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## Effects of racial representation on the persistence of community college students: An examination of conditional and indirect effects

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**MODELING RACIAL DIFFERENCES IN THE  
EFFECTS OF RACIAL REPRESENTATION ON  
2-YEAR COLLEGE STUDENT SUCCESS**

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**ABSTRACT**

The failure of many 2-year college students to persist and complete a postsecondary credential or degree remains a problem of paramount importance to higher education policymakers and practitioners. While racial representation—or the extent to which a student’s racial group is represented on their respective campus—might be one factor that influences the success of students at 2-year colleges, this relationship has received little attention in the higher education literature. The current inquiry focuses on the direct and indirect influences of racial representation on the academic success of Black, Latino, and White students at 2-year institutions. Results indicate that racial representation exhibits both direct and indirect effects on 2-year students’ academic success and that the nature of the relationship varies across racial groups. Implications for research and practice are discussed.

Fifty-three percent of students who begin their postsecondary education at a 4-year institution will complete a baccalaureate degree within 6 years of matriculation, but that figure is only 10% for students who first matriculate at

2-year colleges (Berkner, He, & Cataldi, 2002). Comparing bachelor's degree completion rates at 2- and 4-year institutions can be misleading, given that many 2-year college students do not pursue a baccalaureate degree (Dougherty, 1992). Nevertheless, it is difficult to ignore the reality that national statistics indicate that, of all beginning 2-year college students who seek a credential—certificate, associate's degree, or bachelor's degree—less than 40% earn a credential within 6 years of matriculation (Hoachlander, Sikora, Horn, & Carroll, 2003).

Moreover, college students of color suffer from noticeable disparities in degree attainment, with Black, Latino, and Southeast Asian Americans earning degrees at far lower rates than their White peers (Hoachlander et al., 2003; Museus, 2009; U.S. Census Bureau, 2004). Given the institutional and racial disparities in attainment, it is particularly important to understand the factors that contribute to success, particularly among racial/ethnic minority students at 2-year institutions. This inquiry is designed to examine racial differences in the effects of racial representation on the academic success of 2-year college students.<sup>1</sup>

### **RACIAL REPRESENTATION AND MINORITY COLLEGE STUDENT SUCCESS**

There is some evidence that the extent to which students' racial backgrounds are represented on their respective campus is associated with positive experiences and perceptions of the college environment. Indeed, existing literature is clear and consistent in underscoring the difficulties faced by racial/ethnic minority students at predominantly White institutions (PWIs) (Allen, 1992; Davis, 1994; Feagin, 1992; Feagin, Vera, & Imani, 1996; Fries-Britt & Turner, 2002; Lewis, Chesler, & Forman, 2000; Museus, 2007, 2008a; Museus & Truong, 2009). College students of color at PWIs often report experiencing prejudice and discrimination, alienation and isolation, and pressure from racial stereotypes on campus (Allen, 1992; Davis, 1994; Feagin, 1992; Feagin et al., 1996; Fries-Britt & Turner, 2002; Lewis et al., 2000; Museus, 2007, 2008a; Museus & Truong, 2009). In contrast, when students of color attend institutions at which they constitute the majority, they encounter more welcoming environments (Allen, 1992; Fleming, 1984). This relationship between being a member of the racial majority and having more positive views of the environment is an important consideration because existing research also suggests that more positive perceptions of campus environments increase the likelihood that both majority and minority students will persist and graduate (Cabrera, Nora, Terenzini, Pascarella, & Hagedorn, 1999; Harper & Hurtado, 2007; Hurtado & Carter, 1997; Museus, Nichols, & Lambert, 2008; Nora

<sup>1</sup> For the purposes of this article, "racial representation" is defined as the extent to which a students' race is represented on campus. Also, we use the term "academic success" to refer to students' progress toward completion of a credential or transfer to a 4-year institution, recognizing the diverse interests of students at 2-year colleges.

& Cabrera, 1996). Therefore, it might be reasonable to hypothesize that greater racial representation of students from a given racial minority background on campus might be associated with improved campus environments for those students and, in turn, an increased likelihood of success. In the remainder of this section, we turn to the small body of literature that empirically tests these relationships.

Empirical research that focuses on the effects of racial representation on student outcomes is sparse. The few studies that do examine this relationship, however, suggest that increases in representation are linked to greater likelihood of success (e.g., Etkowitz, Kemelgor, Neuschatz, Uzzi, & Alonzo, 1994; Hagedorn, Chi, Cepeda, & McLain, 2007). With regard to racial/ethnic minority college students, existing research indicates that racial representation is important for Latino students at 2-year colleges. Indeed, research demonstrates that, as the representation of Latinos increases at community colleges, so does the support received and success realized by those students (Hagedorn et al., 2007; Person & Rosenbaum, 2006). Using ordinal regression analyses and a multi-institution sample, for example, Hagedorn et al. examined the effects of racial representation on academic success among Latino community college students and concluded that racial representation was, in fact, associated with their success. Thus, Hagedorn et al. provide compelling evidence that racial representation may be a salient predictor of Latino community college student success, and is a topic that warrants further investigation.

In addition to the absence of important control variables (e.g., gender and financial aid), two limitations of Hagedorn et al.'s (2007) analysis warrant consideration. First, the researchers' sample was limited to Latino community college students. Therefore, their results do not provide insight into whether the relationship between racial representation and 2-year college student success exists for other racial/ethnic groups. Second, Hagedorn et al. employed statistical techniques that did not include the explicit examination of the potential factors that mediate the impact of racial representation on 2-year Latino college student success. The examination of these mediating relationships is important in order to understand how racial representation both directly and indirectly affects success among 2-year college students.

### **THE ROLE OF STUDENT INVOLVEMENT ON 2-YEAR COLLEGE STUDENT SUCCESS**

The connection between college student involvement and persistence is one that has received much attention in previous literature. The theory suggesting that involvement influences the quality of college students' experiences and outcomes was introduced over 2 decades ago (Astin, 1984), and has subsequently become one of the most widely accepted models of college impact (Rendón, Jalamo, & Nora, 2000). Astin's (1984) conceptualization of involvement, which he described as "the amount of physical and psychological energy that the student devotes to

the academic experience,” was very broad and included both curricular and co-curricular engagement (p. 134). This theory of involvement suggests that students’ investment of time and energy in campus activities, such as residential life, athletics, student organizations and clubs, and projects with faculty, increases the likelihood that students will be satisfied with and persist through college. Moreover, Pace (1984) underscored the qualitative aspect of involvement by explaining that the quality of involvement shapes the benefits that accrue from it.

