Inclusive Learning Environments: Modeling a Relationship Between Validation, Campus

Climate for Diversity, and Sense of Belonging

Sylvia Hurtado, UCLA

Adriana Ruiz Alvarado, UCLA

Chelsea Guillermo-Wann, UCLA

Abstract

Using a multi-institutional sample to structurally model the relationships between validation, campus climate, and sense of belonging, the present study examines the extent to which general interpersonal validation and academic validation may mediate the effects of a negative campus climate on students' sense of belonging. Findings begin to disentangle the distinction between the internal psychological processes of validation and sense of belonging, with validation having a direct positive effect on belonging. Additionally, the direct effect of discrimination and bias on sense of belonging was diminished after accounting for validating experiences. The validating experiences can reinforce self-worth and value in educational environments that may help students remain resilient despite microaggressions.

Introduction

As the landscape of higher education becomes growingly diverse, understanding the different processes that can help these diverse students succeed becomes more critical. It is important to note that by diversity, we do not just mean an increased presence of underrepresented populations, but also a growing number of students who are attending college in less traditional ways (McCormick, 2003, Hossler, et al., 2012). The early models of student persistence (Bean & Metzner, 1985; Tinto, 1993; Astin, 1993) have been critiqued for not fully capturing the experiences of underrepresented students, particularly in terms of what it means to be "integrated" in a college campus (Tierney, 1992; Hurtado & Carter, 1997). Whereas integration was once monitored behaviorally as time spent in specific social and academic activities, researchers have drawn attention to the importance of a psychological dimension capturing perceived integration—sense of belonging (Hurtado & Carter, 1997; Hausman, Schofield, & Woods, 2007; Strayhorn, 2012). Sense of belonging as a psychological measure of integration in the college community and attachment to an institution has been linked with persistence (Hausman, et al., 2007) and therefore, some of the more recent and more inclusive models of underrepresented student persistence (Nora, 2003; Nora, Barlow, & Crisp, 2005) also include it as an important contributor of educational attainment.

These same inclusive models also incorporate another less explored process—validation. In her work with community college students, Rendón (1994, 2002) found that in spite not being active in the social aspects of the college experience, many students still showed signs of success. The theory of validation (1994) proposes that students are most likely to succeed in college if they are empowered and view themselves as capable learners through the academic

and interpersonal development they undergo from interactions with institutional agents (Stanton-Salazar, 2010; Museus & Neville, 2012), both inside and outside of the classroom. Validation involves demonstrations of recognition, respect, and appreciation for students and their communities by faculty and staff, and its positive impact on persistence has been demonstrated for some less traditional student populations, including underrepresented racial/ethnic groups and community college students (Barnett, 2006, 2011; Rendón, 2002).

Within this broader context of college student retention, recent research also begins to link validation to campus climate for diversity and sense of belonging. First, students who indicate higher levels of interpersonal validation experience less frequent discrimination and bias as a measure of campus climate (Guillermo-Wann, 2012). Second, validation shares a positive correlation with sense of belonging in college (Hurtado, Cuellar, Guillermo-Wann, & Velasco, 2010). Third, campus climate impacts sense of belonging in college for various racial groups (Hurtado & Carter, 1997; Johnson, Soldner, Leonard, & Alvarez, 2007; Locks, Hurtado, Bowman, & Oseguera, 2008; Maestas, Vaquera, & Zehr, 2007; Nunez, 2009; Strayhorn, 2008; Museus & Maramba, 2011), and both are key factors in college student retention and degree completion (Hausmann, et al., 2007; Museus, Nichols, & Lambert, 2008; Nora et al., 2005; Rhee, 2008). Research therefore suggests that validation also plays an important role in the retention of diverse students through its relationships with campus climate and sense of belonging.

The present study uses a multi-institutional sample to structurally model the relationships between validation, campus climate for diversity, and sense of belonging in compositionally diverse institutions. The relationship between validation and sense of belonging is of key interest because they are both internal processes that have been found to be distinct from

involvement (Barnett, 2011; Locks, et al., 2008). Furthermore, the relationship between validation, campus climate, and sense of belonging has not been modeled, and likely has larger implications for improving college student retention and degree attainment for diverse students.

Validation

The concept of validation stems out of the Transition to College Project as a key factor in the success of underrepresented students (Terenzini et al., 1994), and is defined as "an enabling, confirming and supportive processes initiated by in- and out-of-class agents that foster academic and interpersonal development" (Rendón, 1994, p. 44). These agents can include faculty, classmates, lab instructors, teaching assistants, significant others, family members, friends, and college staff. Rendón (1994) details two forms of validation: academic and interpersonal. Academic validation occurs when agents actively assist students to "trust their innate capacity to learn and to acquire confidence in being a college student" (p. 40). Agents foster interpersonal validation when they engage in students' personal development and social adjustment to college as well as provide social capital to navigate the institution (Museus & Neville, 2012). Both academic and interpersonal validation are important experiences for student success (Barnett, 2006, 2011; Rendon, 1994, 2002).

