

MSW Thesis: An Exploratory Study on the Relationship Between Race, Student
Perceptions of School Environment, and Student Outcomes

THESIS

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By

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Abstract

This study examines the relationship between student perceptions of teacher support, student centeredness, and microaggressions, and sense of school belonging and engagement among Black, Latino, and white students. We first hypothesized that student perceptions of teacher support, student centeredness, and microaggressions would be significantly related to their sense of belonging and engagement. Secondly, we hypothesized that Black and Latino students would report more negative perceptions of their school environment, as well as a weaker sense of school belonging and engagement than their white peers. We analyzed data from a sample of 9536 middle and high school students provided by the Student Success Profile using structural equation modeling. Given prior knowledge on the microaggressions scale, we tested the other constructs in the model for invariance across the two groups (students of color and white students). We found that the measures of teacher support, student-centeredness, belonging, and engagement had too many statistically different factor loadings across the groups to be considered equivalent, which required us to test Black and Latino students separately from white students. Though we could not statistically compare results from the two models, we found that teacher support, student centeredness, and microaggressions are directly and indirectly related to sense of school belonging and engagement among Black/Latino and white students. Findings from this study provide evidence that can be used to guide future research on possible effects of student perceptions of school

environment and school outcomes, and inform school practices to improve school experiences for students across racial groups.

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Introduction

In the field of education there is clear evidence that disparities in educational outcomes continue to exist between certain groups of students. “Disparities in educational outcomes” refers to distinct differences in scores on common performance measures, such as national assessments. Recent data from the National Assessment of Educational Progress (National Center of Education Statistics, 2015) illustrates the nature and magnitude of performance disparities. In 2015, white and Asian 8th grade students scored 292 and 307, respectively, on the NAEP math assessment. White and Asian students’ reading scores were 281 and 274. In contrast, reading scores for Latino and Black students were 253 and 248 (NCES). In mathematics Black students scored 260 and Latino students scored 270.

Educational disparities present a problem for educators because they raise questions about the effectiveness of the current educational system. In the field of education effectiveness is defined in terms of student test scores on national assessments. Educational effectiveness refers to both student and teacher/school performance. The current definition of educational effectiveness can be traced back to the passage of the No Child Left Behind Act of 2001 (NCLB) (U.S. Department of Education, 2001). The original intention of NCLB was to address disparities in educational outcomes by holding schools and teachers accountable for the performance of all subgroups of students. The

concept of accountability is what makes the issue of educational disparities pertinent in education. According to the current definition of educational effectiveness, recent national assessment data may serve as evidence that existing educational disparities reflect a problem with the school environment, not the student.

Educational theory and research suggest that students' social experiences at school may contribute to their academic outcomes (Allen, 2012, Bangura, 1998; Brewster and Bowen, 2004, Soumah and Hoover, 2013). Specifically, environmental factors such as teacher support, student centeredness of schools, and microaggressions, as perceived by students, are associated with student outcomes. "Teacher support" is defined as the degree to which teachers respect, encourage, and listen to students (Brewster and Bowen, 2004). Research shows that teacher support can have an influence on student engagement that extends beyond that of parents for racial/ethnic minority adolescents, such as Latino middle and high school students (Brewster & Bowen, 2004). The concept of "student centeredness" refers to the extent to which school practices and teaching methods are adapted to the unique learning styles and needs of individual students (Bangura, 1998). Bangura posits that when academic institutions engage in student-centered practices student motivation and success will increase.

Microaggressions are verbal or nonverbal messages embedded in everyday interactions that serve to invalidate an individual's reality and perpetuate feelings of inferiority (Allen, 2012). In an educational setting, microaggressions can be found in phrases directed at racial/ethnic minority students that convey beliefs in stereotypes. Such comments convey the idea that students are judged based on personal characteristics

rather than ability (Allen, 2012). The current study examines the relationships among students' perceptions of teacher support, student centeredness, and microaggressions at school and student engagement.

Background and Literature Review

Theoretical Background

Critical Race Theory (CRT) provides a useful lens for examining potential differences in students' experiences in school. CRT is based on the notion that racism is a permanent aspect of American life (Ladson-Billings, 1998). CRT posits that racism is so embedded in the structure of American society that it appears "normal." According to CRT, racism is a pervasive feature in all American institutions, including the kindergarten through 12th grade (K through 12) public education system. CRT emerged in the mid 1970's as a critique of Critical Legal Studies movement (CLS) and its failure to address racism in America's societal structure (Ladson-Billings). Proponents of CRT often use storytelling, which places a strong emphasis on experiential knowledge, as an educational tool because they believe that racism can best be understood through those who have lived it (Ladson-Billings).

In the 1990's, as CRT continued to gain prominence in mainstream literature, researchers began to apply its tenets to explain inequality within the education system. Lynn and Parker (2006) explain that in the early stages of CRT scholars mainly concentrated on the material manifestations of racism and worked towards including traditionally-marginalized groups of individuals in conversations on social justice, race, law, and society. Early CRT research in education examined the impact of black-white

relations in terms of school policy and practice, curriculum, and student-adult interactions. Specifically, literature in the early era of CRT focused on how beliefs of teachers in K through 12 classrooms manifested into practices and policies that marginalized students of color (Lynn and Parker).

Evidence of Disparities in Student Perceptions of School Treatment

Consistent with CRT, research demonstrates that students of color perceive differences in the way they are treated in a school setting. Chapman (2013) found that students of color experienced unequal treatment in the form of double standards. In the Chapman study, students of color expressed that certain rules, such as school dress code, were enforced with them but not with white students who were breaking the same code. Students of color remarked that they are often disciplined more severely than their white counterparts, and when they attempt to defend themselves they are disproportionately punished for their actions. Students in the study also spoke about how teachers and their peers treated them differently when the issue of race or racism was brought up in the classroom. Students of color stated that when they were a minority in a class they were treated as the authority on subjects related to race, which created an uncomfortable atmosphere for them. Chapman explains that although teachers may incorporate matters of race into the curriculum to create a more inclusive environment for students of color, they often inadvertently make certain students the center of attention for the wrong reasons. These findings set up the foundation for further research that demonstrates how perceptions of differential treatment from teachers and peers translate to issues concerning teacher support, student centeredness, and microaggressions.

Teacher Support

Educational research demonstrates that students of color perceive differences in teacher support, which can negatively affect both student engagement and academic performance. Soumah and Hoover (2013) found that students of color believed teachers, administrators, and even bus drivers used unfairly harsh disciplinary measures towards them. Also, students explained that school officials were hypervigilant in their discipline efforts, often observing students of color more intensely than their white peers, which communicated the expectation that students of color would misbehave. Perceptions of being treated unfairly translated into a sense on the part of students of color that school staff did not care about them (Soumah & Hoover). Similarly, students of color believed that teachers and administrators used discipline as a way to communicate low expectations about their academic ability. Furthermore, students in Soumah and Hoover's study explained that due to their own negative views towards students of color that teachers did not go out of their way to provide additional assistance to students, which reduced their motivation to work hard.

Student Centeredness

While there is empirical evidence that demonstrates the effects of teacher support and microaggressions, there is less research available on the concept of student centeredness. Bangura (1998) explains that student centeredness, that is, the requirement for an academic institution to focus on the needs of students to guide its practices, can be defined as a philosophy, a concept, and as a practice that can be implemented. As a philosophy, student centeredness is used to provide an academic institution with long-

term direction. