Attitudes and perceptions of medical students:
Is campus climate associated with professional values?

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Objective

With the recent expansion of healthcare coverage, medical schools are faced with the challenge of producing increasing numbers of physicians capable of serving a diverse population and practicing medicine in underserved areas (Krupa, 2010). Even before the formal curriculum begins, admission committees strive to accept and matriculate a diverse group of students who are both academically capable and altruistically inclined (McGaghie, 1990). Medical educators then hope to provide a positive institutional climate in which all students, regardless of background, can thrive. However, a supportive climate as it relates to diversity can be especially vital for recruiting and retaining African-American, Latino and Native American students, who are underrepresented in medicine (URiM) but are the most likely to practice primary care in underserved areas (Cantor, Miles, Baker & Barker, 1996).

While increasingly more studies have focused on the racial campus climate for undergraduates, little scholarship has examined the climate in graduate or professional schools. The research that does exist on climate in medical schools tends to focus solely on the educational climate, that is, how the curriculum may affect student attitudes and professional behavior (Hojat et al., 2009; Genn, 2001). One notable study on the benefits of diversity in medical school did find that students who worked with patients from diverse backgrounds were more likely to hold positive attitudes towards affirmative action and the societal value of diversity. The results also showed that the majority of students in the sample supported diversity efforts at their medical school (Guiton, Chang & Wilkerson, 2007). However, none of the studies above utilized a formal framework of racial campus climate commonly in use at undergraduate institutions.

In its simplest form, one way to measure campus climate is to examine the compositional diversity of an organization, meaning the proportion of the student body that are racial and ethnic minorities (Hurtado, Milem, Clayton-Pedersen & Allen, 1998, 1999). While various anti-affirmative action policies have made it more difficult to consider race and ethnicity as an admissions factor (or impossible because of voter initiatives in the states of Arizona, California,

Michigan, Oklahoma, and Washington), research at undergraduate institutions demonstrates that interaction among diverse peers improves students' cognitive development, enhances self-efficacy and increases social awareness and civic participation (Gurin, Dey, Hurtado, and Gurin, 2002; Milem, 2003; Milem, Chang & antonio, 2005; Denson & Chang, 2008). However, simply admitting more racial and ethnic minorities does not guarantee that these benefits will be realized. As these authors have argued, the context in which diversity is enacted matters greatly. Scholarship clearly indicates that students must also be given the opportunity to interact in meaningful ways with diverse others if the positive outcomes of diversity are to be achieved (Chang, 1999).

Because of this, Hurtado et al. (1998, 1999) and Milem, Chang, and antonio (2005) argue that other dimensions, including historical, psychological/perceptual, behavioral and organizational components, are interconnected with compositional diversity, and all have an effect on the campus climate of an institution. We focus on these components of climate in this paper. Specifically, we argue that the attitudes, values and behavior of medical students as they relate to campus climate are associated with outcomes related to future professional practice.

To achieve this objective, we use data from a campus climate survey administered to students at two medical schools (one in the Midwest and one in the Southwest United States) in April and May of 2010. This survey focused on measuring attitudes and perceptions of the campus climate at the respective institutions. In particular, we analyze how constructs of collaborative learning, a diverse learning environment, humanistic values, openness to interact with peers and a resistance to diversity efforts relate to perceptions of a supportive climate, amount of leisure time and racial apathy. These constructs were chosen using findings from diversity research that has been conducted on undergraduate students.

Conceptual framework

Current literature conceptualizes campus racial climate as product of both external and internal dimensions (see Figure 1). The external dimensions of climate include the impact of governmental policies, programs, and legal decisions and of the impact of sociocultural events and forces in the larger society. The internal or institutional dimensions of climate are comprised of five interrelated dimensions: the compositional diversity of an institution, psychological/ perceptual impressions of inclusion and diverse interactions among students, behavioral interactions across communities of difference, organizational structures and policies that affect campus diversity, support and inclusion, and the institution's history of inclusion or exclusion. These dimensions are not discrete, but are intertwined forces that influence each other and come together to create the overall campus racial climate of an institution (Hurtado, Milem, Clayton-Pedersen & Allen, 1998, 1999; Milem, Dey & White, 2004; Milem, Chang & antonio, 2005). Because institutional history was not included in our campus climate survey, we omit that dimension from the present study.

Research suggests that as the compositional diversity of a campus increases, the opportunity for meaningful interaction among diverse peers also increases. As students are exposed to the diverse viewpoints of others, they are more likely to support diversity-related practices offered by the organization (Chang, 1999; Milem, 2003). In this way, students' perceptions of the campus climate, their interactions with diverse others and their views of organizational policies are inextricably connected with one another.