While the salience of academic and social involvement on 4-year college student development and success has been documented (e.g., Astin, 1993; Pascarella & Terenzini, 1991, 2005), the role of involvement in the experiences of 2-year college students has received far less attention (Pascarella & Terenzini, 1991, 2005). At 2-year colleges, the overwhelming majority of students face multiple challenges to getting involved on campus outside of class, such as commuting, working part- or full-time, and family responsibilities (Kraemer, 1998; Cohen & Brawer, 1996; Tinto, 1997). Consequently, scholars have asserted that the nature of involvement might be different overall at 2- and 4-year institutions, and that academic and social involvement may be more likely to occur within, rather than outside, the classroom for community college students (Community College Survey of Student Engagement [CCSSE], 2004; McClenney, 2007; Tinto, 1997). For example, McClenney notes that twice as many 2-year college students participate in projects inside class than are involved in activities outside of class. While these lower levels of participation in extracurricular activities might be attributable to the various external demands on community college students’ time and energy, the low levels of participation might also be perpetuated by corresponding budget cuts to existing programs, which limit the availability of such programs to students who would otherwise have the time to participate (Nejman, 1999; Williams, 2000).

Although they may be less likely to get involved outside of class than their 4-year counterparts, there is evidence that 2-year college students’ out-of-class academic and social involvement are important factors in understanding their experiences and outcomes (Cohen & Brawer, 1996; Coley, 2000; Kraemer, 1997; Nora, 1987; Nora, Attinasi, & Matonak, 1990; Nora & Rendón, 1990; Rendón, 1994). For example, academic experiences outside of the classroom, such as the extent to which students participate in study groups, have been shown to be a valid indicator of academic involvement among 2-year Latino community college students (Kraemer, 1997). Social experiences outside of the classroom, including living on campus, participating in student organizations, and organized sports, have also been shown to be valid indicators of 2-year college students’ overall involvement and are associated with positive educational outcomes for those students (Cohen & Brawer, 1996; Kraemer, 1997). For instance, almost one of every five community college students report being involved in campus student organizations (Coley, 2000) and participation in those organizations is associated with more positive perceptions of campus climate and a greater likelihood of student persistence at 2-year institutions (Clements, 2000; Kee, 1999). Thus, it is

important to consider the role of academic and social involvement inside and outside of the class at both 2- and 4-year institutions.

### **THE ROLE OF INVOLVEMENT IN MEDIATING THE EFFECTS OF RACIAL REPRESENTATION ON 2-YEAR STUDENT SUCCESS**

Involvement is especially important for the current examination, given that we hypothesized that racial representation indirectly influences 2-year college students' success via increasing their levels of involvement. One possible lens that can be used to understand the interactions between racial representation, involvement, and success is Rendón's (2002) discussion of cultural validation. She asserts that campus environments that validate the cultural backgrounds of racial/ethnic minority students make it easier for those students to become involved in the academic and social life of their institutions. While Rendón's discussion of cultural validation doesn't directly address racial representation, evidence suggests that the presence of members of a racial/ethnic minority student's respective racial group can lead to the creation of spaces in which that student can find cultural validation and feel comfortable getting involved or becoming more connected to their institutions (Gonzalez, 2003; Guiffrida, 2003; Harper & Quaye, 2007; Kiang, 2002, 2009; Museus, 2008a; Museus & Quaye, 2009), which is associated with a greater likelihood of success (Astin, 1993; Museus & Quaye, 2009; Pascarella & Terenzini, 2005).

Therefore, racial representation may directly affect 2-year college students' success, but it is also possible that representation indirectly influences those students' success via its impact on their levels of academic and social involvement. To the best of our knowledge, however, the existence of such relationships remains unexamined. In sum, extant research suggests that racial representation might be an important factor in predicting community college student success, but much remains to be learned about this potential relationship, including whether the relationship exists, for which racial groups it exists, and whether it is mediated by factors such as involvement in academic and social activities on campus.

### **OBJECTIVES OF THE STUDY**

The purpose of the current inquiry was to understand the nature of the relationship between racial representation and 2-year college student success. This investigation contributes to the existing knowledge base regarding 2-year college student success in three primary ways. First, this examination helps develop a better understanding of how racial representation predicts success among a nationally representative sample of 2-year college students. Second, the current investigation employs path modeling techniques to examine both the direct and

indirect relationships between racial representation and 2-year college student success. Finally, the inquiry adds to existing literature by discussing racial differences in the effects of racial representation on student success at 2-year colleges.

One overarching research question guided the examination: How does racial representation influence 2-year college student success? The following three additional questions were also explored:

1. Does racial representation directly affect 2-year college student success?
2. Does racial representation indirectly affect 2-year college student success via those students' academic and social involvement?
3. How, if at all, do those direct and indirect effects vary across different racial college student populations?

### CONCEPTUAL FRAMEWORK

The concept of racial representation and Astin's (1984, 1999) theory of student involvement provided the foundation for the conceptual framework employed in the current study. Figure 1 shows a conceptual model that highlights the relationship between racial representation and 2-year college student persistence. In congruence with Astin's involvement theory, the concepts of academic and social involvement are embedded within the model. The model hypothesizes that racial representation directly affects 2-year college student performance and

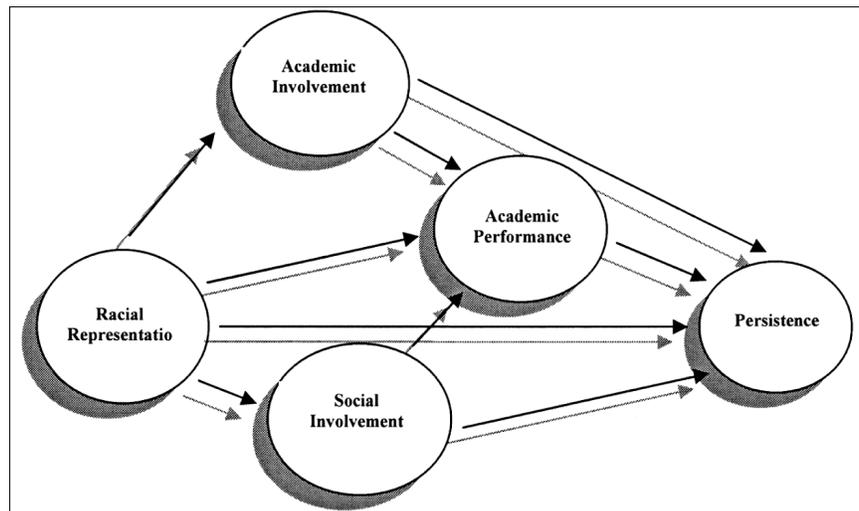


Figure 1. Conceptual model of the effects of racial representation on student success.

success. The conceptual model also posits that racial representation indirectly influences 2-year college student performance and success via its effects on academic and social involvement. As discussed, these hypothesized benefits of racial representation are supported by prior research (e.g., Gonzales, 2003; Harper & Quaye, 2007; Museus, 2008b; Rendón, 2002), indicating that racial representation can facilitate support and involvement among students of color at PWIs. Finally, the conceptual model hypothesizes that racial representation, academic involvement, and social involvement all indirectly influence 2-year college student success via their influence on those undergraduates' academic performance.