Quantitative analysis of validation is still at a nascent stage, with very few studies existing on the topic (Barnett, 2006, 2011; Hurtado, Cuellar, & Guillermo-Wann, 2011; Hurtado et al., 2010). In one of the first quantitative studies on validation, Barnett (2006) developed measures of student perceptions of faculty validation and confirmed four sub-constructs (students are known and valued, good instruction, appreciation for diversity, and mentoring) that influence student integration and persistence in a community college. Subsequent research shows that validation shares partial correlations with items measuring students' activities to

navigate the college environment (Hurtado et al., 2010), and is not an alternative involvement measure, but rather a precondition for involvement because it helps students learn to navigate academic environments (Barnett, 2011). Expanding the operationalization of validation to include institutional agents other than instructors, Hurtado et al. (2011) test measures that tap both into a students' sense of academic validation in the classroom and also general interpersonal validation through interactions with staff and faculty outside of the classroom. They find that Students of Color experience lower levels of both forms of validation, compared to White students. In addition, significantly larger proportions of students indicate higher levels of interpersonal validation at four-year private institutions compared to two-year community colleges and four-year public universities; academic validation is most prevalent amongst community college students and least amongst students at public four-year institutions (Hurtado et al., 2010). Furthermore, interpersonal validation has an inverse relationship with experiencing discrimination and bias for Black, Latina/o, and White undergraduates after accounting for pre-college, institutional, curricular and co-curricular involvement, and other aspects of campus climate (Guillermo-Wann, 2012). Finally, both forms of validation share positive correlations with sense of belonging (Hurtado et al., 2010) but are conceptualized as theoretically distinct constructs.

Sense of Belonging

Sense of belonging measures individuals' perceived social cohesion to various groups or environments, and has both cognitive and affective elements (Bollen & Hoyle, 1990). Higher education research often uses these items to measure the construct: "I feel a sense of belonging to [this campus]," " I feel that I am a member of the [campus] community," and "I see myself as part of the [campus] community" (e.g. Hurtado & Carter, 1997). Sense of belonging has been

used in higher education research to measure a student's psychological sense of integration, and importantly highlights the interplay between the individual and the institution (Hurtado & Carter, 1997). Research on sense of belonging in college is expanding along various social identities such as socioeconomic status (see Hurtado et al., 2012), with lower income status (Ostrove & Long, 2007) and experiencing classism (Langhout, Rosselli, & Feinstein, 2007) decreasing sense of belonging. Sense of belonging is distinct from involvement (Locks, et al., 2008), campus climate for diversity, and inclusion (Hurtado, Alvarez, Guillermo-Wann, Cuellar, & Arellano, 2012). And although it has been used as a proxy for validation in previous research (Nora, Urick, & Quijada Cerecer, 2011), as mentioned, it is actually a theoretically distinct construct that is correlated with two forms of validation (Hurtado et al., 2010). However, much of the research on sense of belonging does not yet incorporate quantitative measures of validation in models to explicitly connect these processes.

Higher education research establishes that many factors influence students' sense of belonging in addition to pre-college measures (Hurtado et al., 2012). Broadly, these include institutional selectivity (Hurtado & Carter, 1997), transition to college (Hurtado & Carter, 1997), various forms of social integration (Hoffman, Richmond, Morrow, & Salomone, 2002; Johnson et al., 2007; Locks et al., 2007; Maestas, et al., 2007; Nunez, 2009), academic integration (Johnson et al., 2007; Maestas et al., 2007; Nunez, 2009; Strayhorn, 2008), faculty interaction (Hoffman et al., 2002; Johnson et al., 2007; Maestas et al., 2007; Nunez, 2009), and multiple aspects of campus climate for diversity (Hurtado & Carter, 1997; Johnson et al, 2007; Locks et al., 2008; Maestas et al., 2007; Nunez, 2009; Strayhorn, 2008) and cultural affirmation (Museus & Maramba, 2011). The possibility of validation in social and academic spheres as an additional factor influencing sense of belonging seems likely. Perhaps most pertinent in hypothesizing a

relationship between validation and sense of belonging is that Nunez' (2009) measure of social capital "faculty takes interest in student's development" might also be interpreted theoretically as part of validation processes. In addition, measures of empathetic faculty understanding, faculty support and comfort, and perceived classroom support that contribute to sense of belonging (Hoffman et al., 2002) suggest that validation from faculty in and out of the classroom may contribute to sense of belonging.

Furthermore, the literature demonstrates that mediating factors can improve sense of belonging in a negative climate for many racial groups (Hurtado et al., 2012). These involve diverse friendships, positive interactions across difference, and a positive campus climate for African American, Asian American, Latina/o, White, aggregated Multiracial students, and aggregated Students of Color in several studies (Hurtado et al., 2012; Hurtado & Carter, 1997; Hurtado et al., 2007; Johnson et al., 2007; Strayhorn, 2008; Locks et al., 2008; Maestas et al., 2007; Nunez, 2009). Even so, there are different predictors of sense of belonging for different racial groups (Inkelas, Zaneeta, & Vogt, 2007). These include a strong cultural orientation or positive perceptions of one's cultural identity for African American and Asian American students (Lee & Davis, 2000; Velazquez, 1999). There is also a positive relationship between participation in cross cultural clubs and sense of belonging for Asian American students, and participation in Greek life and intramural clubs for White students, whereas co-curricular involvement in the form of course-related interaction with faculty has an opposite relationship with sense of belonging for Latina/o students (Inkelas et al., 2007). In addition, familiarity with diversity issues, measures of social and intercultural capital, and social and academic engagement are mediators for Latina/o students (Nunez, 2009). In question in this study are the

extents to which interpersonal and academic validation may moderate the effects of a negative campus climate on students' sense of belonging.

