity Interactions[s]	1 = Never to 5 = Very Often			4.15	0.71			3.95	0.79	***

Table 2 continued

Variable	Possible values	White students				Students of color				P^a
		N	%	Mean	SD	*N*	%	Mean	SD	
Race/ethnic Group Learning/identity[s]	1 = Strongly Disagree to 5 = Strongly Agree			3.30	0.84			3.43	0.84	**
Psychological Processes and Outcomes										
Campus Environment Perceptions[s]	1 = Negative Perception to 5 = Positive Perception			4.16	0.74			3.97	0.73	***
Living Environment Perceptions[s]	1 = Negative Perception to 5 = Positive Perception			4.37	0.75			4.24	0.8	**
Financial Stress[s]	1 = No Stress to 4 = Severe Stress			2.17	0.83			2.56	0.87	***
Social Difficulty Stress[s]	1 = No Stress to 4 = Severe Stress			1.59	0.67			1.81	0.8	***
Academic Skills Stress[s]	1 = No Stress to 4 = Severe Stress			2.60	0.67			2.76	0.67	***
Academic Environment Stress[s]	1 = No Stress to 4 = Severe Stress			1.76	0.67			1.93	0.73	***
Family Stress[s]	1 = No Stress to 4 = Severe Stress			1.64	0.60			1.91	0.67	***
Attitudes										
Institutional Commitment: If you could start over…[s]	1 = definitely no to 4 = definitely yes			3.30	0.77			3.09	0.81	***
Institutional Commitment: Did you ever think of leaving…[s]	1 = yes and 2 = no			1.63	0.48			1.53	0.50	***
Institutional Commitment: How important is it that you graduate…[s]	1 = very unimportant to 5 = very important			4.54	0.90			4.47	0.95	ns
Intent to Return										
Plan to Return Fall for 2010[c]	0 = No; 1 = Maybe; 2 = Yes			1.89	0.41			1.88	0.43	ns
Intermediate Outcomes										
Academic Progress after 1st Year[b]	Unsatisfactory progress	23	2.4			28	5.1			**
	Satisfactory progress	920	97.6			520	94.9			**

Table 2 continued

Variable	Possible values	White students				Students of color				P^a
		N	%	Mean	SD	*N*	%	Mean	SD	
Academic progress after 2nd Year[b]	Unsatisfactory progress	113	11.9			107	19.5			***
	Satisfactory progress	830	88.0			441	80.5			***
Behavior[b]										
	Enrolled/Graduated	859	91.1			498	90.9			ns
	Dropout	84	8.9			50	9.1			ns

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

[a] Chi square (percentages) or *t* test (means)

[b] Institutional data

[c] Survey data

connected, encouraged, and welcomed on campus. Perception about the living environment was a composite measure of the extent to which respondents felt comfortable, safe, and respected in their living environment.

Students' attitudes, measured as their commitment to the institution, was developed from three items that assessed whether respondents would choose the same institution again, if they considered leaving the institution, and the importance they placed on graduating from the institution. Persistence intention was measured by whether respondents planned to return to the institution in the fall semester. The intermediate outcomes included in this study were respondents' academic progress at the end of the second and fourth semesters. Institutional policy indicates that students are making satisfactory academic progress at the end of the second semester if they have at least 24 credits with a 2.0 GPA; students are making satisfactory academic progress at the end of the fourth semester if they have at least 54 credits with a 2.0 GPA. Finally, persistence behavior was based on respondents' enrollment status 2 years after their initial semester of matriculation at the institution. The enrollment status—full or part time, or no enrollment—of each respondent was determined using information from the institution's census for the semester. The census, usually occurring 6 weeks after the first day of classes, marks the point in the semester when the official period to add or drop courses has closed and a reliable assessment of student enrollment can be made. Respondents enrolled in one or more courses or who had graduated as of the census were categorized as persisters, while those meeting neither of these criteria were categorized as dropouts from the institution.

Data Analysis

Data analysis was conducted separately for White students and students of color to examine the underlying reasons for persistence after 2 years of college. The exploratory nature of this study required a two-stage data analysis for each of the groups. Path analysis using AMOS software was conducted. The first stage for each group included the initial 37 variables associated with the Bean and Eaton (2000, 2001/2002) model. The construction of the path model followed the hierarchical organization of the Bean and Eaton model. Path coefficients were calculated using the maximum likelihood method and coefficients below 0.10 were eliminated from the model, based on effect size criteria suggested by Cohen (1988). Variables that did not load on adjacent or distant variables were also removed to keep the model parsimonious. In analyzing the reduced models in the second stage, maximum likelihood estimation with bootstrapping option was utilized because the data violated assumptions of multivariate normality (Mooney and Duval 1993).

To evaluate the stability of the maximum likelihood estimates, the difference between the bootstrapped and maximum likelihood parameter estimates were examined by reviewing the bias statistics. The reported bias statistics were low, indicating the parameter estimates were accurate and not affected by the violation of normality assumption. While the final model for White students included 13 of the initial variables used in the study, the final model for students of color included 17 variables.

Results

The final model predicting persistence through the second year of college for White students (Fig. 2—M1) included three exogenous variables, nine endogenous variables, and one outcome variable. All of the paths in the final model were significant at the 0.001 level.