## METHODS

Data were collected by the National Center for Education Statistics (NCES) for the Beginning Postsecondary Students (BPS: 96/98) longitudinal study. The BPS sample is nationally representative and consists of 12,085 students who enrolled, for the first time, in at least one course in an academic program at 973 2- and 4-year institutions of higher education in the fall of 1995. For this study, the sample was further limited to those who matriculated at a 2-year college in the fall of 1995. Unfortunately, we were forced to further limit the sample to three of the five recognized racial groups in the BPS survey. The numbers of American Indian and Asian/Asian American participants were insufficient for running statistically sound analysis on each respective group; therefore, they were excluded from the examination. It should be noted that the absence of adequate samples of these populations is very problematic, given that it prohibits the examination of their experiences. The final overall sample size was 2,285. This included 1,577 White, 375 Latino, and 333 Black 2-year college students. The first wave of BPS surveys was administered at the end of the cohort's first academic year in the spring of 1996. Two follow-up surveys were conducted in the spring of 1998 and 2001, approximately 3 and 6 academic years after the cohort's matriculation. The response rate for the three waves was 88%. Data from the first and second waves of data collection, completed in 1996 and 1998, were used to answer the research questions.

## VARIABLES

Several control variables were entered into the path model. First, background characteristics (gender and socioeconomic status) were entered into the path model. Second, we controlled institutional size because it has been shown to be associated with student success (for discussion, see Pascarella & Terenzini, 2005). Third, financial factors (tuition and financial aid awards) were entered into the equation as the third set of control variables. Finally, a variable indicating whether the student expected to either transfer to a 4-year institution or complete

an associate's degree was entered into the model. Controlling for this variable was important because not all community college students intend to transfer or complete an associate's degree. Therefore, including this variable allowed us to examine the impact of our key variables on success, while holding initial expectations to transfer or attain a degree constant.

### **Independent Variable: Racial Representation**

Table 1 displays the variable names, variable definitions, alpha scores, and numerical codes for each focal independent, mediating, and dependent variable included in the model. The focal independent variable was racial representation at participants' first institutions, and it was measured by the percentage of the student body who shares the participants' racial background.

Table 1. Key Variable Definitions, Alpha Scores, and Numerical Codes

Variables	Variable definitions and codes
<i>Independent</i> Racial representation	A continuous variable measuring the percentage of the student body that shares the racial background as the respondent.
<i>Mediating</i> Academic involvement (Alpha = .69)	A latent variable based on students' responses to questions of whether they: (1) participated in study groups; (2) had social contact with faculty; (3) met with an academic advisor, and (4) talked with faculty about academics outside of class.
Social involvement (Alpha = .60)	A latent variable based on responses to questions regarding whether they: (1) attended fine arts activities; (2) participated in intramural sports; (3) participated in collegiate athletics; (4) participated in school clubs; and (5) went places with friends from school.
Academic performance	An ordinal variable measuring the cumulative undergraduate grade-point-average. Coded: 0 = Mostly Ds or below; 1 = Cs and Ds; 2 = Mostly Cs; 3 = Bs and Cs; 4 = Mostly Bs; 5 = As and Bs; 6 = Mostly As.
<i>Dependent</i> Academic success	A four-category composite ordinal variable measuring academic success. It is based on whether students attained an associate's degree, transferred to a 4-year institution, and re-enrolled in the fall of 1998.

### **Mediating Variables: Involvement and Performance**

Two of the three focal mediating constructs were based on Astin's concept of involvement. In Astin's (1984) words, an involved student is one who, "devotes considerable energy to studying, spends much time on campus, participates actively in student organizations, and interacts frequently with faculty members and other students" (p. 297). Accordingly, the term academic involvement was defined as the extent to which students engage in four informal academic activities (e.g., participation in study groups or socialization with faculty) in the first year. Social involvement was operationalized as the degree to which a student participates in five social activities (e.g., intramural sports or school clubs) in their first year. In addition, academic performance was included as a mediating variable and was measured by self-reported grades.

### **Dependent Variable: Academic Success**

The study of 2-year college student success is complicated by the diversity of educational goals among community college students. Indeed, it is inappropriate to use bachelor's degree completion as the primary measure of success among community college students because many of them attend 2-year colleges to acquire associate's degrees or get short-term training (Dougherty, 1992). We took this into account by creating a composite four-category ordinal success outcome, based on whether the student:

1. transferred to a 4-year institution;
2. attained an associate's degree; and
3. persisted on to the fourth-year.

While we recognize that 3-year rates might yield different results than if we focused on 4-, 5-, or 6-year outcomes, we chose 3 years as our timeframe to parallel the 150% time-to-degree measure used by the Department of Education in calculating 2-year graduation rates.

### **Data Analysis Procedures**

Data analysis for this examination can be separated into two phases. As previously mentioned, there were not enough American Indian and Asian students in the BPS sample to conduct separate path modeling analyses with those groups, so they were excluded from the following procedures. In the first stage, we utilized the entire sample of Black, Latino, and White students to conduct a principal components analysis with varimax rotation in order to identify the indicators that provide the most reliable measures of academic and social involvement in the BPS. Indicators with factor loadings below .4 were excluded from the model. Table 1 includes the resulting indicators for academic

and social involvement, as well as the corresponding alpha codes that resulted from the principal components analysis.

In the second stage, a path model was constructed in the Amos structural equation modeling software program for each racial group, using our conceptual framework and the constructs emerging from the principal components analysis. The Amos program does not allow the direct application of panel weights in the computation of path and structural models, so we imputed means to replace missing values and calculated a new covariance matrix for each subsample using the appropriate BPS panel weight. Then, we loaded those weighted covariance matrices into the Amos program to conduct the path modeling analyses.

We employed Maximum Likelihood Estimation (MLE) with bootstrapping options to examine the path model. In MLE, ordinal persistence outcomes can pose threats to important assumptions such as multivariate normality and linearity (Kline, 1998). Considering such violations is important because they can lead to the rejection of a model that should not be rejected, contribute to deflated standard errors, and lead to an increased likelihood of committing Type II errors—inaccurate conclusions that path estimates are statistically significant. While it is acceptable to treat ordinal outcomes with four or more categories as continuous (Byrne, 2009), we employed bootstrapping procedures as an extra precautionary measure to ensure that violations to multivariate normality did not influence our results (Kupek, 2005).