Conceptual Framework

Our hypothesized model draws on elements from Nora's (2003) model of student engagement. The student engagement model has five sequential components that lead to persistence, starting with precollege/pull factors, then sense of purpose and institutional allegiance, academic and social experiences, cognitive and non-cognitive outcomes, and goal determination/institutional allegiance. Though this model has been utilized in previous research (Nora, Barlow, & Crisp, 2005; Arbona & Nora, 2007; Crisp & Nora, 2010), not all of its individual elements have been tested in relation to one another. In particular, the direct relationship between the campus climate that includes perceptions of prejudice and discrimination, validating experiences that include encouragement and support from faculty and staff, and institutional commitments that include sense of belonging have yet to be explored. In Nora's model, the campus climate and validating experiences are both part of the academic and social experiences component and sense of belonging is part of the goal determination/institutional allegiance component, thus, the former two elements influence the latter. In accordance with this framework, we include direct paths from campus climate and both of our validation measures to sense of belonging in our hypothesized model. Additionally, we test the mediating effects of the two forms of validation on the influence that campus climate has on students' sense of belonging.

Methods

Data Source and Sample

The data for this study was derived from a combination of the 2010 pilot administration and the 2011 national administration of the Diverse Learning Environments (DLE) survey conducted by the Higher Education Research Institute (HERI) at the University of California, Los Angeles (UCLA). A draft of the pilot survey was administered to students in focus groups at two and four-year colleges in early 2009, and was subsequently revised. Both broad access and structurally diverse selective institutions were selected for the pilot administration based on IPEDS data indicating differences in student diversity. The pilot was administered between December 2009 and May 2010. After further revisions to the instrument, the DLE had its first national administration between October 2010 and June 2011. The DLE was designed to measure institutional practices, the campus climate, and student outcomes (Hurtado, Arellano, Cuellar, & Guillermo-Wann, 2011), targeting students who have substantial familiarity with their respective campuses.

Over the two year period, data were collected at 34 campuses that included 18 private institutions, three public community colleges, and 13 public four-year colleges and universities. The final sample size for this study was 20,460 after removing unusable cases, and was comprised of 14.5% freshmen, 26.3% sophomores, 32.1% juniors, and 27.1% seniors. The racial composition of the final sample was 27.4% Asian, 2.9% Black, 20.5% Latina/o, 0.3% Native American, 41.6% White, and 7.3% Multiracial. The mean parent income range was from $40,000 - $49,999 and one-fifth of the sample was comprised of first-generation college students as defined by parental educational attainment. One-fourth of the students in the study entered their institutions as transfer students and 13.1% of the sample was older than 24-years-old.

Key Variables

As our key independent variable, we included one exogenous variable, discrimination and bias (α=0.89). This eight-item latent construct represents forms of discrimination that often go unreported to campus authorities and serves to represent the campus climate in our study. The eight items are measured on a five-point Likert scale (1=never to 5=very often) capturing the frequency with which students witnessed discrimination, experienced discrimination in the form of verbal comments, written comments, exclusion, offensive visual images, and heard insensitive or disparaging remarks from staff, faculty, or other students.

To test how validation mediates the effect of a discriminatory climate on sense of belonging, we included two endogenous variables, academic validation in the classroom (α=0.87) and general interpersonal validation (α=0.87). Each of these outcomes is a six-item latent construct that has been previously validated by research (Hurtado, et al., 2011). The six academic validation measures are five-point items that capture students' exposure to actions that foster academic development through classroom experiences, including instructors' ability to determine level of understanding, willingness to provide feedback, and make students feel that their contributions are valued in class. The six items in the general interpersonal validation construct are four-point measures capturing the extent to which students agree that faculty and staff members at their institution promote adjustment both inside and outside of the curricular context. Sample items include the extent to which students agree that staff encourage them to get involved in campus activities and recognize their achievements.

The key dependent variable in our model is sense of belonging (α=0.89), which is a three-item latent construct that is based on Bollen and Hoyle's (1990) work on social cohesion. The construct captures the extent to which students feel that they are members of their college,

see themselves as members of the campus community, and feel a sense of belonging to their institution. See Table 1 for full list of the measures comprising each of the four constructs.

Analysis

Our analysis of the data took place in three steps. First, descriptive statistics were run in SPSS to check for normality and missing data. Cases where all of the variables of interest were missing were considered unusable and filtered out, resulting in a final sample of 20,460. Of the remaining cases, no measure had more than two percent missing data. Next, we conducted correlation analysis to use in conjunction with our theoretical framework in the case that any modifications to our hypothesized model were required. Finally, we moved our data into EQS 6.1 in order to employ structural equation modeling (SEM) for our main analysis. SEM is an appropriate form of analysis because it allows for the simultaneous estimation of hypothesized relationships among variables while taking into account measurement error, allowing us to examine both direct and indirect effects of the independent variables on multiple dependent variables.