There is a limitation, however, when it comes to exploring or studying diverse interactions in a school of medicine in that the compositional diversity of these institutions is generally quite low (Carnavale and Rose, 2003). Consequently, our ability to observe diverse interactions would be masked not so much by the lack thereof, or by students not wanting to interact with diverse peers, but by lack of opportunities to do so. The approach that we take in this study is not to look for diverse interactions per se, but to examine how and whether multiple dimensions of campus climate are interrelated as literature suggests. To that end we have built latent constructs that capture a broader set of standpoints regarding diversity related issues at least at the undergrad level which is the conceptual framework which guides our present study. The outcome or endogenous variables are latent constructs named collaborative learning, diverse learning environment, openness to interact, commitment to humanistic values and a resistance to diversity efforts. These endogenous latent variables are particularly relevant to the future practice of medicine, as the ability of physicians to collaborate with others and their knowledge and acceptance of diverse viewpoints is essential to successful professional practice in the 21st century (Bardes, 2006; Cohen, 2002). Likewise, the three exogenous latent variables in this study, supportive climate, leisure time and racial apathy, were selected because we hypothesized that they significantly impact these outcome variables. The use of leisure time as a variable in the model warrants further explanation. There is a body of literature focused on the study of leisure. From Social Network Theory, it has been well established that "Birds of a Feather Sing Together" (Mark, 1998), meaning that people tend to interact and socialize with people with whom they feel comfortable. Given the lack of compositional diversity found in medical schools in general, we assumed that the more leisure time students have, the more they would tend to be clustered with students that are similar to them. Therefore, this lack of diverse interactions may then diminish the importance of diversity related efforts in the eyes of students with greater amounts of leisure time.

Finally, we included in our model three indicator control variables: Gender (Female), URiM Status, and an indicator accounting for the institution in which students enrolled (Southwest or Midwest). Below is a detailed explanation of each of the constructs.

The *collaborative learning* construct measures the extent to which students worked with others. A student who scores high in this measure may regularly work in a group setting to solve problems or learn new material. This collaborative approach is especially important in medicine, as a physician is expected to work as a member of an integrated health care team. Similarly, the

variables named *diverse learning environment* and *openness to interact* are also key indicators of future professionalism. Diverse learning environment measures students' engagement in curriculum that emphasizes the role of race, ethnicity and culture in medical practice, essential knowledge for a physician capable of providing care to a diverse population. *Openness to interact* indicates students' willingness to engage with diverse others, as it measures the frequency of cross-racial interactions in medical school. This could be as simple as sharing a meal, or as personal as having meaningful discussions about race and ethnicity. This willingness, however, can indicate a tendency to participate in these interactions in the future as a health care professional.

Commitment to humanistic values measures a student's agreement with values generally associated with humanistic practice of medicine, including the treatment of patients regardless of the ability to pay and sensitivity to cultural differences. Finally, the variable *resistance to diversity efforts* measures the extent to which students believe that diversity is over-emphasized in the curriculum and in the policies and practices of the organization. It is our belief that such a resistance could indicate that a student is apathetic to learning about diverse others and may be less inclined as a physician to practice in underserved areas, many of which are populated with racial and ethnic minorities.

The independent or exogenous variables are also latent constructs. *Supportive climate* measures students' perceptions of a positive campus climate at their medical school, including the belief that the faculty values all students and administration and organizational traditions are inclusive of all students. *Leisure time* is the amount of discretionary time a student had during medical school to participate in such activities as watching TV, socializing and discussing politics. *Racial apathy* consists of a series of statements that indicates a lack of awareness or indifference to societal inequities related to gender, race and ethnicity. Our conceptual model represents the theoretical links (all of these links move from left to right) and describes the relationships of the different variables in the model (see Figure)2.

Methods and procedure

Data collection

Cross-sectional data were gathered through a survey instrument that consisted of yes/no and Likert-type questions. Questions addressed students' demographic information, experiences, the extent to which they interacted across communities of difference, attitudes on various professional and social issues, and overall impressions of the medical school attended. Survey items were drawn from previously used instruments in higher education and medical education research and new items, developed through a review of literature in higher education, medical education, sociology, and psychology.

Research sites

The survey was administered at two allopathic medical schools in the Southwestern and Midwestern United States. Both medical schools are housed in public, research extensive universities. Southwestern Medical School typically enrolls approximately 460 students in any given year, while Midwestern enrolls 680 students. URM students are generally far out-numbered in both institutions, comprising approximately just 10-15% of the total student body.

Sample

All students enrolled in the two medical schools in April and May of 2010 were invited to complete the survey. Students were invited to participate by emails which contained a link to the online survey. In total, 507 students completed the survey, 272 of which were enrolled at the Southwest medical school (response rate = 60%) and 235 of which attended the Midwestern medical school (response rate = 35%). The sample in our study is comprised of 4% African American, 23% Asian/American, 1% Native American, 7% Latin@, and 69% White. Hence, the percentage of students in our sample who are classified as URiM is 12%. In terms of gender distribution, 56% of the total sample of participants is female. Our sample has more females than males, but the proportion of females who are also URiM is considerably higher; 70% of URiM students are female, as opposed to only 54% of White and Asian students.