Examining the path models with bootstrapping relaxes multivariate normality assumptions. In bootstrapping, random samples with replacement are drawn from the observed data and parameter estimates are computed for each random sample (Bollen & Stine, 1993). Then, the bootstrapped parameter estimates are averaged and their standard errors computed, which together provide a method of evaluating the stability of the normal Maximum Likelihood estimates. The Amos program provides both the normal MLE and bootstrapped parameter estimates. In addition, the Amos output includes a bias statistic, which indicates the degree of difference between the original MLE estimates and the mean of the bootstrapped estimates. Low bias statistics indicate that the standard errors between the normal MLE and bootstrapped estimates are similar and the parameter estimates can be deemed unbiased. For all three racial groups analyzed in the current study, all paths in each model exhibited a bias statistic of zero, suggesting that all parameter estimates reported herein can be interpreted as unbiased.

## LIMITATIONS

There are at least three limitations that warrant consideration before interpreting the findings of the current analysis. The first limitation deals with restrictions posed by the BPS data. While we include many of the factors associated with college student success in our path model, many institutional influences (e.g., campus cultures, sense of belonging, and availability of support services) that have

been associated with adjustment, persistence, and completion in college are not measured in the BPS survey and we, therefore, cannot draw conclusions with regard to the role of such institutional factors in shaping college student outcomes. Second, in terms of measuring involvement, the BPS survey contains questions that measure academic and social involvement, but does not allow for exploration of classroom engagement. This lack of information about classroom involvement is limiting, given that many 2-year students are engaged through the classroom. Nevertheless, previous studies indicate that students who engage in extracurricular involvement accrue positive gains that benefit their retention (Clements, 2008; Kee, 1999; Murrell, Denzine, & Murrell, 1998). Given what we know about the benefits of extra-curricular involvement in the case of 4-year college students, it is important to consider the potential benefits of such experiences for 2-year students who are able to get involved outside of the classroom.

Finally, our final participant sample only includes Black, Latino, and White students. This limitation highlights a larger issue with regard to the exclusion of particular racial groups from large-scale data collection. While Asian and Native American students were included in the BPS, there are not a sufficient number of 2-year college students from either of these racial groups to include them in the current analysis. Given that some Asian American ethnic populations and Native Americans hold college degrees at rates lower than other racial groups, their exclusion from such empirical studies is extremely unfortunate, and this is an issue that should be intentionally addressed in future data collection efforts by national agencies.

## RESULTS

The path models for all three groups initially exhibited weak results, indicating that those models were not a good fit for the corresponding data. To improve the models, we used theoretical presuppositions and modification indices to conduct model-building (Kline, 1998), which entails adding paths to the models to progressively improve model-fit. We used cutoff values for testing the fit of models provided by Hu and Bentler (1999): Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values greater than .95 and a Root Mean Square Error of Approximation (RMSEA) value less than .06. A fourth statistic, the PCLOSE statistic, tests the null hypothesis that the RMSEA is no greater than .05 and was also used to assess the fit of the three models. For each of the three subsamples, all four tests indicated that the final models were a good fit for the data (see Table 2). The models produced CFIs between .98 and .99, TLIs between .98 and .99, RMSEAs of .04, and PCLOSE tests of 1.0. The final models explained 36%, 10%, and 17% of the variation in success among Black, Latino, and White students, respectively.

The means and standard deviations of each focal variable, broken out by race, are displayed in Table 3. There are a couple comparisons in this table that are

Table 2. Model-Fit Results

Sample	N	Model-Fit Statistic			
		CFI	TLI	RMSEA	PCLOSE
Black	333	.99	.99	.04	1.0
Latino	375	.98	.98	.04	1.0
White	1,577	.98	.98	.04	1.0

**Note:** Strong model fit is reflected by (a) CFI and TLI values greater than .95, (b) RMSEA less than .06, and (c) PCLOSE greater than .05.

Table 3. Variable Means and Standard Deviations by Race

Variables	Black		Latino		White	
	Mean	SD	Mean	SD	Mean	SD
Racial representation	25.20	18.41	33.60	30.57	80.98	14.82
Academic involvement ( $\alpha = .69$ )						
Had social contact w/faculty	.61	.70	.44	.54	.49	.62
Participated in study groups	.55	.68	.54	.63	.51	.64
Met with advisor	.86	.70	.72	.60	.77	.63
Talk w/faculty about academics	.84	.77	.68	.65	.79	.68
Social involvement ( $\alpha = .60$ )						
Attended arts activities	.26	.53	.25	.45	.28	.53
Participated in intramural sports	.21	.49	.12	.42	.18	.47
Participated in varsity athletics	.17	.49	.12	.38	.10	.38
Gone places w/school friends	.78	.77	.97	.71	1.03	.78
Participated in school clubs	.26	.54	.28	.54	.22	.52
Academic performance	2.41	1.87	2.73	1.91	3.25	2.00
Academic success	1.64	1.41	1.49	1.01	1.68	1.41

noteworthy. First, not surprisingly, White students tend to be relatively highly represented at their respective institutions. Second, Black students appear to demonstrate the highest levels of academic involvement at community colleges. This is interesting, given that Black students, along with their Latino peers, exhibit success rates appreciably lower than White community college students (Cohen, 1995). Finally, White students also exhibit the highest levels of social involvement in community colleges and the highest levels of academic performance.

Table 4 shows the standardized coefficients for paths from each independent to each dependent variable in the three models. The level of statistical significance was set at .001. All hypothesized path coefficients were statistically significant at the .001 level for White students, and all but one hypothesized paths were statistically significant for Black and Latino 2-year college students. Each standardized path coefficient represents the standard unit change in the success outcome variable that is associated with every one standard unit change in the independent variable. Because some path coefficients were too small for interpretation, we chose to focus the following discussion on relatively moderate to strong standardized path coefficients (i.e., path coefficients greater than .05).