Due to some deviation from multivariate normality in our data, particularly in the discrimination and bias measures, we opted to use the robust maximum likelihood method of estimating parameters. Robust methods take into account violations of statistical assumptions and provide more accurate inferences (Huber & Ronchetti, 1981). Maximum likelihood estimation provides multiple goodness-of-fit measures to assess the overall model. For this study, it was inappropriate to rely solely on the traditional chi-square test because it is sensitive to sample size and almost always rejects the model when there is a large sample (Bentler & Bonnet, 1980). Instead, for assessment of absolute fit we used the root mean square error of approximation (RMSEA), which is considered one of the most informative indices because it is

sensitive to the amount of estimated parameters contained in the model (Hooper, Coughlan, & Mullen, 2008). A good model should produce an RMSEA of less than 0.06 (Hu & Bentler, 1999). For relative goodness-of-fit, the comparative fit index (CFI) of 0.95 or greater is desired (Hu & Bentler, 1999).

Limitations

Several limitations should be noted when interpreting the results of this study. First, our data was only collected for each participant at a single point in time, which limits our ability to draw causal conclusions. However, the direction of our paths are all grounded in theory and past research that suggests experiences with climate proceed feelings of belonging. Second, the campus climate is operationalized simply as experiences with discrimination and bias and does not capture the behavioral, structural, and organizational dimensions (Hurtado, Milem, Clayton-Pederson, & Allen, 1998, 1999; Hurtado, et al., 2012). Finally, our model omitted variables that have been previously linked to sense of belonging, including precollege characteristics (Strayhorn, 2010; Maestas, et al, 2007; Locks, et al, 2008), and other social (Locks, et al, 2008; Johnson, et al., 2007; Nuñez, 2009) and academic (Strayhorn, 2010; Maestas, et al., 2007; Nuñez, 2009) experiences. Nonetheless, our study was intentional in testing only a particular piece of Nora's (2003) model that had not been previously tested and begins to demonstrate how a discriminatory climate, validation, and sense of belonging work in relation to one another.

<div align="center">**Results**</div>

In order to test a mediation model, significance of the direct effects from the independent variable and the mediator variables to the dependent variable must first be established (Baron & Kenny, 1986). Accordingly, the direct effects on sense of belonging were tested for significance through a two construct model with each of the other three key variables. For our key

independent variable, discrimination and bias, the two construct model produced fit values of x^2=900 df=36, p=0.000; RMSEA=0.03; NFI=.99; CFI=0.99 and a direct path of β=.10 to sense of belonging. After establishing that all three direct paths were significant (p<.01), we proceeded to test our hypothesized model by regressing sense of belonging on our other three constructs, while simultaneously regressing both of the validation measures on discrimination and bias. This resulted in a model that converged but with substandard goodness-of-fit results. In order to improve the model, the Lagrange multiplier modification indices and the results of our correlation analyses were consulted for recommendations of paths to be added to the model. Only paths between error terms that were theoretically justified were included in the final equation. The final model produced values of x^2=6823.25, df=209, p=0.000; RMSEA=0.06; NFI=.91; CFI=0.92; and it explained 37% of the variance in students' sense of belonging.

Figure 1 demonstrates the standardized coefficients for each of the direct paths in the model. Confirming our hypothesis and prior research (Locks, et al., 2008; Hurtado & Carter, 1997; Nuñez, 2009), the direct relationship between discrimination and bias to sense of belonging is negative and significant (β=-.04, p<.001). The direct paths to sense of belonging from academic validation (β=.05, p<.01) and general interpersonal validation (β=.60, p<.001) are both positive and significant, indicating that the more validation students receive both inside and outside of the classroom from faculty and staff, the greater their feelings of belonging. This important finding had only been theorized by researchers (Nora, 2003) but had not been empirically demonstrated using multi-institutional data.

Although the relationship between the two validation measures and sense of belonging is positive, the direct path is considerably stronger from general interpersonal validation. This finding is of particular importance because it allows us to create distinctions between the types of

validation and better understand what types of validating experiences most influence psychological integration. The different relationships that sense of belonging has to the two validation outcomes imply that a student' sense of belonging might have more to do with the reception of a message than with its transmission since academic validation mostly captures exposure to actions that foster academic development and general interpersonal validation captures students' perceptions of those actions. For instance, faculty providing feedback to help students assess their progress is part of the academic validation construct and can potentially be interpreted as faculty taking an interest in students' development which is part of the general interpersonal validation. The implication for institutional agents is that they need to ensure that well-meaning actions do not get misinterpreted by students.

The final direct paths in the model are from discrimination and bias to academic validation (β=-14, p<.001) and general interpersonal validation (β=-.11, p<.001), both significant and negative. That is, the higher the level of discrimination and bias witnessed by students, the less they feel validated. Though this relationship was hypothesized, it is nonetheless troubling particularly because underrepresented students tend to have more negative experiences with the climate (Hurtado, 1992; Cabrera & Nora, 1994; Rankin & Reason, 2005; Hurtado & Ruiz, 2012), meaning that they are less likely to reap the positive effects of feeling validated. At the same time, though the direct paths are significant, discrimination and bias only explains less than two percent of the variance of each of the validation constructs.