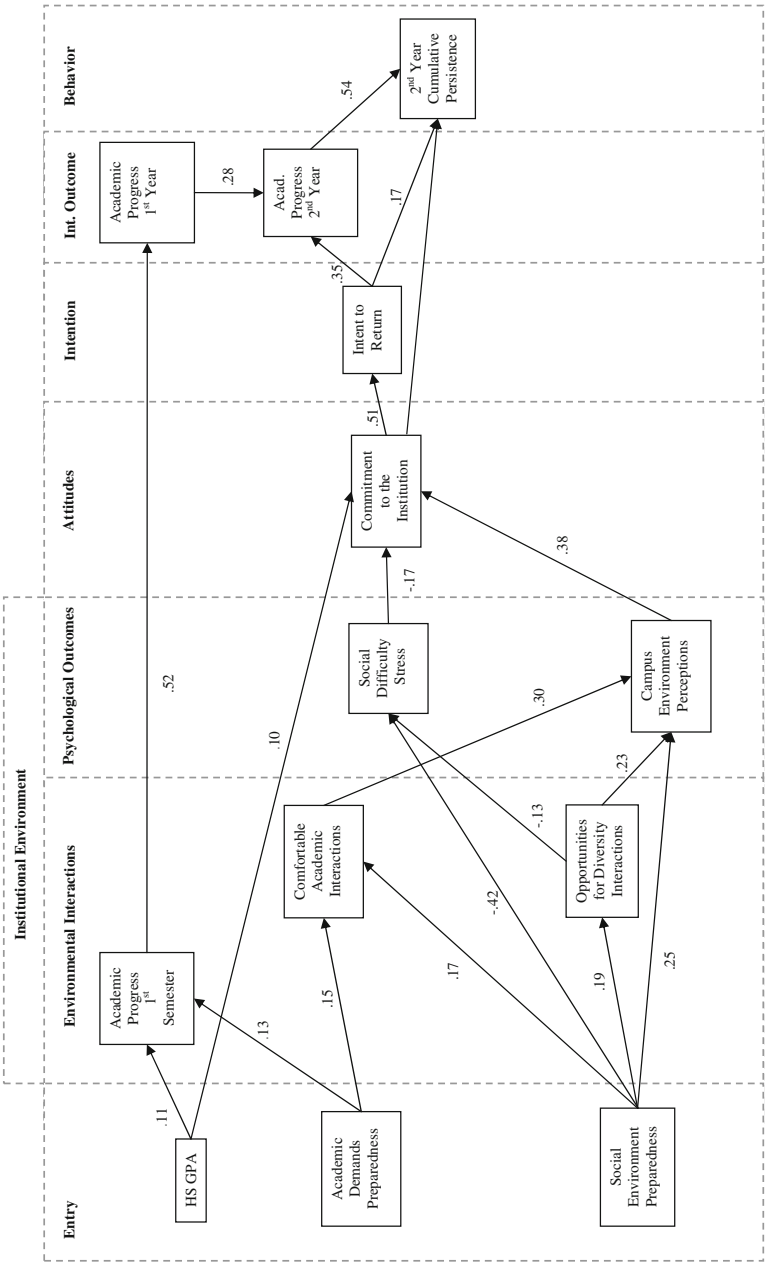

Fig. 2 M1—Final model for second year cumulative student persistence for White students. All path coefficients presented in the final model are significant at $p < 0.001$ level

