Quantitative Measures of Students' Sense of Validation: Advancing the Study of Diverse Learning Environments

Sylvia Hurtado
University of California, Los Angeles

Marcela Cuellar
University of California, Los Angeles

Chelsea Guillermo-Wann
University of California, Los Angeles

Abstract
The study of students' sense of validation holds promise for understanding college student retention and success, but more research is needed regarding the generalizability and use of the concept. The development of quantitative measures can help facilitate use across student populations in multiple types of institutions of higher education. The present study empirically examines two validation constructs, student perceptions of academic validation in the classroom and general interpersonal validation, in a new nationally available instrument, the Diverse Learning Environments (DLE) survey. Construct validity and cross-validation tests indicate that survey items tap into these latent factors for students of color and White students, and that students of color perceive lower levels of both forms of validation compared to White students. These factors and survey items may be used in future research to examine the relationship between validation, student experiences, and educational outcomes.

Introduction

President Obama has recently emphasized the importance of attaining a college degree, stating that by 2020, this nation will once again have the highest proportion of college graduates in the world (White House Office of the Press Secretary, 2009). Advancing the success of diverse college students has seen renewed interest among various states whose sagging economies have become

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more dependent on a college-educated workforce. For example, studies in California have noted that increases in the number of college graduates will result in increases in state revenues (Brady, Hout, & Stiles, 2005). At the same time, two- and four-year institutions that are broadly accessible have highly mobile student populations. Many students leave without degrees in hand, and national studies show that approximately half of all undergraduates attend more than one postsecondary institution (McCormick, 2003; Peter & Cataldi, 2005). This new national goal, coupled with renewed state interest and institutional focus on improving student success rates, suggests a reexamination of practice and research focused on encouraging retention and degree completion. Such approaches must be directed not only toward students from underrepresented communities entering college for the first time, but also toward students reentering higher education for advancement in the workforce.

While student engagement and involvement has been linked with retention (Astin, 1993; Pascarella & Terenzini, 2005; Tinto, 1987), monitoring actual engagement in specific academic and social activities is not enough, because students attending broad-access institutions may be constrained by work and family commitments. It is important to understand how students' internal sense of validation indicates whether the educational environment is inclusive and whether staff and faculty proactively empower students for success. The first step, however, is to utilize an emergent theme of validation developed from qualitative studies to create measures that may be useful for both researchers and educators wishing to improve the probability of student reenrollment and degree attainment. In obtaining new measures of validation, our goal is to encourage more use of the concept to understand its utility in meeting new national, state, and institutional goals. Student articulation and reports of validation in college have received limited research attention, and only one recorded study to date has attempted to measure and quantify the concept (Barnett, 2006). In quantifying measures, we hope to attain some level of generalizability of the concept across diverse students in different college environments. More importantly, our goal is to enable educators to improve their capacity for timely assessment of student experiences in order to study their effect on reenrollment and student success. Accordingly, the purpose of this study is to empirically examine the concept of student validation through the Diverse Learning Environments (DLE) survey, a new national instrument available through the Cooperative Institutional Research Program (CIRP).

Key Studies and Related Concepts

The importance of validating experiences in the postsecondary success of historically underrepresented students first emerged in the Transition to College Project (Terenzini et al., 1994). Subsequently, Rendón (1994) fully articulated the concept of validation in a key article examining how historically underrepresented students are empowered to become successful college students. Rendón (1994) defines validation as "an enabling, confirming, and supportive process initiated by in- and out-of-class agents that foster academic and interpersonal development" (p. 44). Validation is comprised of several elements that can occur across multiple contexts within an institution. Specifically, validation occurs when an individual within an institution takes an active interest in students and takes the initiative to reach out to them. Students feel capable of learning and valued at their institution when validation occurs as a result of recognition by faculty and staff or institutional agents who are actively inclusive. As such, validation serves as a prerequisite for development and involvement for many students who are learning to navigate postsecondary environments, and remains part of the developmental process throughout a college student's experience.

Rendón (1994) further describes two types of validation, academic and interpersonal, both of which can occur inside and outside of the classroom. Actions initiated by individuals within a student's life are an essential component of both types of validation. Academic validation represents actions that foster academic development. Several faculty actions within a classroom characterize academic validation. For example, faculty who show genuine concern for students, create learning opportunities that empower students, extend opportunities to work individually with students, and provide meaningful feedback are all elements of in-class academic validation. Validation also exists beyond academic development. Interpersonal validation represents actions that promote the personal and social adjustment both within the curricular and cocurricular contexts of an institution. Collectively, academic and interpersonal validation are components of a holistic student development model.

Although the body of empirical literature on the effects of validation on educational outcomes is limited, research indicates that validation positively impacts the postsecondary success of historically underrepresented racial/ethnic groups and community college students (Barnett, 2006; Rendón, 2002).

Rendón (2002) found several examples of academic and interpersonal validation within Puente, a highly successful community college academic support program in California. Faculty, mentors, and counselors actively reached out to Puente students and incorporated pedagogical practices that valued the personal experiences of students. Through their affirming interactions with these institutional agents, Latina/o community college students in a Puente English class gained confidence in their academic skills, enabling them to gain confidence in other classes. Validation is important in the persistence of community college students (Barnett, 2006; Rendón 1994, 2002). Higher levels of validation are positively related to students' intent to persist and their sense of integration. Barnett (2006) found four distinct constructs that she identified as faculty validation for community college students. Each of these constructs had modest to significant relationships to students' intentions to persist and sense of integration. Given that the majority of community college students commute to campus, classroom interactions are of particular interest for their academic and social integration.

Most research on validation utilizes qualitative methods to capture the processes through which this core concept influences student experiences and outcomes. However, new conceptual models for guiding analyses of student persistence and degree attainment (Holmes et al., 2002; Nora, Barlow, & Crisp, 2005) include validating academic and social experiences as key predictors. Previous research is also limited on the influence of validation among students from different racial/ethnic backgrounds attending a wide variety of institutions. The influence of validation on the postsecondary success of students attending four-year institutions, especially those with many mobile students, has not been explored. Furthermore, a major limitation of this research is that it has been conducted in community college English classes, which raises questions regarding the generalizability of the concept across institutional contexts and students enrolled in coursework throughout an institution. Using common quantitative measures of validation allows for examining the phenomenon across students in many disciplines and institutional types. Barnett's (2006) study provides a valuable example of the utility of quantitative measures in extending the qualitative research on validation and key student outcomes. However, the findings from this work are limited for several reasons. The validation constructs are representative of students at one community college, so research with samples of

students from other types of institutions is necessary. Although faculty validation is extremely important, especially for students whose engagement primarily occurs within the classroom, Barnett's (2006) measures only represent validation by faculty and do not examine the process with other actors in the institution. The literature consistently indicates the importance of faculty in the academic success of students (Pascarella & Terenzini, 2005); nonetheless, it is important to take into account how other institutional agents also play an important role in enhancing students' sense of validation. Students frequently interact with staff across various campus departments and offices, and in some instances, with administrators. All of these individuals have the potential to engage in student-centered practices. We aim to develop quantitative measures of validation that assess the levels of academic validation that students experience within the classroom as well as a more general measure of interpersonal validation that results from contact with both staff and faculty.

Methodology

Data Source and Sample

The data source for this study was derived from the pilot administration of the Diverse Learning Environments (DLE) survey conducted by the Higher Education Research Institute (HERI) at the University of California, Los Angeles (UCLA). The DLE contains a number of new constructs, including the validation measures examined in this study. Data were collected between December 2009 and May 2010 at three community colleges, six public four-year institutions, and five private four-year institutions across the United States. Broad-access institutions and structurally diverse selective universities were included to expand the scope of institutions and students featured in higher education research. The DLE administration targeted students with substantial familiarity with their respective campuses in order to capture their perceptions of the climate for diversity. Accordingly, institutions were instructed to assess students who had earned 24 units or more at the community college and students in the second and third years at four-year institutions, including transfer students; some four-year institutions surveyed students in their first and fourth or more years as well. The DLE was administered online, resulting in a 34% average response rate based on students who accessed the survey from notification emails.

The sample is inclusive of students beyond the historically "traditional" college-going population. The final sample size was 4,472 after removing unusable cases, and was composed of 466 freshmen, 1,564 sophomores, 1,413 juniors, and 1,029 seniors based on self-reported class standing. The composition of the final sample was 0.7% Arab American/Arab (n = 31), 14.2% Asian American/Asian (n = 636), 4.4% Black (n = 197), 18.1% Latina/o (n = 809), 0.8% Native American/American Indian/Alaska Native (n = 34), 0.2% Native Hawaiian/Pacific Islander (n = 8), 42.4% White/Caucasian (n = 1,898), and 19.2% students who indicated two or more monoracial/monoethnic backgrounds (n = 859). Accordingly, the aggregated group of students of color comprised 57.6% of the final sample (n = 2,574). The mean income range was $40,000–$49,999, but was lower for students of color and higher for White students. The mean age was 24.8 years with minimal difference between groups, and includes students through age seventy-nine. Almost two-thirds were first-generation college students when defined by parental educational attainment, and about 40% did not enter their current institution as first-time, full-time freshman. In sum, the sample captures diverse students as intended.

Measures

This study draws upon the existing research and tests quantitative measures for two hypothesized latent factors, academic validation in the classroom and general interpersonal validation. Central to these two concepts are educators' actions that express interest in students' academic development and success and that facilitate students' incorporation into the campus (Rendón, 1994). However, latent factors, such as validation, cannot be directly measured (Bollen, 1989); accordingly, we developed a variety of measures hypothesized to capture dimensions of a students' sense of validation based on the literature. All measures are student self-reports, which have been shown to be accurate measures and are widely used in educational research (Gurin, Dey, Hurtado, & Gurin, 2002; Pascarella & Terenzini, 2005). See Table 1 for a complete description of the survey items and results of the study.

Data Analysis

We followed Byrne's (2008) sequence for construct validation to examine if the DLE items accurately measure validation for both students of color and White undergraduates. We created these two groups for analysis because the concept of validation has been built upon the experiences of students of color (Rendón,

1994; Terenzini et al., 1994), and a synthesis of studies on racial climate indicate differential perceptions based on racial/ethnic group (Harper & Hurtado, 2007). First, descriptive statistics including means, standard deviations, skewness, and kurtosis were examined for normality in distribution. Pearson correlations were then examined for strong relationships between the variables hypothesized to measure the two distinct latent factors (Harman, 1976).

Second, confirmatory factor analysis (CFA) was conducted in EQS software separately for students of color and White students. Factor analysis in general explains the correlations or covariances between observed variables and unobserved latent factors (Bollen, 1989). In conducting CFA, we specified a model with latent factors hypothesized to fit the data and then used the technique to confirm the model; therefore the technique required some a priori knowledge about the data structure and is appropriate for measures developed from a strong theoretical foundation (Bollen, 1989; Bryne, 2008). Several model fit indices together indicated whether or not the data fit the hypothesized factor structure and measurement, with cutoffs for the comparative fit index (CFI) close to .95, root mean square error of approximation (RMSEA) close to .06 (Hu & Bentler, 1999), and the normed fit index (NFI) close to .95 (Bentler & Bonnett, 1980; Hu & Bentler, 1999). To test the hypothesized model, the covariance matrix for each group was analyzed using robust maximum likelihood (ML) estimation, which corrected for nonnormality in the data (Yuan & Bentler, 2007). The hypothesized models were adjusted based on model fit and statistical modification indices coupled with theoretical justification. Following these steps, CFA was run in each separate group first to test the factor structure of each of the validation factors independently, and then a two-factor higher order construct model was run in which the factors covaried, again for each group to establish baseline models.

Once baseline models for each group were confirmed, equality constraints were tested simultaneously using EQS across the two groups. Invariance across groups is important because it confirms that survey items are accurate measures in subgroups of a sample or population (Jöreskog, 1971; Brown, 2006). In this process, factor reliability and loadings are calculated for each group, whereas fit indices are calculated only for the overall model across both groups. The first step was to test for configural invariance to examine the basic factor structure. Next, measurement invariance in the two-group CFA examined the equality of factor loadings and measurement error variances and covariances. Partial

measurement invariance was tested when full invariance was not confirmed across groups by releasing constraints between errors and between factors and variables (Byrne, 2008). In each of these substeps, fit indices and statistical modification indices guided theoretically sound model modification. The final model for partial measurement invariance was confirmed by calculating the change in the Satorra-Bentler Chi-Square for robust ML (Satorra & Bentler, 2001) between the previous and final models and confirming the change was not significant (see also Byrne, 2008). Finally, mean scores for the two groups were tested to determine if students of color and White students perceived different levels of academic or general interpersonal validation.

Limitations

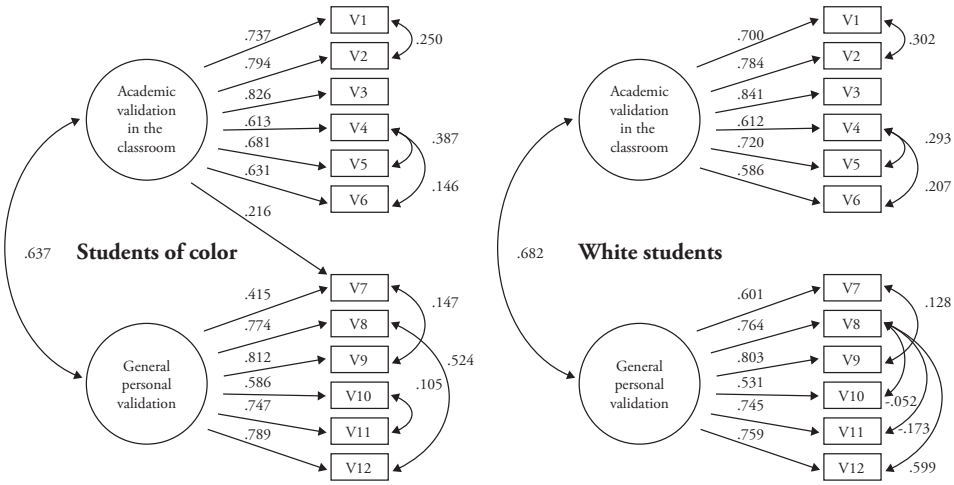
Limitations of this study include aspects of the analysis and instrument. Perhaps most prominent is that the present study does not disaggregate students of color into their respective racial and ethnic groups for the group comparisons. However, this was justified in order to retain the most underrepresented students in the analysis (e.g. Arab, Black, and American Indian). Second, the DLE items do not disaggregate validation measures for staff and faculty; compromises were made due to space constraints and aims to create the most parsimonious factors on a national instrument. Finally, while survey research enables measurement of student perceptions across many institutions, it does not allow observation of the process. Despite these limitations, this research contributes to the growing body of literature on students' sense of validation and is a strong foundation for advancing assessment of the concept on a national level.

Results

Two-Factor Baseline Models for Students of Color and White Students

Results for the development of two-factor hierarchical baseline models are presented separately for each sample group along with standardized coefficients in Figure 1. The circles represent each of the two separate latent factors, and the squares denote the observable variables (survey measures). The unidirectional arrows point from the factors to variables, illustrating that the underlying latent factors generate the measurable traits. The bidirectional arrow between the latent factors shows a hypothesized correlation between the two validation latent constructs. In addition, Table 1 displays the unstandardized parameter estimates and unique variances for the baseline models for students of color and White students.

FIGURE 1 | Standardized Estimates of Two-Factor Baseline Models for Students of Color and White Students



Students of Color

The initial model for academic validation in the classroom did not include correlated error terms, and fit indices showed the model fit could be improved (Satorra-Bentler [S-B] χ^2 = 396.2975; df = 9, p < .001; CFI = .926; NFI = .925; RMSEA = .129). The LaGrange Multiplier (LM) univariate tests were examined to include theoretically sound paths that could improve the model fit. With the two additional paths, the final model for academic validation in the classroom provided a strong representation of this latent factor (S-B χ^2 = 27.2000; df = 6, p < .001; CFI = .990; NFI = .995; RMSEA = .037) with a high reliability (α = .866). Similarly, the first model for general interpersonal validation did not include correlated error terms and robust goodness-of-fit results were not adequate (S-B χ^2 = 353.3576; df = 9, p < .001; CFI = .933; NFI = .931; RMSEA = .122). Three paths between significant error terms were subsequently added based on these tests. The final model for general interpersonal validation for students of color was strong (S-B χ^2 = 58.0873; df = 6, p < .001; CFI = .990; NFI = .989; RMSEA = .058) and had high reliability (α = .868).

Building on the independent results of each factor model, the initial two-factor model for students of color in which the factors covary fit the data (S-B χ^2 = 321.9652; df = 47, p < .001; CFI = .977; NFI = .973; RMSEA = .048). However, LM univariate tests were examined to potentially improve the model, given that two standardized residuals exceeded the .10 threshold. Interestingly, the LM univariate tests indicated a cross-loading relationship between the faculty empowerment item (V7) in the general interpersonal validation factor and the academic validation in the classroom factor. The path between this item and the academic validation factor was included in the next model given the theoretical justification of this relationship. The robust goodness-of-fit indices indicated a strong fit for the final baseline two-factor model with the cross-loading relationship (S-B χ^2 = 269.4386; df = 46, p < .001; CFI = .981; NFI = .978; RMSEA = .044), with the correlation between the factors at .637. These findings indicate that the hypothesized validation factors fit the data for students of color with the addition of the cross-loading variable.

TABLE 1 | Unstandardized Parameter Estimates in Baseline Models for Students of Color and White Students

	Students of color		White students	
Latent factor/Items and variable label	b	Error variance	b	Error variance
F1: ***Academic validation in the classroom*** [a]				
V1: Instructors were able to determine my level of understanding of the course material	1.000	.675	1.000	.715
V2: Instructors provided me with feedback that helped me judge my progress	2.306	.607	1.174	.620
V3: I feel like my contributions were valued in class	2.014	.564	1.326	.541
V4: Instructors encouraged me to meet with them after or outside of class	1.768	.790	1.127	.791
V5: Instructors encouraged me to ask questions and participate in discussions	2.045	.732	1.079	.694
V6: Instructors showed concern about my progress	2.291	.776	1.227	.810
V7: Faculty empower me to learn here	.216	.817	--	--
F2: ***General interpersonal validation*** [b]				
V7: Faculty empower me to learn here	1.000	.817	1.000	.799
V8: At least one staff member has taken an interest in my development	1.111	.633	1.616	.645
V9: Faculty believe in my potential to succeed academically	1.169	.583	1.375	.596
V10: Staff encourage me to get involved in campus activities	1.051	.811	1.159	.848
V11: Staff recognize my achievements	.981	.665	1.441	.667
V12: At least one faculty member has taken an interest in my development	1.147	.614	1.540	.651

[a] Five-point scale: From very often = 5 to never = 1
[b] Four-point scale: From strongly agree = 4 to strongly disagree = 1

White Students

The initial model for White students' academic validation in the classroom indicated that it could be improved (S-B χ^2 = 255.2941; df = 9; p < .001; CFI = .933, NFI = .931, RMSEA = .120). Modification tests indicated three paths between theoretically justified error terms that were added in three stages to derive a stronger final model (S-B χ^2 = 6.442; df = 6; p > .376; CFI = 1.000, NFI = .998,

RMSEA = .006); the reliability was also high (α = .858). Similarly, for general interpersonal validation, the initial model was not a good fit without correlated error terms (S-B χ^2 = 325.886; df = 9; p < .001; CFI = .912; NFI = .910; RMSEA = .136). Four paths between theoretically justified error terms were individually added and significantly improved the model fit. The final general interpersonal validation model for White students provides a strong representation of the relationship between items and this latent factor (S-B χ^2 = 42.083; df = 5; p < .001; CFI = .990, NFI = .988, RMSEA = .063), which also has high reliability (α = .854). Again, building on the independent results of each factor model, the initial two-factor model for White students had correlation between the factors at .682, and provided a strong representation of the latent validation factors (S-B χ^2 = 236.131; df = 46; p < .001; CFI = .977, NFI = .972, RMSEA = .047). This means that the data for White students strongly matches the conceptualized relationship between the items and the factor onto which they load.

These baseline measures for students of color and White students demonstrate successful development of quantitative indicators that empirically represent Rendón's (1994) conceptualization of validation, which can be used to assess how much validation students feel they receive at an institution. Confirmatory factor analyses reveal that the DLE items statistically represent latent factors of academic validation in the classroom and general interpersonal validation. The action-oriented nature of the items captures the central premise of validation, which is that institutional agents can engage in student-centered behaviors that enhance a sense of validation among students. The six items relating to how much students perceive that instructors actively reach out, engage them within the classroom, and recognize students' progress parsimoniously assess academic validation in the classroom. Similarly, general interpersonal validation can be measured by a six-item set related to their perceptions of how faculty and staff have reached out to them and expressed interest in their development. Furthermore, perceptions of general interpersonal validation and academic validation in the classroom are highly interrelated. Students who report high levels of validation in the classroom are also likely to report high levels of general interpersonal validation. It is important to note we have identified that students' sense of validation is a function of their experiences with faculty and staff, which can be used to assess many activities and interactions on campus, including mentoring, participation in academic support programs, and pedagogies of inclusion in diverse learning environments.

Test of Invariance of the Configural Model Across Groups

The separate two-factor models for students of color and White students served as the baseline models from which to test for invariance across groups. The separate analyses for students of color and White students indicate that the items for both interpersonal and academic validation in the classroom strongly represent these constructs. The next stage of analysis examined if the common factor structures across both groups were equivalent in the two-factor models. A test of invariance of this configural model for both groups provided evidence to the equivalence of the factor structures, and the first model required no modification (S-B χ^2 = 502.6991; df = 92, p < .001; CFI = .980; NFI = .975; RMSEA = .045). These results indicate that the common items equivalently comprise both factors for both samples of students. Table 2 summarizes the fit indices for tests of invariance of the configural measurement models across groups following the procedural steps articulated in Byrne (2008).

TABLE 2 | Tests for Invariance of Factorial Structure and Item Measurements Across Groups

Model tested	CFI	NFI	RMSEA	S-B χ^2	*df*	$\Delta\chi^2$	Δdf
Model 1 (configural)	.980	.975	.045	502.70	92	--	--
Model 2 (measurement) Invariance of factor loadings, measurement error variances-covariances					.607	1.174	.620
Model 3 (partial measurement) Invariance of factor covariances and release of error variances-covariances of V3, F1; V11, F2; E4,E5	.978	.972	.044	557.83	107	55.13	15