Data analysis

We conducted data analysis in two stages. First, exploratory principal components factor analysis with Varimax rotation was used to assess the indicators that most adequately represent each latent variable or construct in the model (See Table 1 for factor loadings and alpha scores). A Structural Equation Model using the software program LISREL8.8 was then constructed. This model was based on conceptual framework describe above because SEM assumes a causal connection based on sustained theoretical arguments (Blunch, 2008). One advantage of SEM is that it allows for simultaneous estimation of hypothesized relationships using estimated covariance/correlation matrices, and generates goodness of fit measures to evaluate the overall fit of the proposed model. These fit measures are a corrected version (accounting for sample size and degrees of freedom) of the Chi-Square test that is frequently recommended. The use of Chi-Square tests is often criticized for its sensitivity to sample size (Bentler & Bonett, 1980; Hu & Bentler, 1999), which has led to the proposal of numerous alternative fit indices that evaluate model fit. Following Kleyman and McVean (2008), we present the Root Mean Square Error of Approximation (RMSEA) with corresponding confidence intervals, Incremental Fit Index (IFI), Root Mean Square Residual (RMR), Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI), and Parsimony Normed Fit Index (PNFI). The traditional cut-off points for each of these fit indices suggested by experts in the topic (Bentler & Bonett, 1980; Hu & Bentler, 1999;

Worthington, R. L, & Whittaker, T. A., 2006) are presented in Table 1, along with the fit indices found in our fitted model.

As briefly mentioned above, as part of this analysis we included gender, institution, and underrepresented in medicine (URiM) status as factors for some of the structural equations fitted. Once again, we reiterate that the selection of the structural models was based on theoretical notions. It is important to note that fitting the data to the model without theoretical considerations was not the purpose of our paper. Because of this, variables found to be insignificant are left in our model. In addition, we recognize that there has been previous confusion, misunderstanding and disagreement regarding the use of Structural Equation Modeling a as theory generating or theory testing technique. In this respect, although our relationships are based on theory, we are neither claiming causality, nor claiming theory corroboration, we merely want to explore whether our extrapolation of theoretical links taken from research on undergraduate institutions can be applied to medical school settings.

We used Maximum Likelihood Estimation (MLE) to analyze the structural models. Including only categorical level variables, however, can warrant suspicion that the assumption of multivariate normality may be violated, which can potentially bias the parameter estimates. For example, non-normality can result in attenuated estimates of standard errors and lead to increased likelihood of Type II errors (Museus, Nichols and Lambert, 2008). To address issues of non-normality, we used the normalization method provided by LISREL. Essentially, before fitting the models we normalized the observed variables (du Toit and du Toit, 2001) and created a new normalized dataset to fit the model, all of this without altering the natural structure of our data. Finally, for the few cases of missing data we relied on the Expectation Maximum (EM) algorithm for multiple imputation of missing values built within LISREL. It is worth mentioning that we had less than five percent of missing data from most variables, and below 10% of missing data for 90% of the entire dataset.

Limitations

This study has limitations that warrant consideration. Just like any other cross-sectional study, there is a potential self-selection bias due to the potential scenario of only having sampled willing students to participate. This positive self-selection could lead to find overwhelmingly positive estimates in the model. A second limitation is the nature of the self-reported data. These data do not reveal possible discrepancies between what the students report and what they actually do or think. These limitations guide us to one of the major criticisms of SEM models, in that "there is no true model, all models are wrong to some degree; the best one can hope for is to identify a parsimonious, meaningful model that fits observed data adequately well" (MacCallum and Austin, 2000, p. 218). Achieving parsimony was one of our goals and accounted for our choice of the latent constructs to be fitted in the model.

Results

The descriptive results are presented in Tables 2 and 3. The alpha scores and factor loadings for each construct tested confirm that our underlying theoretical presumptions of how the data are grouped are robust (Table 2). Table 3 summarizes descriptive statistics of the factors presented in Table 2. We emphasize, however, that the variables presented in Table 3 are not the latent variables *per se*, but the empirical representation of the constructs used in the structural equation models. These variables are presented in their observed form, not in the normalized transformation used to construct factors before running the models.

The hypothesized structural relationships were tested in this model for the entire sample (N=503), as shown in Figure 3. Although the final χ^2 was significant ($p < 0.01$), this statistic is sensitive to sample size (Kline, 1998). Conventional practice in structural equation modeling suggests that values of RMSEA below .05 (Maruyama, 1998) provide evidence of a good fitting model. The RMSEA was 0.034 (90% CI of the RMSEA [0.030 ; 0.037]). As it can be more clearly shown in Table 3, the fit indices found in this model indicated that the data provided evidence of very good model fit. In addition, specialized literature suggests that the researcher should account for the number of parameters to be estimated when considering sample size. Bentler and Chou (1987) suggest that you must have at least a 5:1 ratio of participants to number of parameters, with the ratio of 10:1 being optimal, with sample sizes of at least 100 participants (Kline, 2005; Worthington & Whittaker, 2006). Our sample size is 503, and we have an estimated ratio of 14.4:1 (503/35).

In Figure 3 we see important patterns in the data. From the institutional perspective, and according to the purpose of this analysis, we see that students' perceptions of supportive climate impacted directly and significantly (0.29 standard deviation units, p. <.01) the sense of being educated in a diverse learning environment and engagement in collaborative learning (0.22 standard deviation units, p<.01). In other words, as expected we found significant relationships between students' perceptions of being in an institution committed to their success and wanting to interact and collaborate with other students and colleagues.