Table 2 demonstrates both the direct and indirect effects of the model. In terms of indirect effects, discrimination and bias had a significant negative (β=.07, p<.01) effect on sense of belonging through its effect on academic validation and general interpersonal validation. The majority of that effect (β=.06) is due to the strong direct effect that general interpersonal

validation has on students' sense of belonging, because it is hampered by negative experiences with the climate. In other words, the more students witness acts of discrimination or hear disparaging remarks from faculty, staff, or fellow students, the less validated they are likely to feel outside of the classroom and, consequently, the weaker their sense of belonging will be. It is important to note, however, that the direct effect of discrimination and bias on sense of belonging is lower when it is mediated by validation than it is in the two construct model without mediating variables. Though the total effect in both models is still the same, the reduction of the direct effect from β =-0.11 to β =-0.04 implies that academic validation and general interpersonal validation can be used to mitigate the direct relationship between negative experiences with the campus climate and a sense of belonging. If efforts are made by concerned institutional agents to help students feel more empowered, that sense of validation can serve as a barrier against discriminatory experiences and can help students feel that they are a part of their campus communities.

Conclusion and Implications

This study makes several important contributions to our understanding of creating inclusive communities on campus. First, it extends the generalizability of previous studies of validation by examining two new constructs empirically (academic and general interpersonal validation) across students attending broad access and selective institutions. The early work was conducted primarily on students attending community colleges, and this study extends the work to research on students attending four-year colleges. The availability of validation measures on the DLE survey enables the use of these constructs across institutions, opening a new path for researchers to examine validation experiences. The work also extends previous qualitative research on both validation and the critical role of institutional agents in adjustment and

navigation of college that have been found in single institution studies (Rendon, 1994; Museus & Neville, 2011; Stanton-Salazar, 2010). It adds to the emerging quantitative research in this area by extending the definition of validation to include not just students' perceptions of how faculty empower them, but also how other institutional agents do so. This work suggests that educators that have direct contact with students play an important role in creating students' sense of belonging on a campus. For students who do not have time for traditional college involvements or do not have as much peer contact, it is important to note that they get their cues from faculty and staff about whether the educational environment is inclusive and welcoming.

Second, we hypothesized that validation mediates the impact of discrimination and bias on students' sense of belonging. Previous research has well established the negative direct effect of a hostile racial climate on students' sense of belonging (Hurtado & Carter, 1997; Locks et al., 2008). We extend this work to show that while there are direct and indirect effects of discrimination and bias on students' sense of belonging, validating experiences help to offset these experiences: students who reported validating experiences were also less likely to report experiences of discrimination and bias, and the direct effect of discrimination and bias on sense of belonging was diminished after accounting for validating experiences. The validating experiences can reinforce self-worth and value in educational environments that may help students remain resilient despite microaggressions and assaults on their social identity. Further research is needed that addresses cultural affirmation and resilience in its relation to sense of belonging (Museus & Maramba, 2011) and ultimately student retention.

This brings us to the third contribution in that, the findings begin to disentangle the concepts of validation and sense of belonging, as two theoretically distinct internal psychological processes that are related to the contexts and contacts with others in the educational environment.

Validation is a process that involves recognition and value engendered by faculty and staff in curricula and extracurricular contexts. Sense of belonging is a feeling of attachment and place within the overall campus community. Both are critical as precursors to persistence in college. Future research should test each concept to determine if they have distinct effects on reenrollment and eventual graduation from the same institution. It may well be that sense of belonging may be more strongly tied to completion at the same college, while validation empowers students to continue their career goals but not necessarily at the same college. Now that there are several measures available, we can explore distinct effects especially with a variety of social identity groups to build inclusive learning environments and improve college degree attainments.

References

Arbona, C., & Nora, A. (2007). Predicting college attainment of Hispanic students: Individual,
institutional, and environmental factors. *The Review of Higher Education*, *30*(3), 247–270.

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

Barnett, E. (2006). *Validation experiences and persistence among urban community college
students*. Available from ProQuest Dissertations and Theses database. (UMI No. 3250210)

Barnett, E. A. (2011). Faculty validation and persistence among nontraditional community
college students. *Enrollment Management Journal*, *5*(2), 97–117.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social
psychology research: Conceptual, strategic, and statistical considerations. *Journal of
Personality and Social Psychology*, *51*, 1173-1182.

Bean, J., & Metzner, B. (1985). A conceptual model of nontraditional undergraduate student
attrition. *Review of Educational Research*, *55*, 485–650.

Bentler, P.M., & Bonnet, D.C. (1980). Significance tests and goodness of fit in the analysis of
covariance structures. *Psychological Bulletin*, *88*(3), 588-606.

Bollen, K. A., & Hoyle, R. H. (1990). Perceived cohesion: A conceptual and empirical
examination. *Social Forces*, *69*(2), 479–504.