Test of Invariance of the Measurement Model Across Groups

Next, tests of the measurement model, which first examine the equality of factor loadings and error variances-covariances, indicate a good model fit (S-B χ^2 = 557.8289; df = 107, p < .001; CFI = .978; NFI = .972; RMSEA = .044). However, incremental univariate χ^2 values in the LM tests show that three paths in the model were significantly different (p < .05) between both samples. Two of the differences involved factor loadings V11 ("Staff recognize my achievements") and V3 ("I feel like my contributions were valued in class") and an error covariance between E4 and E5, whose items relate to the amount of encouragement that instructors provide for asking questions or meeting outside of class. Provided

these differences in the model, a partial measurement invariance test was run to examine the equivalence of covariance between both validation factors for both groups after removing the statistically significant paths (Byrne, 2008). The results represent a strong model fit (S-B χ^2 = 536.6950; df = 105, $p < .001$; CFI = .979; NFI = .973; RMSEA = .043). The change in the Satorra-Bentler Chi-Square from this model to the original one was not significant, which confirmed further modification was unnecessary. Beyond the differences identified on two factor loadings and one covariance among error terms, the two-factor model of students' sense of validation are equivalent across both groups. The cross validation results of the configural model across both groups confirm that the same sets of items measure these types of validation for students of color and White students. As such, these items collectively measure the level of validation that students feel they are receiving at the institution.

Wilcoxon-Mann-Whitney Test for Difference in Means

We performed a Wilcoxon-Mann-Whitney test, which is akin to a t-test, but is specific for noninterval variables that are not normally distributed (DePuy, Berger, & Zhou, 2005). We created rescaled factors, with a range of 0 to 100 and mean of 50, which were weighted based on factor loadings produced in the confirmatory factor analysis. Test results indicated that White students' mean score for academic validation in the classroom was significantly higher than that for students of color ($z = -3.80$, $p < .001$). Similarly, results for general interpersonal validation was also significantly higher for White students than students of color ($z = -1.97$, $p < .05$). Interestingly, differences in mean scores were more significant for academic validation in the classroom. These findings suggest that White students and students of color experience different levels of validation, with students of color generally reporting lower levels of academic validation in the classroom and general interpersonal validation.

Discussion and Implications

Validation has emerged as an important concept for the academic success of underrepresented groups in higher education. This study establishes new measures and shows that a sense of validation can be assessed across two-year, public and private, selective, and broad-access four-year institutions, and also among White students. Although the validation measures have construct

validity across both students of color and White students, it remains important to understand differences in validation that might exist between groups.

Overall, the cross-validation tests show that the DLE survey items represent two validation constructs that are part of a higher order factor model across both groups. However, notable differences exist between the groups. For example, for students of color, the item related to feeling empowered by faculty to learn is directly related to the academic validation they report in the classroom as well as their general interpersonal sense of validation. Although the interrelatedness of this item and both factors are theoretically grounded, this relationship for White students is not observed. In addition, differences in mean scores indicate that students of color report lower levels of validation than White students, with a more stark difference in academic validation in the classroom. These results suggest that students of color and White students experience validation differently at their institutions, which is consistent with previous research on classroom experiences for underrepresented students. For example, Cabrera and Nora (1994) found that African Americans, Latinos, and Asian Americans were more likely than White students to feel isolated from class discussion and singled out in class. These negative classroom experiences significantly affected the alienation that students generally felt at their institutions. Furthermore, prejudiced faculty and staff indirectly influenced the alienation students felt, given the strong correlation of these individuals with negative classroom experiences in their study. Thus, classroom experiences strongly influence underrepresented students' general perceptions of the institution. The strong relationship between validating classroom experiences and students feeling generally empowered by faculty at the institution therefore makes sense for students of color. Invariance tests also showed differences across groups in how items measuring whether students feel like their contributions were valued in class (academic validation) and whether or not staff recognize their achievements (general interpersonal validation) contribute to validation. These differences speak to the level of inclusiveness that students report and how this contributes to their own sense of feeling valued in the college environment.