Equally important was the effect of supportive climate on promoting a humanistic approach to the practice of medicine (.13 standard deviation units, p.<.01). Because the distinction between humanistic values and diverse learning environment is rather minimal, some would argue that their intercorrelation is high, and that is why supportive climate is explaining both of them very well. Therefore, as a robustness check in the model, we tried to explain the variation of the construct diverse leaning environment by humanistic values (Humanistic), in case a high covariance would have been found, the predictive power would be high and statistically significant. As we can see in Figure 3, this was not the case. Humanistic values have no effect or statistically significant association with diverse learning environment. Both variables are

independent in the structural equation model, and both are explained by supportive climate. In a similar manner, we also see that the effects of supportive climate are both direct and indirect.

Another advantage of the use of SEM is that it allows for testing direct, indirect, and total effects. In Table 4 we present these types of indirect and total effects of every independent variable. Once again, we can see that supportive climate has a total effect on collaborative learning, of almost one standard deviation (.54). In a similar manner we see that its total effect on diverse learning is.27 standard deviation units. Supportive climate perspective is the most important latent construct found regarding its total impact in the model.

In Figure 3 we can also see that a one-unit variation in students' openness to interact and share with peers and colleagues is associated with a .31 increase in standard deviation units of our collaborative learning construct.

In terms of gender variations, the model presented no difference between male and female students regarding gender influence on the variation of openness to interact. Additionally, female students had a slightly negative association with resistance to diversity related efforts. This finding mirrors the finding of other research at the undergrad level, which says women tend to be more open to diversity efforts and activities than are men (Milem, 1994; Pascarella and Terenzini, 2005). In our piece however, we found no statistical significant differences having gender as a factor in the model.

Theory suggests that underrepresented students are more likely to value related diversity efforts, and we expected to find a negative relationship with URM status and resistance to diversity. The model corroborates this hypothesis with a very strong and statistically significant negative association of -0.47 standard deviation units ($p<.001$). URM status also shows a significant relationship with the variable openness to interact (.33 units, $p<.01$) and a total impact of .31 standard deviation units on the variation of collaborative learning. As we would expect, based on previous research, URM students are more likely to engage in cross-racial interactions, and less likely to oppose efforts to diversify their medical school.

Another important variable was racial apathy. We believed there would be a relationship between resistance to diversity efforts and indifference towards racial, ethnic, and gender problems that happen on a daily basis in America. The data analyzed actually found that racial apathy was statistically significant and positively associated with resistance to diversity efforts. In addition, we see that this relationship is the most important direct effect of a construct in our model with more than a half standard deviation unit ($p< .001$).

In our theoretical model, we explored the relationship between leisure and resistance to diversity efforts. Specifically, as explained before, we wanted to test whether leisure time was associated with resistance to diversity efforts. Although the observed direction of the relationship was positive, as we expected, this association was not statistically significant, which allowed us to

conclude that in this study there is no evidence to say that leisure time, which in theory may translate into spending time with like-minded people, was a factor motivating resistance towards diversity related efforts.

There is one finding that appears to counterintuitive in our model, the positive relationship between resistance to diversity efforts and collaborative learning. We however, need to remember what the construct collaborative learning means. That is, the fact that a student "A" is willing work collaboratively with others to learn does not necessarily mean that student "A" thinks there is a need to increase diversity in the medical school, especially if there is not much diversity on the campus to start with. In other words, assume person "A" is resistant to diversity efforts (ResDivEffor) but he/she is willing to collaborate with peers/colleagues to solve academic problems, to learn new material (ColLearn), all of which, in the long run can benefit this person's professional status. We all know individuals who really want to collaborate and participate with others who they think will help them to learn, regardless of race or ethnicity; but the fact they are learning together, does not mean that people will support efforts to diversify the campus.

Finally, we tested for institutional variations in key variables that were theoretically related to supportive climate perceptions. We found that attending the Southwest medical school was statistically significant, but weakly related to a decrease in Humanistic views (.008 standard deviation units, $p < .05$). Another relationship that was also rather weak was Southwest and resistance to diversity efforts with an impact of .01 standard units in the variation of the former ($p < .01$). There was however, a positive relationship link (.20 standard deviation units) between attending the Southwest medical school and increased sense of experiencing a diverse learning environment ($p < .01$). In addition, we see a small negative effect of Southwest on the construct collaborative learning; nonetheless, when we account for the total effect of the Southwest medical school on collaborative learning the relationship was positive and reached .436 standard deviation units (See Table 4).

Implications and conclusion

The most important latent construct this model tested was students' perceptions of a supportive climate. Even though this construct is well grounded theoretically, no empirical evidence of its potential impact has been found in research on graduate education, and specifically not in medical school settings. In our study we found that the total effect of this latent construct was the greatest of the entire model and the direction of the relationships corroborated what scholarship at the undergraduate level has found. Our research indicates that as students feel valued and accepted within their medical school, they are also more likely to identify with humanistic values in the practice of medicine. As medical schools seek to produce more physicians who will serve the needs of a diverse population, this humanistic orientation to medicine is even more critical. A supportive climate also has a direct positive effect on students' engagement in collaborative

learning and a learning environment that promotes respect and awareness for cultural differences. Fostering a positive campus climate within the organization is an important step in meeting the needs of the physician workforce in the 21st century, and should be an important priority for medical educators.