Table 4. Standardized Path Coefficients for the Black, Latino, and White Samples

Predictor variable	Dependent variable			
	Academic involvement	Social involvement	Academic performance	Academic success
<b>Black sample</b>				
1. Racial representation	.01	-.11***	.16***	-.07***
2. Academic involvement	—	—	.18***	.00***
3. Social involvement	—	—	-.13***	.33***
4. Academic performance	—	—	—	.19***
<b>Latino sample</b>				
1. Racial representation	.11***	.02***	-.01***	.07***
2. Academic involvement	—	—	.07***	.02***
3. Social involvement	—	—	-.07***	.09***
4. Academic performance	—	—	—	.03***
<b>White sample</b>				
1. Racial representation	-.06***	-.02***	-.02***	-.03***
2. Academic involvement	—	—	.09***	.12***
3. Social involvement	—	—	-.08***	.16***
4. Academic performance	—	—	—	.09***

\*\*\*Indicates statistical significance at the .001 level.

Those moderate to strong paths with their corresponding standardized path coefficients are displayed in Figures 2 through 4.

### The Black Student Sample: Key Direct and Indirect Effects

For the Black student sample, the strongest positive predictor of success was social involvement (.33), followed by academic performance (.18). Contrary to our expectations, academic involvement was not statistically and significantly associated with success (see Figure 2). But, while this finding might seem counter-intuitive, the lack of a relationship between academic involvement and success could be due to the fact that academic performance accounts for most of the influence that academic experiences have on success among Black students. A closer look at mediating relationships offers another plausible explanation. The data suggest that much of the positive influence of academic involvement on 3-year success among Black students is indirect. Indeed, for Black students, higher levels of reported academic involvement were associated with subsequently higher levels of academic performance, which, in turn, was positively associated with success. Social involvement also exhibited an indirect influence on success, but that influence was negative, with higher levels of social involvement leading to lower levels of academic performance and subsequently lower levels of success. This could be an indication that, for Black students, spending limited time on

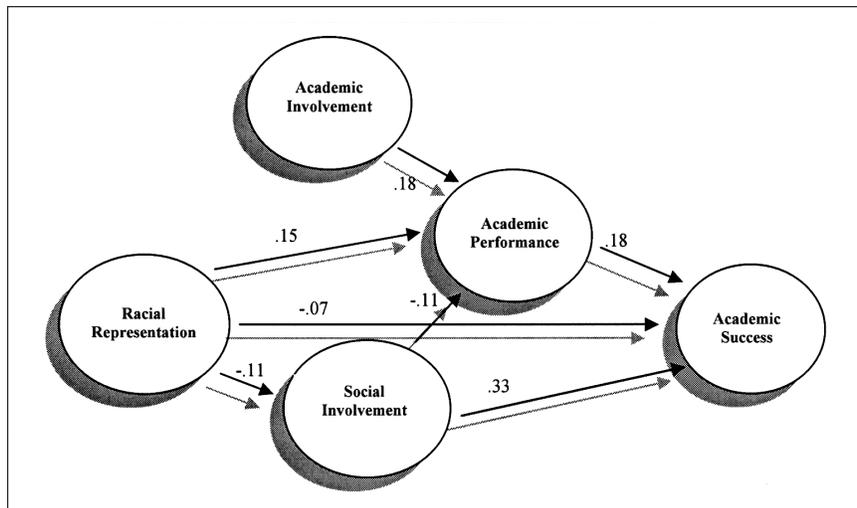


Figure 2. Final path model for Black student sample.

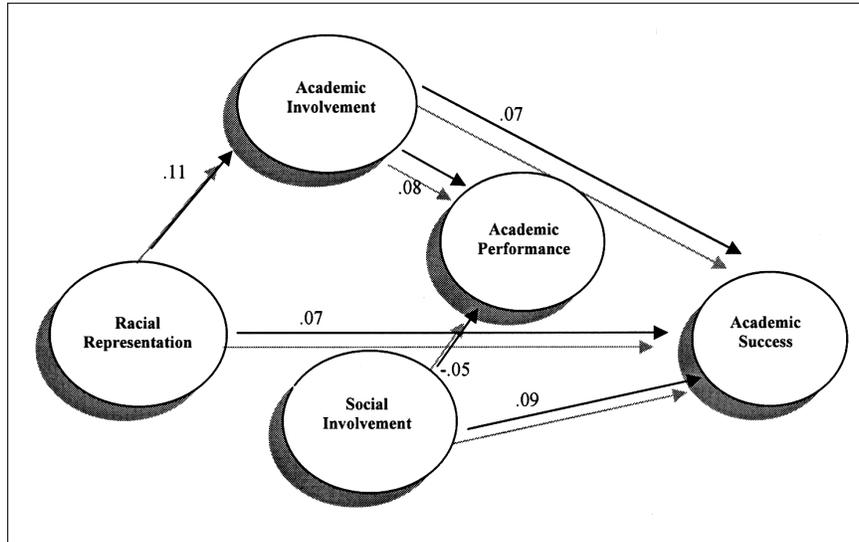


Figure 3. Final path model for Latino student sample.

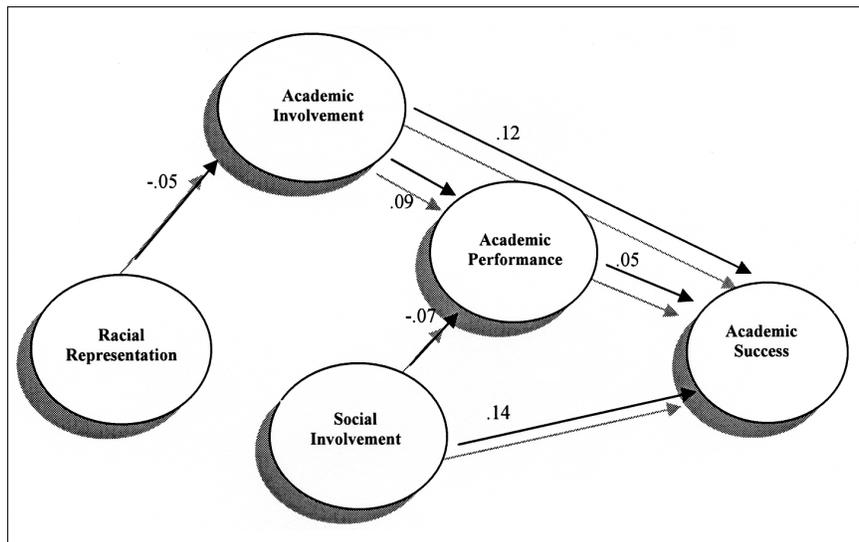


Figure 4. Final path model for White student sample.

extracurricular activities is inversely associated with their investment of time on activities related to academic achievement.

Also surprising was the fact that higher levels of racial representation were directly related to lower levels of success among Black students ( $-.07$ ). However, this relationship appears to be complex, as racial representation also exhibited both positive and negative indirect effects on academic success. Representation positively and indirectly affected success via academic performance. That is, higher levels of racial representation were associated with higher levels of academic performance and, in turn, greater likelihood of success.