Cabrera, A. F. & Nora, A. (1994). College students' perceptions of prejudice and discrimination
and their feelings of alienation: A construct validation approach. *Review of Education,
Pedagogy, and Cultural Studies, 16*(3-4), 387-409.

Crisp, G., & Nora, A. (2010). Hispanic student success: Factors influencing the persistence and
transfer decisions of Latino community college students enrolled in developmental

education. *Research in Higher Education, 51*(2), 175-194

Guillermo-Wann, C. (2012). How you count matters: Using multiracial student data to examine

discrimination and bias in college. *Manuscript submitted for publication.*

Hausmann, L. R., Schofield, J. W., & Woods, R. L. (2007). Sense of belonging as a predictor of

intention to persist among African American and White first-year college students.

Research in Higher Education, 48(7), 803-839.

Hoffman, M., Richmond, J., Morrow, J., & Salomone, K. (2002-2003). Investigating sense of

belonging in first-year college students. *Journal of College Student Retention: Research,*

Theory & Practice, 4(3), 227-256.

Hooper, D., Coughlan, J., & Mullen, M.R. (2008). Structural equation modeling: Guidelines for

determining model fit. *Electronic Journal of Business Research Methods*, *6*(1), 53-60.

Hossler, D., Shapiro, D., Dundar, A., Ziskin, M., Chen, J., Zerquera, D., & Torres, V. (2012).

Transfer and mobility: A national view of pre-degree student movement in postsecondary

institutions. Herndon, VA: National Student Clearinghouse Research Center.

Huber, P.J., & Ronchetti, E.M. (1981) *Robust statistics*. New York: Wiley.

Hurtado, S. (1992). The campus racial climate: Contexts of conflict. *Journal of Higher*

Education, *63*(5), 539-569.

Hurtado, S., Alvarez, C. L., Guillermo-Wann, C, Cuellar, M., & Arellano, L. (2012). A model

for diverse learning environments: The scholarship on creating and assessing conditions for

student success. In J.C. Smart, & M.B. Paulsen (Eds.) *Higher Education: Handbook of*

Theory and Research, 27. New York: Springer.

Hurtado, Arellano, Cuellar, & Guillermo-Wann, (2011). Diverse Learning Environments survey

    instrument: Introduction and select factors. Presentation at the HERI Diversity Research

    Institute, Los Angeles, CA.

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of campus

    climate on Latino college students' sense of belonging. *Sociology of Education, 70*, 324-

    245.

Hurtado, S., Cuellar, M., & Guillermo-Wann, C. (2011). Quantitative measures of students'

    sense of validation: Advancing the study of diverse learning environments. *Enrollment*

    Management Journal, *5*(2), 53–71.

Hurtado, S., Cuellar, M., Guillermo-Wann, C., & Velasco, P. (2010, May). *Empirically defining*

    validation, sense of belonging, and navigational actions for students in diverse institutions:

    The Diverse Learning Environments survey. Presentation at the 50th annual forum for the

    Association for Institutional Research, Chicago, IL.

Hurtado, S., Milem, J. F., Clayton-Pedersen, A., & Allen, W. (1998). Enhancing campus

    climates for racial/ethnic diversity: Educational policy and practice. *Review of Higher*

    Education, *21*(3), 279–302.

Hurtado, S., Milem, J. F., Clayton-Pederson, A., & Allen, W. A. (1999). *Enacting diverse*

    learning environments: Improving the campus climate for racial/ethnic diversity in higher

    education. ASHE-ERIC Series. San Francisco: Jossey-Bass.

Hurtado, S., & Ruiz, A. (2012). *The climate for underrepresented groups and diversity on*

    campus. Los Angeles, CA: Higher Education Research Institute.

Hu, L.T., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis:

    Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55.

Inkelas, K. K., Zaneeta, E. D., Vogt, K. E., & Leonard, J. B. (2007). Living-learning programs and first-generation college students' academic and social transition to college. *Research in Higher Education, 48*(4), 403-434.

Johnson, D. R., Soldner, M., Leonard, J. B., & Alvarez, P. (2007). Examining sense of belonging among first-year undergraduates from different racial/ethnic groups. *Journal of College Student Development, 48*(5), 525-542.

Langhout, R. D., Rosselli, F., & Feinstein, J. (2007). Assessing classism in academic settings. *Review of Higher Education, 30*(2), 145-184.

Lee, R. M., & Davis, C., III. (2000). Cultural orientation, past multicultural experience and a sense of belonging on campus for Asian American college students. *Journal of College Student Development, 41*, 110-115.

Locks, A. M., Hurtado, S., Bowman, N. A., & Oseguera, L. (2008). Extending notions of campus climate and diversity to students' transition to college. *Review of Higher Education, 31*(3), 257-285.

Maestas, R., Vaquera, G. S., & Zehr, L. M. (2007). Factors impacting sense of belonging at a Hispanic- serving institution. *Journal of Hispanic Higher Education, 6*(3), 237-256.

McCormick, A. C. (2003). Swirling and double-dipping: New patterns of student attendance and their implications for higher education. *New Directions for Higher Education, 121,* 13-24.