Our findings regarding differences in the impact of climate in each medical school context are consistent with the work of Guiton, Chang, and Wilkerson's (2007) earlier study regarding the important role that institutional context has in shaping student outcomes. However, the differences that we found were not always what we expected to find given our understanding of each institutional context. This is especially true regarding the negative relationship between Southwest medical school and humanism were surprising to us. We were surprised by this finding given that the institution has an active chapter of the Gold Humanism Honor Society (unlike Midwest which does not). Moreover, the vast majority of students who attend Southwest are involved in medical outreach activities to low income clients, many from communities of color, in the area.

In addition, our results lend support to the inclusion of diversity-related content in medical education but also suggest that the current curriculum has room to improve. One of the most important findings of our model is the positive connection between racial apathy and a resistance to diversity efforts. It appears that students who demonstrate a lack of awareness or indifference toward inequity are also those who oppose the inclusion of diversity content in the curriculum as well as efforts to diversify the institution.

Of course it is probable that students form their attitudes about diversity efforts well before they matriculate into a medical school. However, we argue that medical school administrators should strive to improve the way they educate their students about the role of race, ethnicity and culture in the practice of medicine. Too often, this content is added onto the curriculum almost as an afterthought. Not only should they find more elegant ways to integrate these issues into their coursework and clinical rounds, but they should also ensure that students know why this education is important. Our findings suggest that ignorance of social stratification may partially explain resistance to diversity efforts which not only has implications in the campus climate of the institution, but more importantly in the future contributions of these students to the society they will serve.

In addition, these attitudes may partially be related to socioeconomic status (SES). It is worth remembering that traditionally, most medical students tend to come from high SES backgrounds with parents who have advanced graduate or professional degrees—many in medicine. In Table 5 approximately 60% of our sample comes from families with at least $75,000 parental income after taxes. Growing up in privilege can insulate students from issues related to racial and economic stratification. In a separate study utilizing the same data, our preliminary results show that SES is indeed positively associated with resistance to diversity efforts. However, it is also

important to note that other factors may shape these viewpoints, including religious and political orientations.

The results of our study underlie the important role that medical educators have in shaping a more socially aware and responsive physician workforce. While traditional admissions metrics are generally successful in selecting students for admission who can succeed in the first two years of the medical school curriculum, they are not very helpful in selecting students who will be successful in the clinical aspect of medical education. In recent years, a great deal of focus has been placed on finding ways to select students for medical school who will have a more humanistic orientation to medical practice. Moreover, groups like the Arnold P. Gold Foundation have been active in trying to transform medical education in ways that encourage a more humanistic approach to the practice of medicine. Helping medical schools to select and prepare a physician workforce that will be responsive to the diverse needs of our increasingly diverse country has been a key priority of the Association of American Medical Colleges for more than two decades.