The results also indicate, however, that racial representation indirectly and negatively influenced success via social involvement. That is, greater representation was associated with lower levels of social involvement and subsequent lower levels of academic success. Given that involvement in Black student organizations has been associated with Black student involvement (Harper & Quaye, 2007), this finding is also counterintuitive. One possible explanation is that Black students with lower levels of racial representation and more unwelcoming environments on campus are compelled to get socially involved. Indeed, there is evidence that, when particular racial groups experience negative campus climates, it can function to increase the engagement and activism of students within those groups (Burns, Harper, Hildebrand, & Moore, 2000). In contrast, greater representation may lead to more positive perceptions of the campus environment and, consequently, less of a need for social activism and other forms of engagement at community colleges among Black students. Another possible explanation is that Black students at 2-year colleges with greater representation are not gaining the potential benefits of being at an institution with such representation because they do not have the opportunities to do so. A third potential explanation is that our social involvement construct is not a sufficient measure of involvement in social activities for Black students. Indeed, other researchers have noted that the failure to measure the types of involvement that are more reflective of the interests of students of color (e.g., religion, community service and activism, and ethnic dance and art) could account for researchers finding that social involvement is positively related to outcomes for White, but not minority, students (Hurtado & Carter, 1997; Nora, 1987).

Racial representation also exhibited two three-way ( $A \rightarrow B \rightarrow C$ ) indirect effects on academic success among Black 2-year students. Representation indirectly and positively influenced success via social involvement and academic performance. That is, greater levels of racial representation on campus were associated with lower levels of social involvement, which were correlated with higher levels of academic performance and ultimately higher levels of success among Black 2-year college students in the sample. This finding could be an indication that Black students who are less socially involved—as measured by our indicators—have more time and energy to invest in their coursework, leading to higher levels of success. This raises questions for future research about the

specific types of social involvement that are more likely to facilitate or hinder positive academic outcomes for Black 2-year students.

### **The Latino Student Sample: Key Direct and Indirect Effects**

As shown in Figure 3, social involvement also exhibited the largest positive direct effect on Latino 2-year college student success (.09), followed by racial representation (.07) and academic involvement (.07). Thus, if the positive effects of academic involvement are accounted for by its positive influence on academic performance for Black 2-year college students, this doesn't appear to be the case for Latino 2-year college students. Indeed, the influence of academic involvement on success appears to be mainly direct for Latino students. And, surprisingly, academic performance was not related to academic success for this group.

In addition to the positive direct effect of racial representation on academic success, representation exhibited a positive indirect influence on success via academic involvement. That is, greater racial representation was associated with higher levels of academic involvement and consequently higher levels of success. This was the only statistically significant indirect effect of representation on success for Latinos. In contrast to Black students, for Latinos, representation did not indirectly influence success via academic performance or social involvement.

### **The White Student Sample: Key Direct and Indirect Effects**

Figure 4 displays the final path model for the White sample. Similar to the other two groups, social involvement exhibited the most powerful direct effect on 2-year college student success for White students (.14), and it was followed by academic involvement (.12) and academic performance (.05). While racial representation exhibited significant direct effects on academic success for both Black and Latino students, that path was insignificant for the White sample. It is possible that the absence of a direct relationship between racial representation and success among White students might be partially understood through the lens of cultural validation. Rendón (2002) asserts that traditional (i.e., referring to White, middle/upper class backgrounds) college students generally experience a greater degree of validation in their lives and in college. Thus, one explanation could be that, in many cases, White students encounter institutional environments that validate the cultures from which they come and relatively small shifts in the percentage of students from their racial background at their respective institutions does not have as powerful of an influence as it does on students of color.

However, racial representation did exert two negative indirect influences on success. First, representation was indirectly and negatively associated with success via its influence on academic involvement. In other words, higher levels of representation were associated with lower levels of academic involvement,

which was, in turn, related to decreased success. Second, racial representation exhibited a three-way negative indirect influence via academic involvement and academic performance. That is, greater representation on campus was associated with lower levels of academic involvement and ultimately lower levels of success for White students.

## DISCUSSION AND CONCLUSIONS

There are four overarching conclusions that we highlight in this section. First, our examination contributes to existing literature by examining the relationship between racial representation and success using a nationally representative sample of 2-year college students. To the best of our knowledge, this is the first study to do so. Thus, this analysis adds to the existing knowledge base (Hagedorn et al., 2007; Person & Rosenbaum, 2006) focused on racial representation and student outcomes by providing evidence that representation is a significant predictor of academic success among community college students on a national level.

Second, we conclude that the relationship between racial representation and 2-year college student success is probably conditional upon race. Indeed, the direct relationship between racial representation and success was significant and negative for Black students, significant and positive for Latino students, and negligible in the White 2-year sample. Moreover, representation exhibited statistically significant and positive indirect influences on success for Black and Latino students, but not for their White peers. And representation was indirectly related to success for Black and White, but not Latino, students. These racial differences are consistent with earlier studies focusing on racial differences in the impact of institutional factors on success (e.g., Cabrera et al., 1999; Museus et al., 2008; Nora & Cabrera, 1996).

Third, our analysis shows that the relationship between racial representation and 2-year college student success is complex. While representation exhibited important direct effects on success for Black and Latino students, it also exhibited several indirect effects on academic success via involvement and academic performance for all three racial groups. This is congruent with other studies that have focused on examining complex direct and indirect effects of institutional environments, such as campus climate, on academic success (e.g., Cabrera et al., 1999; Hurtado & Carter, 1997; Museus et al., 2008; Nora & Cabrera, 1996). Thus, future studies that employ regression analyses to examine this relationship should consider the possible indirect effects that may be present in their models.

Lastly, in examining social and academic involvement as mediating variables, this examination adds to our understanding of extracurricular student involvement in community colleges. The findings suggest that, to the extent that community college students are able to get involved in a variety of ways outside of class (e.g., extracurricular involvement with students and faculty, student organizations, athletics), they may be able to attain benefits similar to those enjoyed by

their 4-year counterparts. Given the various challenges that limit the capacity of 2-year college students to get involved outside of the classroom, researchers have generally conceptualized 2-year college involvement as engagement that occurs in the classroom. Although we acknowledge that many 2-year students are unable or unwilling to get involved beyond the classroom, and that available venues for extracurricular involvement are often not available for those students, our findings support the need to consider increasing opportunities for out-of-class engagement among these students. The relationships between both academic and social involvement and the success outcome variable are complex. What our results suggest, however, is that such forms of involvement *can* facilitate academic success among 2-year college students. Thus, the findings confirm the importance of extracurricular involvement at community colleges and suggest that, for 2-year students who are able to participate in extracurricular activities, the benefits may mirror those found in the case of 4-year students.