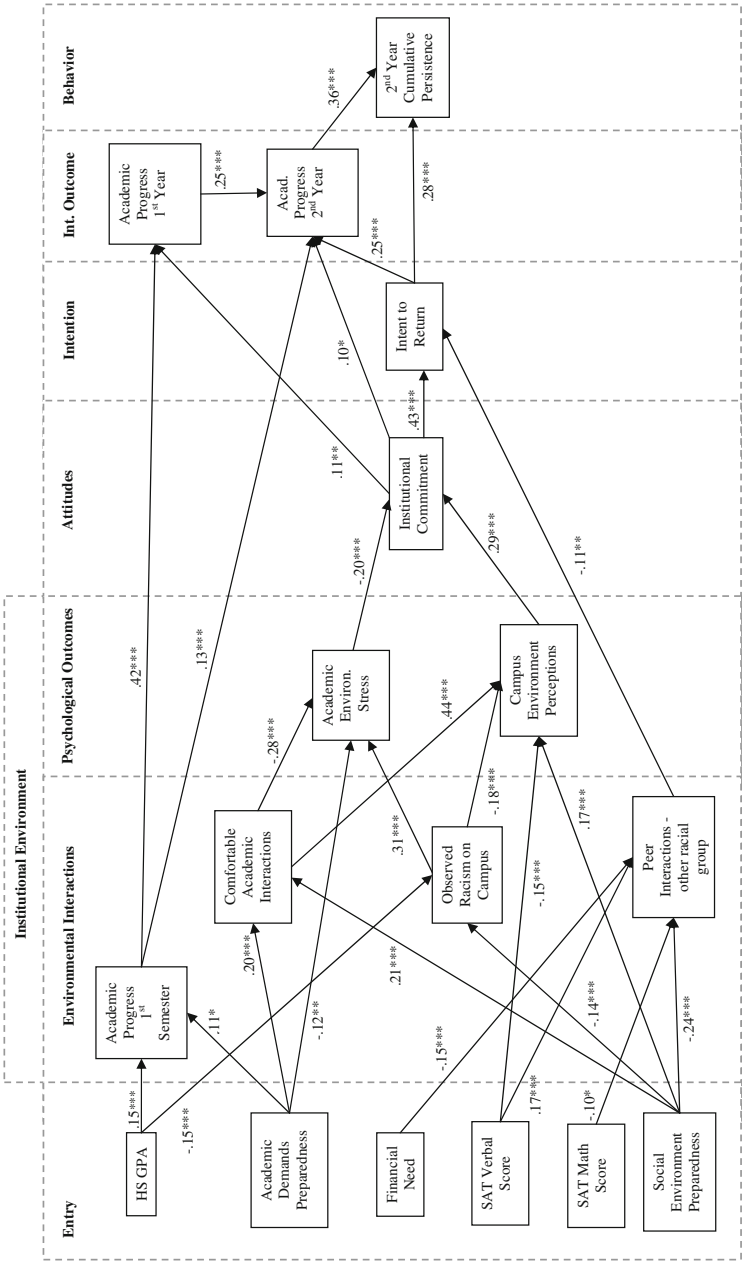

Fig. 3 M2—Final model for second year cumulative student persistence for students of color. $***p < 0.001$, $**p < 0.01$, $*p < 0.05$

The final model produced a comparative fit index (CFI) of 0.92, a root mean square error of approximation (RMSEA) of 0.06, and Akaike's Information Criterion (AIC) of 360.4. Goodness of fit indices fell close to the acceptable limits for CFI of $\geq$0.95 and RMSEA of $\leq$0.06 (Hu and Bentler 1999). The significance of the model was also examined through the squared multiple correlations (SMC) for the endogenous variables that are the focus of this study. SMCs explicate the proportion of the variance in the variable that is accounted for by all the other associated variables in the model (Tabachnick and Fidell 2007). Based on these SMC values, the model accounted for 44 % of the variation in White students' persistence after 2 years of college. The SMC values for the other endogenous variables included in the model are as follows: campus environment perceptions (27 %), academic progress after the first year (27 %), academic progress after the second year (21 %), institutional commitment (20 %), social difficulty stress (21 %), comfortable academic interactions (7 %), opportunities for diversity interactions (4 %), and academic progress after the first semester (3 %).

The final model predicting persistence through the second year of college for students of color (Fig. 3—M2) included six exogenous variables, ten endogenous variables, and one outcome variable. The final model produced a comparative fit index (CFI) of 0.94, a root mean square error of approximation (RMSEA) of 0.04, and Akaike's Information Criterion (AIC) of 327.9. This model accounted for 27 % of the variation in persistence after 2 years of college. The SMC values for the other endogenous variables included in the model are as follows: campus environment perceptions (33 %), academic progress after the second year (22 %), academic environment stress (22 %), academic progress after the second semester (19 %), institutional commitment (15 %), comfortable academic interactions (12 %), peer interactions – other racial group (12 %), observed racism on campus (4 %), and academic progress after the first semester (3 %).

Effects Explaining Second Year Cumulative Persistence

Of the variables which had at least one indirect relationship with persistence after the second year of college, intent to return (M1: total effect = 0.360, $p < 0.001$; M2: total effect = 0.372, $p < 0.001$), institutional commitment (M1: total effect = 0.288, $p < 0.001$; M2: total effect = 0.207, $p < 0.001$) and academic progress after the second year (M1: total effect = 0.544, $p < 0.001$; M2: total effect = 0.360, $p < 0.001$) were the most influential variables (Table 3). Both models displayed similarities in terms of the relationships between the most influential variables and the outcome variable. The strong positive relationship between intent to return and persistence indicated that, due to both direct and indirect (mediated) effects, students who planned to return to the institution after their first year were more likely to persist by the end of their second year. In addition, the direct strong positive relationship between academic progress after the second year and persistence indicated that making satisfactory academic progress was highly influential on persistence. Students were also more likely to persist if they felt committed to the institution. Other variables displayed marginally influential or weak relationships with persistence by the end of the second year of college.

Discussion

This study empirically tested a modified version of Bean and Eaton's (2000, 2001/2002) Psychological Model of College Student Retention to examine the persistence decisions of