Tables and figures

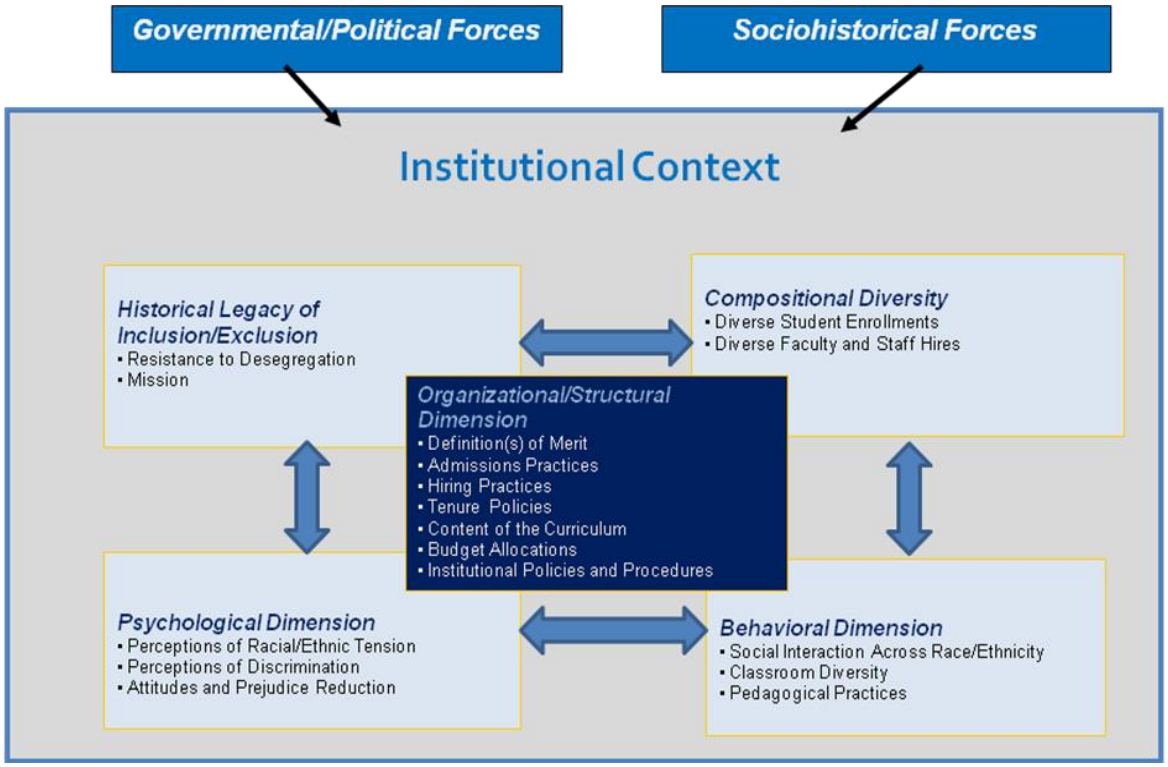

Figure 1. Conceptualization of campus racial climate

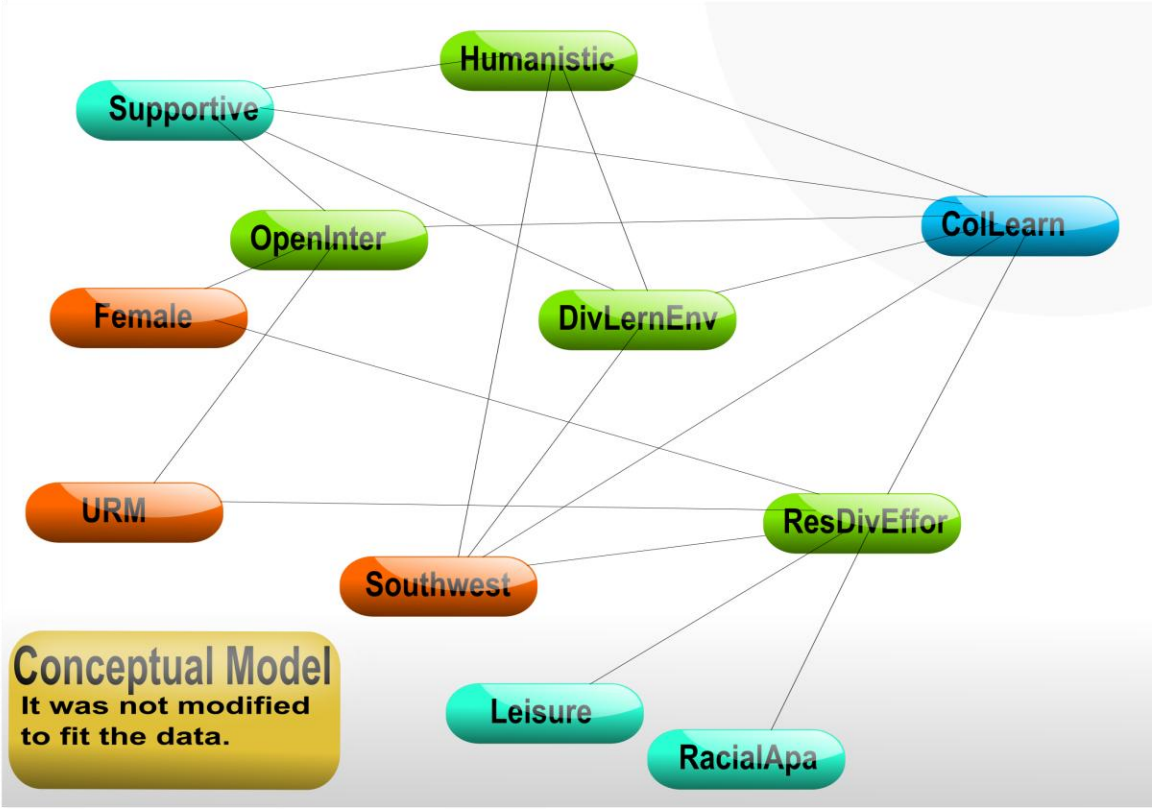

Figure 2. Conceptual model tested with a sample of 507 medical students enrolled in two universities in the U.S.A.