### IMPLICATIONS FOR RESEARCH

Several implications for research and practice emerged from our analysis. For purposes of parsimony, we focus on four of them herein. With regard to future research, national studies and other surveys of college students should include intentional efforts to oversample Asian, Asian American, and American Indian college students. Other national studies, such as the National Education Longitudinal Study (NELS: 88/00) included such efforts, which make it possible to examine those racial groups separately. We find it unfortunate that we were forced to exclude these two populations, given their inadequate representation in the BPS study.

Second, future research on the impact of racial representation on college student outcomes should consider the utility of path and structural equation modeling techniques in the examination of the complex relationship between racial representation and success. Clearly, if regression techniques were employed in the preceding analysis, the complex relationship between representation and academic success might have been oversimplified and many of the indirect effects of representation on the success outcome could have remained masked. Path and structural equation modeling techniques can shed light on such relationships.

It may also be helpful for future research to explore the difference between racial representation and ethnic (e.g., Chinese, Vietnamese, Haitian, Puerto Rican, etc.) representation. In light of the fact that national datasets, such as the BPS, often lack sufficient numbers of students within racial minority groups, it is unlikely that those datasets contain sufficient subsamples of students within specific ethnic groups, which makes the examination of ethnic group representation difficult. Nevertheless, future data collection efforts could include sampling techniques that oversample and ensure sufficient numbers of specific ethnic

groups, thereby enabling examinations of whether ethnic representation shapes students' outcomes.

### IMPLICATIONS FOR PRACTICE

There are at least two important implications of these findings for practice. First, evidence of the positive direct and indirect influences of racial representation on student success can permit educators to better justify the use of limited resources in efforts to recruit under-represented racial/ethnic minority students. Indeed, generating persuasive empirical evidence that the representation of racial minority groups increases academic involvement, academic performance, and overall success rates on campus can inform decision-making regarding the use of resources to enhance representation of those groups on campus. In addition, efforts to cultivate and sustain racial minority subcultures (e.g., cultural centers, targeted support programs, and ethnic organizations) aimed at creating social and academic spaces that increase visibility of and support for college students of color at PWIs are supported by these findings.

Second, educators should be aware of the various types of racial representation on their respective campuses. On any given college or university campus, one racial minority group may have achieved a critical mass, while other populations of color may lack significant levels of representation. If this is the case, simply achieving a student body of which a substantial portion is comprised of students of color, generally, does not guarantee that each racial group will reap the benefits associated with that structural diversity. In fact, despite increased representation of students of color at PWIs, attention should be given to ensuring support for specific populations who may remain under-represented on those campuses. For example, even on campuses with high numbers of Chinese and Korean students, Southeast Asian American undergraduates may be severely under-represented. While taking into account such specificity in the delivery of support programs and services may be difficult or time-consuming, such considerations may be necessary to effectively maximize success among those students.

### REFERENCES

- Allen, W. R. (1992). The color of success: African-American college student outcomes at predominantly White and historically Black public colleges and universities. *Harvard Educational Review*, 62(1), 26-44.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25(4), 297-308.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco, CA: Jossey-Bass.
- Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 518-529.

- Berkner, L., He, S., & Cataldi, E. F. (2002). *Descriptive summary of 1995-96 beginning postsecondary students: Six years later*. Washington, DC: U.S. Department of Education.
- Bollen, K. A., & Stine, R. A. (1993). Bootstrapping goodness-of-fit measures in structural equation models. In K. A. Bollen & J. Long (Eds.), *Testing structural equation models* (pp. 111-135). Newbury Park, CA: Sage.
- Burns, S. L., Harper, S. R., Hildebrand, E. S., & Moore, M. N. (2000). Behavioral responses to hate crimes: A study of Asians and Asian-Americans on a university campus. *Journal of the Indiana University Student Personnel Association* 33(1), 64-78.
- Byrne, B. M. (2009). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. New York: Taylor & Francis.
- Cabrera, A. F., 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(2), 134-160.
- Clements, E. (2000). Creating a campus climate in which diversity is truly valued. In S. R. Aragon (Ed.), *New directions for community colleges* (no. 112, pp. 63-72). San Francisco: Jossey-Bass.
- Cohen, A. M. (1995). *Orderly thinking about a chaotic system*. Paper presented at the Annual National Transfer and Articulation Symposium. February 24-25, 1995, Tucson, AR.
- Cohen, A. M., & Brawer, F. B. (1996). *The American community college*. San Francisco, CA: Jossey-Bass.
- Coley, R. J. (2000). *The American community college turns 100: A look at its students, programs, and prospects*. Princeton, NJ: Educational Testing Services (ED 441 553).
- Community College Survey of Student Engagement (CCSSE). (2004). Engagement by design: Summary of 2004 findings. Austin, TX: Author. Retrieved February 2, 2009 from [http://www.ccsse.org/publications/CCSSE\\_reportfinal2004.pdf](http://www.ccsse.org/publications/CCSSE_reportfinal2004.pdf)
- Davis, J. E. (1994). College in Black and White: Campus environments and academic achievement of African American males. *Journal of Negro Education*, 63(4), 620-633.
- Dougherty, K. J. (1992). Community colleges and baccalaureate attainment. *The Journal of Higher Education*, 63(2), 188-214.
- Etzkowitz, H., Kemelgor, C., Neuschatz, M., Uzzi, B., & Alonzo, J. (1994). The paradox of critical mass for women in science. *Science New Series*, 266(5182), 51-54.
- Feagin, J. R. (1992). The continuing significance of racism: Discrimination against Black students in White colleges. *Journal of Black Studies*, 22(4), 546-578.
- Feagin, J. R., Vera, H., & Imani, N. (1996). *The agony of education: Black students at White colleges and universities*. New York: Routledge.
- Fleming, J. (1984). *Blacks in college*. San Francisco, CA: Jossey-Bass.
- Fries-Britt, S. L., & Turner, B. (2002). Uneven stories: Successful Black collegians at a Black and a White campus. *Review of Higher Education*, 25(3), 315-330.
- Gonzalez, K. P. (2003). Campus culture and the experiences of Chicano students in a predominantly White university. *Urban Education*, 37(2), 193-218.
- Guiffrida, D. A. (2003). African American student organizations as agents of social integration. *Journal of College Student Development*, 44(3), 304-319.

- Hagedorn, L. S., Chi, W., Cepeda, R. M., & McLain, M. (2007). An investigation of critical mass: The role of Latino representation in the success of urban community college students. *Research in Higher Education, 48*(1), 73-91.
- 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, 120*, 7-24. San Francisco, CA: Jossey-Bass.
- Harper, S. R., & Quaye, S. J. (2007). Student organizations as venues for Black identity expression and development among African American male student leaders. *Journal of College Student Development, 48*(2), 127-144.
- Hoachlander, G., Sikora, A. C., Horn, L., & Carroll, C. D. (2003). *Community college students: Goals, academic preparation, and outcomes*. Washington, DC: National Center for Education Statistics.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indices in covariance structure analysis: Conventional versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Hurtado, S., & Carter, D. (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.
- Kee, A. M. (1999). *Campus climate: Perceptions, policies and programs in community colleges: AACC research brief*. Washington, DC: American Association of Community Colleges.
- Kiang, P. N. (2002). Stories and structures of persistence: Ethnographic learning through research and practice in Asian American studies. In Y. Zou & H. T. Trueba (Eds.), *Advances in ethnographic research: From our theoretical and methodological roots to post-modern critical ethnography* (pp. 223-255). Lanham, MD: Rowman & Littlefield.
- Kiang, P. N. (2009). A thematic analysis of persistence and long-term educational engagement with Southeast Asian American college students. In L. Zhan (Ed.), *Asian American voices: Engaging, empowering, enabling* (pp. 59-76). New York: NLN Press.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford Press. A very readable introduction to the subject, with good coverage of assumptions and SEM's relation to underlying regression, factor, and other techniques.
- Kraemer, B. A. (1997). The academic and social integration of Hispanic students into college. *The Review of Higher Education, 20*(2), 163-179.
- Kupek, E. (2005). Log-linear transformation of binary variables: A suitable input for structural equation modeling. *Structural Equation Modeling, 12*(1), 28-40.
- Laden, B. V., & Hagedorn, L. S. (2000). Job satisfaction among faculty of color in academe: Individual survivors or institutional transformers? In L. S. Hagedorn (Ed.), *What contributes to job satisfaction among faculty and staff* (pp. 57-66). San Francisco, CA: Jossey-Bass.
- Lewis, A. E., Chesler, M., & Forman, T. A. (2000). The impact of "colorblind" ideologies on students of color: Intergroup relations at a predominantly White university. *The Journal of Negro Education, 69*(½), 74-91.
- McClenney, K. M. (2007). Research update: The community college survey of student engagement. *Community College Review, 35*(2), 137-146.

- Murrell, S. P., Denzine, G., & Murrell, P. H. (1998). Community college residence halls: A hidden treasure. *Community College Journal of Research and Practice*, 22(7), 663-674.
- Museus, S. D. (2007). Using qualitative methods to assess diverse campus cultures. In S. R. Harper & S. D. Museus (Eds.), *Using qualitative methods in institutional assessment: New Directions for Institutional Research*, 136, 29-40. San Francisco, CA: Jossey-Bass.
- Museus, S. D. (2008a). The model minority and the inferior minority myths: Inside stereotypes and their implications for student involvement. *About Campus*, 13(3), 2-8.
- Museus, S. D. (2008b). The role of ethnic student organizations in fostering African American and Asian American students' cultural adjustment and membership at predominantly White institutions. *Journal of College Student Development*, 49(6), 568-586.
- Museus, S. D. (2009). A critical analysis of the exclusion of Asian American from higher education research and discourse. In L. Zhan (Ed.), *Asian American voices: Engaging, empowering, enabling* (pp. 59-76). New York: NLN Press.
- Museus, S. D., Nichols, A. H., & Lambert, A. (2008). Racial differences in the effects of campus racial climate on degree completion: A structural model. *The Review of Higher Education*, 32(1), 107-134.
- Museus, S. D., & Quaye, S. J. (2009). Toward an intercultural perspective of racial and ethnic minority college student persistence. *The Review of Higher Education*, 33(1), 67-94.
- Museus, S. D., & Truong, K. A. (2009). Disaggregating qualitative data on Asian Americans in campus climate research and assessment. In S. D. Museus (Ed.), *Conducting research on Asian Americans in higher education: New directions for Institutional Research* (no. 142, pp. 17-26). San Francisco, CA: Jossey-Bass.
- Nejman, M. (1999). Student programmer's guide to developing multicultural activities at community colleges. *Campus Activities Programming*, 31(8), 544-61.
- Nora, A. (1987). Determinants of retention among Chicano college students: A structural model. *Research in Higher Education*, 26(1), 31-58.
- Nora, A., Attinasi, L. C., Jr., & Matonak, A. (1990). Testing qualitative indicators of precollege factors in Tinto's attrition model: A community college student population. *Review of Higher Education*, 13(3), 337-356.
- Nora, A., & Cabrera, A. (1996). The role of perceptions of prejudice and discrimination on the adjustment of minority students to college. *Journal of Higher Education*, 67, 119-148.
- Nora, A., & Rendón, L. I. (1990). Determinants of predisposition to transfer among community college students: A structural model. *Research in Higher Education*, 31(3), 235-255.
- Pace, C. R. (1984). *Measuring the quality of college student experiences. An account of the development and use of the college student experiences questionnaire*. Los Angeles: Higher Education Research Institute, University of California, Los Angeles. (ERIC Document. ED255099.)
- Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students*. San Francisco, CA: Jossey-Bass.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students (Vol. 2): A third decade of research*. San Francisco, CA: Jossey-Bass.
- Person, A. E., & Rosenbaum, J. E. (2006). Chain enrollment and college enclaves: Benefits and drawbacks of Latino college students' enrollment decisions. In C. L.

- Horn, S. M. Flores, & G. Orfield (Eds.), *Latino educational opportunity: New Directions for Community Colleges*, 133, 51-60. San Francisco, CA: Jossey-Bass.
- Rendón, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education*, 19(1), 33-51.
- Rendón, L. I. (2002). Community college puente: A validating model of education. *Educational Policy*, 16(4), 642-667.
- Rendón, L. I., Jalomo, R. E., & Nora, A. (2000). Theoretical considerations in the study of minority student retention in higher education. In J. Braxton (Ed.), *Reworking the student departure puzzle*. Nashville, TN: Vanderbilt University Press.
- Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *Journal of Higher Education*, 68(6), 82.
- U.S. Census Bureau. (2004). *We the people: Asians in the United States*. Washington, DC: U.S. Government Printing Office.
- Williams, T. E. (2002). Challenges in supporting student learning and success through student services. In T. H. Burs & H. D. Calhoun (Eds.), *Next steps for the community college: New directions for community colleges* (no. 117, 67-76). San Francisco, CA: Jossey-Bass.

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