Table 3 Direct, indirect and total effects on second year cumulative persistence

	White student model (M1)			Student of color model (M2)		
	Direct effect	Indirect effect	Total effect	Direct effect	Indirect effect	Total effect
SAT Verbal Score	–	–	–	–	−0.016***	−0.016***
SAT Math Score	–	–	–	–	0.004*	0.004*
Social Environment Preparedness	–	0.059***	0.059***	–	0.012*	0.012*
Academic Demands Preparedness	–	0.015***	0.015***	–	0.022***	0.022***
High School GPA	–	0.038***	0.038***	–	0.016***	0.016***
Financial Need	–	–	–	–	0.006**	0.006**
Academic Progress—1st Semester	–	0.008***	0.008***	–	0.086***	0.086***
Comfortable Academic Interactions	–	0.032***	0.032***	–	0.038***	0.038***
Observed Racism on Campus	–	–	–	–	−0.024***	−0.024***
Peer Interactions—Other Racial Group	–	–	–	–	−0.040**	−0.040**
Opportunities for Diversity Interactions	–	0.032***	0.032***	–	–	–
Social Difficulty Stress	–	-0.048***	-0.048***	–	–	–
Academic Environment Stress	–	–	–	–	−0.042***	−0.042***
Campus Environment Perceptions	–	0.109***	0.109***	–	0.061***	0.061***
Institutional Commitment	0.105***	0.183***	0.288***	–	0.207***	0.207***
Intent to Return	0.168***	0.192***	0.360***	0.282***	0.090***	0.372***
Academic Progress—1st year	–	0.154***	0.154***	–	0.089***	0.089***
Academic Progress—2nd year	0.544***	–	0.544***	0.360***	–	0.360***

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

$R^2 = 0.44$ for White student model, $R^2 = 0.27$ for student of color model

students of color and White students at a predominantly White research university. Using measures of stress and feelings about the campus environment as the psychological dimensions of students' college experiences, the models identified common and unique psychological factors and campus experiences important to persistence for students of color and White students.

The analysis identified common direct and indirect effects for the persistence decisions of students of color and White students at the institution. The psychological dimension shared by both models was the indirect effect of students' feelings about the campus environment to persistence, which operated through students' commitment to the institution, intentions to return, and making academic progress by the end of the second year. For both models, feelings about the campus environment were directly affected by having comfortable academic interactions and feeling prepared for the social environment of college. Lastly, high school GPA directly affected making academic progress in the first semester for both groups of students.

The models identified unique forms of stress that influenced the persistence decisions for students of color and White students at the institution. Consistent with research on the role of stress in students' of color academic performance (Neville et al. 2004) and persistence decisions (Wei et al. 2011), stress related to the academic environment was an indirect negative influence on persistence for students of color. This form of stress had a negative direct effect on students' of color commitment to this institution, and indirectly affected their intention to return and making academic progress after the first and second years of college. The model for White students identified social difficulty stress as an indirect effect on their persistence decisions, with a negative direct effect on commitment to this institution, and indirect effects on intention to return and making academic progress by the end of their second year of college.

The models also identified different campus experiences that affect students' of color and White students' stress and feelings about the campus environment. For students of color at this institution, observations of and encounters with racism on campus increased their academic environment stress and diminished their feelings about the campus environment, affecting commitment to the institution, and ultimately their persistence decisions. This finding is consistent with previous research identifying the effects of the campus racial climate on feelings of belonging for students of color at predominantly White institutions (e.g. Johnson et al. 2007; Solórzano et al. 2000; Yosso et al. 2009), and the indirect effect of the campus racial climate to their commitment to the institution and persistence decisions (e.g. Cabrera et al. 1999; Museus et al. 2008). For White students, opportunities for interactions with different racial/ethnic groups on campus reduced their social difficulty stress and positively affected their feelings about the campus environment, providing further evidence of the benefits of campus diversity and cross-racial interactions (Chang 1999, 2007; Milem et al. 2005).

As the Bean and Eaton (2000) model stipulates, students' entry characteristics play a role in their persistence decisions. The model for students of color included a combination of academic, social, and financial entry characteristics that had direct and indirect effects on the campus experiences and psychological dimensions that contributed to their persistence decisions at this institution. Among the notable findings for students of color was that feeling prepared for the social environment and high school GPA had negative direct effects on observations of racism. It may be that students of color who reported fewer experiences with racism on campus attended predominantly White high schools, which would equip some for the academic and social realities of campus life at this predominantly White institution. Having a financial need negatively affected students' of color interactions with peers from

other racial/ethnic groups, suggesting real or perceived socio-economic barriers in their peer interactions that include but are not limited to White students at the institution. The effect of SAT math score to diverse peer interactions may be related to students' academic major, in that majors that typically attract students with high SAT math scores, such as engineering and science fields, have little racial and ethnic diversity among students.

For White students at this institution, the effects of the entry characteristics on subsequent factors in the model make intuitive sense, such as the effects of feeling prepared for the academic demands of college and the social environment of campus on comfortable academic interactions, social difficulty stress, and feelings about the campus environment. Of note is the effect of feeling prepared for the social environment on opportunities to interact with diverse peers, suggesting that White students may be coming to the institution anticipating such opportunities.

Implications for Practice and Future Directions for Research

The use of Bean and Eaton's (2000, 2001/2002) model in this study illustrates how the campus environment, including racial climate experiences, can contribute to the psychological dimensions of students' of color experiences in college during their first year, and how these initial experiences go on to affect their persistence decisions during the first 2 years of college. The results reinforce the burden of racism experienced by students of color at predominantly White institutions, but also the stress related to the academic environment and positive feelings about the campus environment. The findings point to the cumulative effects of the racial climate for students of color that contribute to their persistence decisions at this institution. The model is also useful in demonstrating how racial and ethnic diversity on campus is beneficial to White students' social experiences and ultimately their persistence at the institution. For White students at this institution, having the opportunities for diverse peer interactions (rather than the frequency of such interactions) is important to the social dimension of their college experience and ultimately in their persistence decisions.