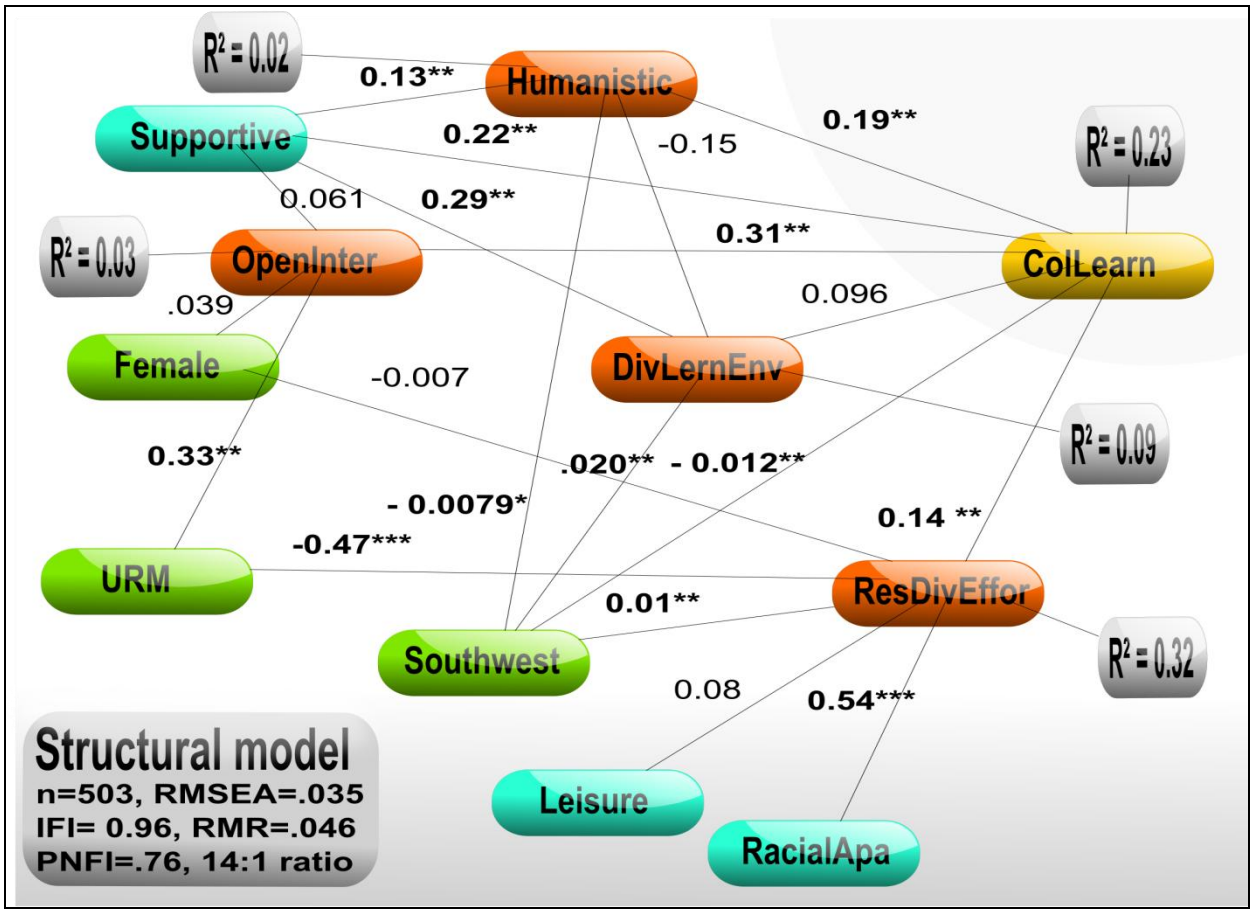

Figure 3. Entire sample: Structural parameters of the model for the entire sample of med school students (n=503).

*The model represents relationships among the standardized and normalized constructs of Supportive climate (SupClima), Diverse Learning Environment (DivLrn), Openness to Interact (OpnsIntc), Collaborative Learning (ColLearn). Leisure (Leisure), Racial Apathy (RacUnawe), Resistance to Diversity Efforts and Humanistic Values (CommitPh). All structural paths are represented in standard deviation units. The statistically significant paths are marked with *, **, *** at the .05, .01, and .001 alpha level or less.*

Table 1. Means and standard deviations for indices built from measured variables for the entire sample and for males and females subsamples.

Indices	N	Mean (SD)	Range
Supportive climate (SupClima)	496	3.23 (.56)	1 - 4
Diverse learning environment (DivLrn)	253	3.26 (.86)	1 - 5
Openness to interact (OpnsIntc)	501	3.54 (.82)	1.30 - 5
Collaborative learning (ColLearn)	252	4.14 (.69)	1.75 - 5
Resistance to diversity efforts (NegDivOri)	503	2.07 (.62)	1 - 4
Racial apathy (RacUnawe)	500	1.82 (.53)	1 - 3.83
Humanistic values (CommitPh)	503	3.33 (.41)	2 - 4
Leisure when enrolled (Leisure)	497	3.73 (.81)	1 – 6.60
Female	503	0.56	0-1
URM	503	0.12	0-1
Southwest	503	0.54	0-1
Female-URM[1]	59	.70	0-1
Female-No-URM[2]	444	.54	0-1

[1]Comparison group is Male-URM

[2]Comparison group is Male-Non-URM

Table 2. Latent and Measured variables, factor loadings, and Internal Consistency (Alpha Scores) for total sample and male and female subsamples.