Museus, S.D., & Maramba, D.C. (2011). The impact of culture on Filipino American students' sense of belonging. *Review of Higher Education*, *34*(2), 231-258.

Museus, S. D., Neville, K. (2012). The role of institutional agents and social capital in the experiences of minority college students. *Journal of College Student Development, 53*(3), 436-452.

Museus, S. D., Nichols, A. H., & Lambert, A. D. (2008). Racial differences in the effects of campus racial climate on degree completion: A structural equation model. *Review of Higher Education, 32*(1), 107-134.

Nora, A. (2003). Access to higher education for Hispanic students: Real or illusory? In J. Castellanos & L. Jones (Eds.), *The majority in the minority: Expanding the representation of Latina/o faculty, administrators, and students in higher education* (pp. 47–68). Sterling: Stylus.

Nora, A., Barlow, E., & Crisp, G. (2005). Student persistence and degree attainment beyond the first year in college. In A. Seidman (Ed.), *College retention: Formula for student success* (pp. 129-153). Westport, CT: ACE/Praeger.

Nora, A., Urick, A., & Quijada Cerecer, P.D. (2011). Validating students: A conceptualization and overview of its impact on student experiences and outcomes. *Enrollment Management Journal*, *5*(2), 53–71.

Nunez, A. (2009). Latino students' transitions to college: A social and intercultural capital perspective. *Harvard Educational Review, 79*(1), 22-48.

Ostrove, J. M., & Long, S. M. (2007). Social class and belonging: Implications for college adjustment. *Review of Higher Education, 30*(4), 363-389.

Rankin, S. & Reason, R. (2005). Differing perceptions: How students of color and White students perceive campus climate for underrepresented groups. *Journal of College Student Development, 46*(1), 43-61.

Rendón, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education, 27*(4), 235-252.

Rendón, L. I. (2002). Community college Puente: A validating model of education. *Journal of Educational Policy*, *16*(4), 642-667.

Rhee, B. (2008). Institutional climate and student departure: A multinomial multilevel modeling approach. *The Review of Higher Education, 31*(2), 161-183.

Stanton-Salazar, R. D. (2010). A social capital framework for the study of institutional agents and their role in the empowerment of low-status students and youth. *Youth & Society*, 10(5), 1–44.

Strayhorn, T. (2012). *College students' sense of belonging: A key to educational success for all students*. New York: Routledge.

Strayhorn, T. L., (2008). Sentido de pertenencia: A hierarchical analysis predicting sense of belonging among Latino college students. *Journal of Hispanic Higher Education, 7*, 301-320.

Strayhorn, T.L. (2010). When race and gender collide: Social and cultural capitals' influence on the academic achievement of African American and Latino males. *The Review of Higher Education*, *33*(3), 307-332.

Terenzini, P.T., Rendón, L.I., Upcraft, M.L., Millar, S.B., Allison, K.W., Gregg, P.L., Jalomo, R. (1994). The transition to college: Diverse students, diverse stories. *Research in Higher Education, 3*5(1), 57-73.

Tierney, W.G. (1992). An anthropological analysis of student participation in college. *Journal of Higher Education*, *63*(6), 603-617.

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.

Velasquez, P. (1999, November). *The relationship between cultural development, sense of*

belonging, and persistence among Chicanos in higher education: An exploratory study. Paper presented at the annual meeting of the Association for the Study of Higher Education (ASHE), San Antonio, TX.

Table 1. Measures Comprising Key Variables in Model

| Variable	Items and Scale
Independent Discrimination and Bias (α=0.89)	Scale: 1=never; 2=seldom; 3=sometimes; 4=often; 5=very often Items: (a) Experienced discrimination type: verbal comments; (b) Experienced discrimination type: written comments; (c) Experienced discrimination type: offensive visual images; (d) Heard insensitive or disparaging remarks from: faculty; (e) Witnessed discrimination; (f) Heard insensitive or disparaging remarks from: staff; (g) Experienced discrimination type: exclusion; (h) Heard insensitive or disparaging remarks from: students
Mediating Academic Validation in the Classroom (α=0.87)	Scale: 1=never; 2=seldom; 3=sometimes; 4=often; 5=very often Items: (a) Instructors were able to determine my level of understanding; (b) Instructors provided me with feedback that helped me judge my progress; (c) I feel like my contributions were valued in class; (d) Instructors encouraged me to meet with them after or outside of class; (e) Instructors encouraged me to ask questions and participate in discussions; (f) Instructors showed concern about my progress
General Interpersonal Validation (α=0.87)	Scale: 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree Items: (a) Faculty empower me to learn here; (b) At least one staff member has taken an interest in my development; (c) Faculty believe in my potential to succeed academically; (d) Staff encourage me to get involved in campus activities; (e) Staff recognize my achievements; (f) At least one faculty member has taken an interest in my development
Dependent Sense of Belonging (α=0.89)	Scale: 1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree Items: (a) I see myself as part of the campus community; (b) I feel I am a member of this college; (c) I feel a sense of belonging to this campus