Although some scholars suggested the futility of addressing students' psychological dispositions in relation to persistence because such dispositions are beyond the control of the institution (Reason 2009), this study suggests that institutions might play a role in mitigating the psychological effects of the college experience by attending to the campus racial climate and academic engagement issues. Institutions may set goals to achieve racial/ethnic diversity on campus without considering and preparing for the impacts of such demographic shifts (Hurtado et al. 1999). The institution serving as the site for this study enrolled nearly 30 % students of color among the first-year class at the time of the study. This diversity sets the stage for opportunities for interactions with racially/ethnically diverse students and experiences of racial discrimination. Predominantly White institutions seeking to create and maintain racially and ethnically diverse student enrollments must understand the different effects of campus racial diversity on students of color and White students, and be prepared to develop opportunities for student interaction and address the potential conflicts in campus racial dynamics (Hurtado et al. 1999).

The institution where this study was conducted is a large university where faculty efforts are typically concentrated on research activities, and therefore, where faculty may be less engaged with students both in and out of the classroom (Astin 1993; Umbach and Wawrzynski 2005). It is clear from the results of this study that comfortable academic interactions have different effects on students of color and White students at the institution. A renewed focus on teaching and working with undergraduates can create better academic

interactions for students (Braxton 2008), which can alleviate students' of color stress related to the academic environment and fosters positive feelings about the campus environment. Faculty development initiatives are useful venues for discussing the learning and development needs of undergraduate students and issues facing students of color at a predominantly White institution. The development of institutional and academic department cultures that value and reward teaching and advising underscore the importance of meaningful faculty–student interactions and support for faculty efforts and accomplishments in these areas.

Based on the amount of variance explained, one could conclude that the Bean and Eaton (2000, 2001/2002) model is a better tool for explaining the persistence of White students than for students of color at this institution. Indeed, these differences in explained variance suggest the limited applicability of this framework for understanding students' of color persistence decisions. However, differences in variance explained may be due to greater heterogeneity among the student of color sample and greater homogeneity among the White student sample. Based on the number of significant paths and constructs in the final model, one could argue that the Bean and Eaton model is a better tool for understanding those factors contributing to students' of color persistence at this predominantly White institution. For both models, the inclusion of constructs related to the campus racial climate illustrates its effects on different types of stress and the complex dynamic of racial diversity for students of color and White students at a predominantly White institution. A question for research and assessment practice is whether frameworks such as Bean and Eaton are valuable because of the variance explained or because of the relationship among variables illustrated by the model.

The application of the Bean and Eaton (2000) model to the current study indicated a need to modify the model based on when students participate in a study of persistence and their actual persistence decisions (returning for the fall semester). Retention scholars and practitioners are encouraged to be mindful of the timing of students' persistence decisions when constructing future studies using this and other retention models. The increasing levels of stress experienced by college students suggests the need for Bean and Eaton's model in assisting institutions with identifying ways the campus environment can lessen students' stress and positively affect their persistence. The modified model also included constructs related to the campus racial climate. Given the psychological and behavioral dimensions of campus racial climates (Hurtado et al. 1999), future application of Bean and Eaton's model should include these constructs when studying student of color persistence at a predominantly White institution and White students' persistence at a racially/ethnically diverse institution. These latter points will become increasingly relevant as the racial and ethnic demographic composition of many institutions tilts in the direction of greater diversity. As with any theoretically or conceptually derived model, empirical testing is necessary for refinement and advancement. Such efforts are necessary for expanding our repertoire of retention frameworks used in research and practice.

Limitations

As with all research, there are several limitations associated with the current study. First, the Bean and Eaton (2000) model was applied post hoc to the data collected for this study, thus some aspects of the model were not adequately represented or included in the analysis (e.g., students' bureaucratic and external interactions as dimensions of the institutional environment). Second, measures of stress and feelings about the campus environment were the only psychological processes and outcomes included in the model and there are

additional psychological processes that likely also affect persistence at this institution. Third, given that the survey was administered in the spring semester, some students who had already decided to leave the university may not have responded to the survey, therefore, this study may not have captured a complete picture of the influences of persistence at this institution. In addition, students who experienced high levels of stress at the time of data collection may have been less likely to complete the survey, thus the full effect of stress on persistence at this institution remains only partially examined by this study. Finally, the modest number of students within each of the racial/ethnic minority groups made it necessary to combine these groups for the analysis, and thus differences among these groups could not be analyzed in this study. Gathering data from multiple cohorts of first-year students across different racial/ethnic groups is one way to build robust samples for single-institution studies that would allow analysis of racial/ethnic group differences without combining students of color into one category.

Conclusion

Although higher education researchers have studied retention extensively, the current study adds to the literature by identifying aspects of students' psychological experiences and campus racial climate perceptions that affect their persistence decisions at this predominantly White institution. The current study supports Bean and Eaton's (2000) conceptual model with some modifications, encouraging the use of retention frameworks other than Tinto's model when examining students' persistence decisions. In addition, the findings of this study reaffirm the role of the campus racial climate in persistence decisions, and thus supports the inclusion of these constructs in future retention studies at a racially/ethnically diverse campus. This study also points to the long-term effects of students' first-year college experiences with their academic environment, overall campus environment, and the campus racial climate, as well as institutional responsibility for addressing not only enrollment goals regarding diversity, but also the accompanying campus climate issues.

Appendix

See Table 4.

Table 4 Scale and item loadings of composite variables

Factors and items (White students/Students of color)	Factor loading (White students/Students of color
Peer Interactions—Own Racial/Ethnic Group ($\alpha = 0.90/0.94$)	
Worked on a class project/assignment	0.45/0.54
Studied informally	0.54/0.70
Shared a meal	0.80/0.85
Spent free time together (i.e., hang out)	0.86/0.89
Went out socially	0.83/0.88
Attended campus activities	0.77/0.85
Had intellectual discussions outside of class	0.68/0.83
Shared personal feelings and problems	0.74/0.82

Table 4 continued

Factors and items (White students/Students of color)	Factor loading (White students/Students of color
Peer Interactions—Other Racial/Ethnic Group ($\alpha = 0.93/0.93$)	
Worked on a class project/assignment	0.50/0.46
Studied informally	0.68/0.69
Shared a meal	0.85/0.81
Spent free time together (i.e., hang out)	0.87/0.86
Went out socially	0.85/0.86
Attended campus activities	0.79/0.79
Had intellectual discussions outside of class	0.80/0.81
Shared personal feelings and problems	0.81/0.80
Had meaningful discussions about race relations outside of class	0.57/0.68
Observed Racism on Campus ($\alpha = 0.89/0.85$)	
I have observed instructors directing discriminatory words, behaviors, or gestures at students of color in my class	0.82/0.75
I have observed students directing discriminatory words, behaviors, or gestures at students of color in my class	0.74/0.71
I have encountered racial/ethnic stereotypes about my academic ability from my instructors	0.79/0.78
I have felt unwelcomed by classmates on course project assignments because of my race/ethnicity	0.82/0.75
I have observed residents directing discriminatory words, behaviors, or gestures at students of color	0.64/0.49
I have observed resident advisors (RAs) directing discriminatory words, behaviors, or gestures at students of color	0.68/0.51
I have felt unwelcomed where I live because of my race/ethnicity	0.65/0.55
Comfortable Academic Interactions ($\alpha = 0.85/0.84$)	
In my classes, I am treated with respect by other students	0.59/0.46
I feel comfortable participating in class	0.68/0.67
I feel comfortable asking an instructor for help if I do not understand course-related material	0.71/0.71
I feel comfortable asking another student for help if I do not understand course-related material	0.54/0.56
I feel comfortable discussing personal issues that could impact my academic success with my instructors	0.60/0.65
I feel comfortable interacting with instructors of the same racial/ethnic background as my own	0.71/0.65
I feel comfortable interacting with instructors of different racial/ethnic backgrounds from my own	0.71/0.71
Opportunities for Diversity Interactions ($\alpha = 0.89/0.89$)	
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in my living environment	0.60/0.61
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in the classroom	0.68/0.72
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in clubs and organizations	0.80/0.79
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in campus activities	0.84/0.83

Table 4 continued

Factors and items (White students/Students of color)	Factor loading (White students/Students of color
I feel I have opportunities to interact with students from different racial/ethnic backgrounds in informal social activities	0.72/0.75
Racial/Ethnic Group Learning/Identity ($\alpha = 0.79/0.76$)	
At times it is important for me to be with people of my own racial/ethnic group	0.50/0.49
Since coming to college, I have learned a great deal about my own racial/ethnic group	0.75/0.68
Since coming to college, I have learned a great deal about other racial/ethnic groups	0.69/0.60
I have gained a greater commitment to my racial/ethnic identity since coming to college	0.67/0.70
Campus Environment Perceptions ($\alpha = 0.89/0.87$)	
Describe the campus environment—Friendliness	0.67/0.61
Describe the campus environment—Respect	0.74/0.71
Describe the campus environment—Sensitivity	0.72/0.70
Describe the campus environment—Support	0.65/0.66
Describe the campus environment—Integrated	0.46/0.49
Campus Environment Feelings ($\alpha = 0.91/0.90$)	
Describe generally how you feel on campus—Comfortable	0.59/0.53
Describe generally how you feel on campus—Connected	0.66/0.65
Describe generally how you feel on campus—Encouraged	0.69/0.63
Describe generally how you feel on campus—Welcomed	0.68/0.58
Living Environment Perceptions ($\alpha = 0.81/0.80$)	
How you feel in your living environment—Comfortable	0.68/0.75
How you feel in your living environment—Safe	0.54/0.55
How you feel in your living environment—Connected	0.58/0.51
How you feel in your living environment—Respected	0.68/0.69
Financial Stress ($\alpha = 0.91/0.92$)	
Debt load	0.80/0.76
Finances to pay for tuition	0.88/0.84
Finances to pay for expenses associated with my major	0.79/0.78
Finances to pay for other expenses while at SU	0.83/0.85
Finances to pay for travel between home and SU	0.73/0.74
Finding a job after graduation	0.47/0.59
My family's financial situation	0.68/0.66
Social Difficulty Stress ($\alpha = 0.89/0.90$)	
Difficulty making friends on campus	0.82/0.77
Difficulty feeling socially accepted on campus	0.81/0.84
Difficulty integrating with university life/activities	0.70/0.78
Academic Skills Stress ($\alpha = 0.83/0.80$)	
Academic demands of coursework	0.68/0.62
Grades/GPA	0.69/0.57
Time management	0.66/0.68
General study skills	0.69/0.67

Table 4 continued

Factors and items (White students/Students of color)	Factor loading (White students/Students of color
Academic Environment Stress ($\alpha = 0.86/0.86$)	
Negative classroom environment	0.63/0.49
Poor relations with instructors	0.69/0.62
Making connections with instructors	0.65/0.62
In a major I do not like	0.55/0.55
Difficulty getting the help/advice I need in my school/college	0.64/0.67
Lacking connection to my school/college	0.63/0.66
Family Stress ($\alpha = 0.77/0.76$)	
Responsibilities to my family	0.46/0.46
Lacking support from my family	0.62/0.60
Family issues or problems	0.62/0.62
Being the first in my family to go to college	0.46/0.45
Institutional Commitment ($\alpha = 0.67/0.63$)	
If you could start over, would choose the same institution	0.71/0.63
Ever think of leaving the institution	0.49/0.48
Important that you graduate from the institution	0.61/0.55

References

American College Health Association. (2011). *American college health association-national college health assessment II: Reference group executive summary fall 2010.* Retrieved from American College Health Association website: http://www.achancha.org/reports_ACHA-NCHAII.html.

Astin, A. W. (1993). *What matters in college: Four critical years revisited*. San Francisco, CA: Jossey-Bass.

Aud, S., Hussar, W., Johnson, F., Kena, G., Roth, E., Manning, E., et al. (2012). *The condition of education 2012* (NCES 2012-045). Retrieved from National Center for Education Statistics website: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2012045.

Bean, J. (2005). Nine themes of college student retention. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 215–243). Westport, CT: Praeger.

Bean, J., & Eaton, S. B. (2000). A psychological model of college student retention. In J. M. Braxton (Ed.), *Reworking the departure puzzle: New theory and research on college student retention* (pp. 48–61). Nashville, TN: Vanderbilt University Press.

Bean, J., & Eaton, S. B. (2001/2002). The psychology underlying successful retention practices. *Journal of College Student Retention, 3,* 73–89. doi:10.2190/6R55-4B30-28XG-L8U0.

Braxton, J. M. (Ed.). (2000). *Reworking the departure puzzle: New theory and research on college student retention*. Nashville, TN: Vanderbilt University Press.

Braxton, J. M. (2003). Student success. In S. R. Komives, D. B. Woodard, Jr., & Associates (Eds.), *Student services: A handbook for the profession* (pp. 317–335). San Fransisco, CA: Jossey-Bass.

Braxton, J. M. (Ed.). (2008). *The role of the classroom in college student persistence.* (New Directions for Teaching and Learning, No. 115). San Francisco, CA: Jossey-Bass.

Braxton, J. M., Hirschy, A. S., & McClendon, S. A. (2004). *Understanding and reducing college student departure*. (ASHE-ERIC Higher Education Report, Vol. 30, No. 3). San Francisco, CA: Jossey-Bass.

Bray, N. J., Braxton, J. M., & Sullivan, A. S. (1999). The influence of stress-related coping strategies on college student departure decisions. *Journal of College Student Development, 40*, 645–657.

Cabrera, A., Nora, A., Terenzini, P. T., Pascarella, E., & Hagedorn, L. S. (1999). Campus racial climate and the adjustment of students to college: A comparison between White students and African American students. *The Journal of Higher Education, 70*, 134–160.

Chang, M. J. (1999). Does racial diversity matter? The educational impact of a racially diverse undergraduate population. *Journal of College Student Development, 40*, 377–395.

Chang, M. J. (2007). Beyond artificial integration: Reimagining cross-racial interactions among undergraduates. In S. R. Harper, & L. D. Patton (Eds.), *Responding to the realities of race on campus* (New Directions for Student Services, No. 120, pp. 25–37). San Francisco: Jossey Bass. doi:10.1002/ss.255.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

DeAngelo, L., Franke, R., Hurtado, S., Pryor, J. H., & Tran, S. (2011). *Completing college: Assessing graduation rates at four-year institutions.* Retrieved from Higher Education Research Institute website: http://heri.ucla.edu/DARCU/CompletingCollege2011.pdf.

Eimers, M. T., & Pike, G. R. (1997). Minority and nonminority adjustment to college: Differences and similarities? *Research in Higher Education, 38*, 77–98.

Gloria, A. M., & Ho, T. A. (2003). Environmental, social, and psychological experiences of Asian American undergraduates: Examining issues of academic persistence. *Journal of Counseling and Development, 81*, 93–105.

Gloria, A. M., Robinson Kurpius, S. E., Hamilton, K. D., & Willson, M. S. (1999). African American students' persistence at a predominantly White university: Influences of social support, university comfort, and self-beliefs. *Journal of College Student Development, 40*, 257–268.

Greer, T. M., & Chwalisz, K. (2007). Minority-related stressors and coping processes among African American college students. *Journal of College Student Development, 48*, 388–404. doi:10.1353/cds.2007.0037.