Classroom experiences strongly influence underrepresented students' general perceptions of the institution.

Implications for Research and Practice

The development of new validation constructs in this study has several implications for institutional assessment, higher education research, and the improvement of campus practices. Given the construct validity of general interpersonal validation and academic validation in the classroom on the DLE survey, institutions may consider utilizing these parsimonious item sets to examine the extent to which students feel validated in their postsecondary experience. These items will now be available nationally as part of HERI's Cooperative Institutional Research Program's (CIRP) suite of surveys designed for longitudinal assessment. The DLE instrument was designed to assess the campus climate for diversity, educational practices, and student learning outcomes, as national surveys currently lack this multifaceted approach (Hurtado, Griffin, Arellano, & Cuellar, 2008). The DLE targets students in their second and third years of college and community college students who have earned a modest amount of credits at a single institution, although it can be used to assess undergraduates at all levels and institutional types. Primary outcomes featured in the DLE include habits of mind and skills for life-long learning, competencies for multicultural living, and achievement and student mobility measures (Hurtado, Cuellar, Alvarez, Guillermo-Wann, & Arellano, 2009). Additional outcomes can be measured by linking the DLE to other survey and institutional data on retention. Institutional researchers can then locally examine how levels of validation influence college experiences and outcomes for students by linking these factors with other assessment data. Advancing student success will require more information about the college environment and how students experience it; these measures of validation capture faculty and staff efforts to be student-centered and inclusive.

Validation is an action-oriented process that involves interactions between students and institutional agents. Through quantitative analyses of validation, institutional researchers may be able to more quickly assess student experiences to anticipate the likelihood of reenrollment and other college outcomes. These data can be presented to faculty, staff, and counselors to reflect on student experiences on campus and increase awareness about creating more inclusive practices in diverse environments. However, we also recommend that institutions spend time identifying the key institutional agents that assist in student success to understand their practices and interactions with students. This can be done using survey data as a first step using qualitative methods to observe interactions or tapping into students' social networks

to identify key institutional agents and units that result in successful navigation of the college environment. Identifying exemplars and key practices that result in increasing students' validation in the environment may be a key element in improving overall retention rates.

Rendón (1994) noted the importance of validation for underrepresented students, or a conclusion further substantiated in the present study. Although validation can be measured through the same items for White students and students of color, significant differences in the way that validation is experienced exists across both groups. Careful consideration should be placed on further examination of how validation may be experienced differently in various subpopulations of students in different types of institutions. Since institutions differ in their racial and ethnic compositions, it will be extremely important to consider how underrepresented racial/ethnic groups in diverse educational environments experience validation. Similarly, research should examine how students from other underrepresented social identity groups experience validation and how it impacts student success. The application of validation as a framework may shed light on ways to reduce the marginalization and educational inequities faced by other populations such as low-income students, part-time students, LGBTQ students, and students with disabilities.

The use of validation measures shifts the focus from student behaviors such as engagement (or lack of engagement) to how students experience the learning environment and to improvements that can made in how educators shape student experiences. Increasing degree attainment remains a key focus of local, state, and national efforts. Understanding the validating experiences of diverse student populations can provide valuable knowledge for the development of learning environments that empower all students to succeed and achieve their educational goals.

About the Authors: Sylvia Hurtado is professor and director of the Higher Education Research Institute in the Graduate School of Education and Information Sciences at UCLA.

Chelsea Guillermo-Wann is a graduate student at The University of California, Los Angeles.

Marcela Cuellar is a graduate student at The University of California, Los Angeles.

Address correspondence to: Dr. Sylvia Hurtado, UCLA, Higher Education Research Institute, 3005C Moore Hall, Los Angeles, CA 90095-1521, shurtado@gseis.ucla.edu

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