Table 2. Structural Model: Direct Effects, Indirect Effects, and Correlations

Path	Standardized Coefficient
Direct effect on academic validation	
Discrimination and bias	-0.135**
Direct effect on general interpersonal validation	
Discrimination and bias	-0.105**
Direct effect on sense of belonging	
Discrimination and bias	-0.036**
Academic validation	0.052**
General interpersonal validation	0.600*
Indirect effect on sense of belonging	
Discrimination and bias	0.070**
Correlations among error terms	
Discrimination and bias (a), (h)	0.101**
Discrimination and bias (b), (c)	0.102**
Discrimination and bias (d), (f)	0.238**
Discrimination and bias (e), (h)	0.213**
Academic validation (a), (b)	0.076**
Academic validation (d), (e)	0.069**
Academic validation (d), (f)	0.189**
Academic validation (c), (e)	0.052**
General interpersonal validation (b), (f)	0.149**
General interpersonal validation (a), (c)	0.029**
General interpersonal validation (d), (e)	0.007**

**p<.01, *p<.05
***letters in parentheses refer to items listed in Table 1

Figure 1. Model showing relationship between climate, validation, and sense of belonging
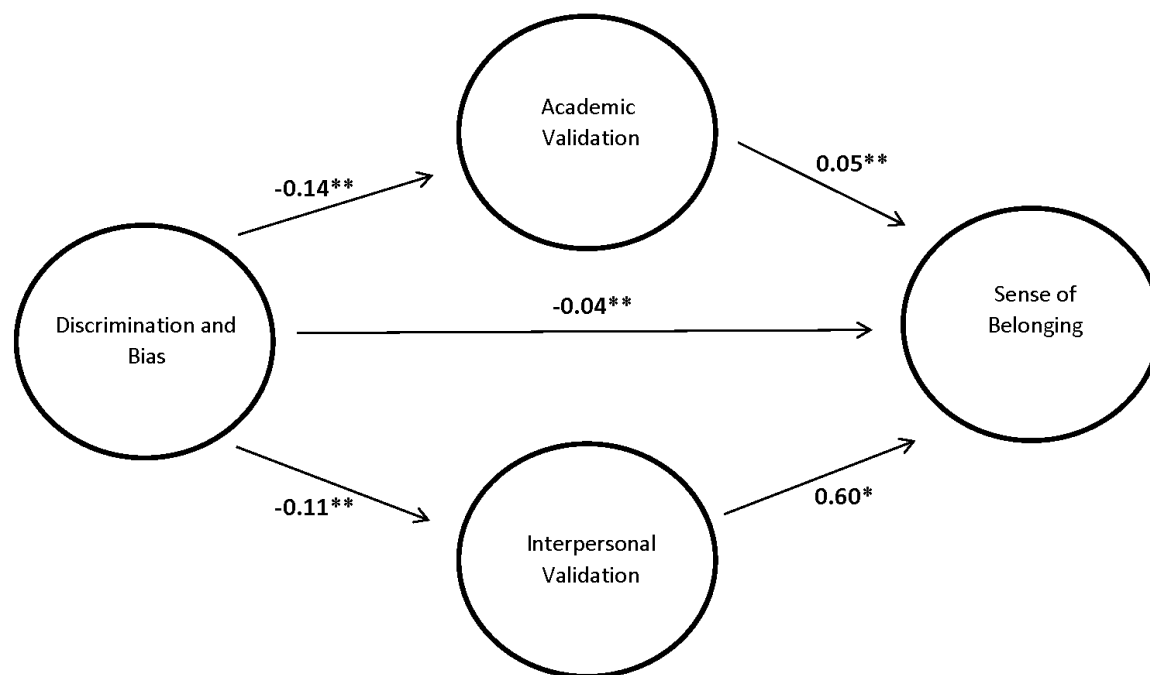
Appendix A. Measurement Model

Manifest Variable	Standardized Coefficient
Discrimination and Bias (α=0.89)	
Experienced discrimination type: verbal comments	0.811**
Experienced discrimination type: written comments	0.738**
Experienced discrimination type: offensive visual images	0.731*
Experienced discrimination type: exclusion	0.725**
Witnessed discrimination	0.709**
Heard insensitive or disparaging remarks from: faculty	0.664*
Heard insensitive or disparaging remarks from: staff	0.659*
Heard insensitive or disparaging remarks from: students	0.613**
Academic Validation in the Classroom (α=0.87)	
I feel like my contributions were valued in class	0.845*
Instructors provided me with feedback that helped me judge my Instructors	0.840**
were able to determine my level of understanding progress	0.773**
Instructors encouraged me to ask questions and participate in discussions	0.765*
Instructors showed concern about my progress	0.521**
Instructors encouraged me to meet with them after or outside of class	0.471**
General Interpersonal Validation (α=0.87)	
Faculty believe in my potential to succeed academically	0.799**
At least one faculty member has taken an interest in my development	0.762**
At least one staff member has taken an interest in my development	0.755**
Staff recognize my achievements	0.752**
Faculty empower me to learn here	0.623*
Staff encourage me to get involved in campus activities	0.577*
Sense of Belonging (α=0.89)	
I see myself as part of the campus community	0.854**
I feel I am a member of this college	0.860**
I feel a sense of belonging to this campus	0.821**