Latent and measured Variables*	Factor Loadings	Internal Consistency
Collaborative learning (ColLearn)		*Alpha = .823*
Collaborated with peers/colleagues to solve problems	0.878	
Participated in group-work	0.875	
Worked with others to learn new material	0.799	
Worked with other students from diverse racial/ethnic backgrounds	0.694	
Diverse learning environment (DivLernEnv)		*Alpha = .791*
Discussed the role of race/ ethnicity in medicine	0.910	
Learned about how culture impacts medical practice	0.910	
Openness to interact (OpenInter)		*Alpha = .926*
Talked about my professional values	0.822	
Had medical or scientific discussions outside of class/ rotations	0.821	
Dined or shared a meal	0.823	
Studied or prepared for class or rotations	0.803	
Shared personal feelings and problems	0.814	
Shared career aspirations	0.785	
Studied with someone from a different racial/ ethnic background than myself	0.758	
Had meaningful and honest discussions about race/ ethnicity	0.753	
Talked about inequality in society	0.728	
Socialized with other medical students from a different racial/ethnic background than myself	0.687	

Humanistic values (Humanistic)		*Alpha = .686*
All patients deserve healthcare regardless of their ability to pay	*0.705*	
Doctors should treat patients who do not have insurance and cannot afford to pay their medical bills	*0.694*	
Producing more physicians to serve URMs should be a top priority of this medical school	*0.602*	
Understanding cultural differences is important in medical education and practice	*0.576*	
Resistance to diversity efforts (ResDivEff)		*Alpha = .843*
The curriculum spends too much time addressing race and culture in medicine	0.849	
Too many resources are devoted to promoting diversity	0.823	
Administration is placing too much emphasis on achieving diversity at the expense of enhancing prestige	0.799	
There is too much emphasis on gender and sexual orientation in the curriculum	0.776	
One problem with pursuing the goal of diversity is the admission of too many underprepared students	0.694	
Supportive climate (Supportive)		*Alpha = .825*
All medical students are valued by this medical school	0.818	
This medical school demonstrates a commitment to helping me succeed	0.714	
Diverse viewpoints are sought out and valued by faculty and administrators at this medical school	0.799	
The medical school faculty and staff are open to new ideas	0.770	
Organizational traditions are inclusive of all students	0.732	

Leisure time (Leisure)		*Alpha = .664*
Watching TV / movies and listening to music	*0.731*	
Using the Internet or web	*0.673*	
Socializing	*0.672*	
Reading non-medical literature (e.g. books, newspapers, magazines)	*0.644*	
Discussing politics	*0.538*	
Racial apathy (RacUnawe)		*Alpha = .772*
Our society has done enough to promote the welfare of different racial/ethnic groups	0.755	
A person's racial background in this society does not interfere with achieving everything he or she wants to achieve	0.735	
Race does not play a role in access to healthcare	0.735	
Racial/ethnic discrimination is not a major problem in the US	0.636	
In the United States everyone has access to high quality healthcare	0.636	
Income does not play a role in access to healthcare	0.624	

*The ranges used for most of the scales were 1-5 but in the cases of the supportive climate variables and worked with others to learn new material (ALLCOL3) and worked with other students from diverse racial/ethnic backgrounds (ALLCOL4), the ranges were 1-4. The only variable with a larger scale was Leisure with a range 0-7.

Table 3. Suggested and Found Fit indices

Fit Indices	Recommended CutOff	Value found
Root Mean Square Error of Approximation (RMSEA)	.05 [range below .05]	.035 [0.032 ; 0.039]
Incremental Fit Index (IFI)	0.95	0.96
Root Mean Square Residual (RMR)	.10	0.046
Comparative Fit Index (CFI)	.95	.96
Non-Normed Fit Index (NNFI)	0.95	0.95
Parsimony Normed Fit Index (PNFI)	No threshold levels (above .50 is recommended)	0.76

Table 4. Direct, indirect and total effects of latent variables (S.D. in parenthesis).

	Supportive Climate			Humanistic views		
Predictand	Direct	Indirect	Total	Direct	Indirect	Total
ColLearn	0.22** (.05)	0.691	0.911	0.19** (.06)		0.19
DiverseLear	0.29** (.07)	-0.02	0.27	-0.15 (.08)		-0.15
OpenInter	0.061 (.05)					
Humanistic	0.13** (.05)					
	Racial Apathy			Leisure		
ResDiveEff	0.54*** (.05)		0.54	0.08 (.04)		0.08
ColLearn		0.68	0.68		0.22	0.22
	Southwest			Female		
ColLearn	-0.012** (.002)	0.448	0.436			
Humanistic	-0.008* (.01)		-0.008		0.496	0.496
DiverseLear	0.02** (.003)		0.02			
ResDiveEff	0.01** (.002)		0.01	-0.007 (.02)		0.007
OpenInter				0.039 (.023)		0.039
	URM			Resistance Diversity efforts		
ColLearn		0.31	0.31	0.14** (.06)		0.14
OpenInter	0.33* (.07)		0.33			
ResDiveEff	-0.47*** (.13)					
	Diverse learning environment			OpenInteract		
ColLearn	0.096 (.06)		0.096	0.31** (.05)		0.31

Table 5. Combined Parental Income

Parental income	Frequency	Cumulative Percent
Less than $12,500	11	2.2
$12,500 - $24,999	16	5.5
$25,000 - $49,999	37	13.0
$50,000 - $74,999	59	24.9
$75,000 - $99,999	86	42.3
$100,000 - $149,999	112	65.0
$150,000 - $174,999	33	71.7
$175,000 and over	140	100.0
Total	494	

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