Harper, S. R., & Hurtado, S. (2007). Nine themes in campus racial climates and implications for institutional transformation. In S. R. Harper, & L. D. Patton (Eds.), *Responding to the realities of race on campus* (New Directions for Student Services, No. 120, pp. 7–24). San Francisco: Jossey Bass. doi:10.1002/ss.254.

Higher Education Research Institute. (2011). The American freshman: National norms fall 2010. *Research brief.* Retrieved from Higher Education Research Institute website: http://www.heri.ucla.edu/PDFs/pubs/briefs/HERI_ResearchBrief_Norms2010.pdf.

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education, 70*, 324–345.

Hurtado, S., Milem, J., Clayton-Pedersen, A., & Allen, W. (1999). *Enacting diverse learning environments: Improving the climate for racial/ethnic diversity in higher education.* (ASHE-ERIC Higher Education Report, Vol. 26, No. 8). Washington, DC: The George Washington University.

Johnson, D. R., Soldner, M., Leonard, J. B., Alvarez, P., Inkelas, K. K., Rowan-Kenyon, H. T., et al. (2007). Examining sense of belonging among first-year undergraduates from different racial/ethnic groups. *Journal of College Student Development, 48*, 525–542. doi:10.1353/csd.2007.0054.

Joo, S. H., Durband, D. B., & Grable, J. (2008/2009). The academic impact of financial stress on college students. *Journal of College Student Retention, 10,* 287–305. doi:10.2190/CS.10.3.c.

Milem, J. F., Chang, M. J., & Antonio, A. L. (2005). *Making diversity work on campus: A research-based perspective*. Washington, DC: Association of American Colleges and Universities.

Mooney, C. Z., & Duval, R. D. (1993). *Bootstrapping: A nonparametric approach to statistical inference.* (Sage University Paper Series on Quantitative Applications in the Social Sciences, series no. 07-095). Newbury Park, CA: Sage.

Museus, S. D., Nichols, A. H., & Lambert, A. D. (2008). Racial differences in the effects of campus racial climate on degree completion: A structural model. *The Review of Higher Education, 32*, 107–134. doi:10.1353/rhe.0.0030.

Neville, H. A., Heppner, P. P., Ji, P., & Thye, R. (2004). The relations among general and race-related stressors and psychoeducational adjustment in Black students attending predominantly White institutions. *Journal of Black Studies, 34*, 599–618. doi:10.1177/0021934703259168.

Nora, A., & Cabrera, A. F. (1996). The role of perceptions of prejudice and discrimination on the adjustment of minority students to college. *The Journal of Higher Education, 67*, 119–148.

Pritchard, M. E., & Wilson, G. S. (2003). Using emotional and social factors to predict student success. *Journal of College Student Development, 44*, 18–28.

Reason, R. D. (2009). An examination of persistence research through the lens of a comprehensive conceptual framework. *Journal of College Student Development, 50*, 659–682. doi:10.1353/csd.0.0098.

Rendón, L. I., Jalomo, R. E., & Nora, A. (2000). Theoretical considerations in the study of minority student retention in higher education. In J. M. Braxton (Ed.), *Reworking the departure puzzle: New theory and research on college student retention* (pp. 127–156). Nashville, TN: Vanderbilt University Press.

Rodgers, K. A., & Summers, J. J. (2008). African American students at predominantly White institutions: A motivational and self-systems approach to understanding retention. *Educational Psychology Review, 20*, 171–190. doi:10.1007/s10648-008-9072-9.

Seidman, A. (Ed.). (2005). *College student retention: Formula for student success*. Westport, CT: Praeger.

Smedley, B. D., Myers, H. F., & Harrell, S. P. (1993). Minority-status stresses and the college adjustment of ethnic minority freshmen. *The Journal of Higher Education, 64*, 434–452.

Solórzano, D., Ceja, M., & Yosso, T. (2000). Critical race theory, racial microaggressions, and campus racial climate: The experiences of African American college students. *Journal of Negro Education, 69*, 60–73.

Struthers, C. W., Perry, R. P., & Menec, V. H. (2000). An examination of the relationship among academic stress, coping, motivation, and performance in college. *Research in Higher Education, 41*, 581–592.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th Ed.). Boston: Allyn and Bacon.

Tierney, W. G. (1999). Models of minority college-going and retention: Cultural integrity versus cultural suicide. *The Journal of Negro Education, 68*, 80–91.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago, IL: University of Chicago Press.

Umbach, P. D., & Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement. *Research in Higher Education, 46*, 153–184. doi:10.1007/s11162-004-1598-1.

Wei, M., Ku, T., & Liao, K. Y. (2011). Minority status stress and college persistence attitudes among African American, Asian American, and Latino students: Perception of university environment as a mediator. *Cultural Diversity and Ethnic Minority Psychology, 17*, 195–203. doi:10.1037/a0023359.

Yosso, T. J., Smith, W. A., Ceja, M., & Solórzano, D. (2009). Critical race theory, racial microaggressions, and campus racial climate for Latina/o undergraduates. *Harvard Educational Review, 79*, 659–690.

Zajacova, A., Lynch, S. M., & Espenshade, T. J. (2005). Self-efficacy, stress, and academic success in college. *Research in Higher Education, 46*, 677–706. doi:10.1007/s11162-004-4139-z.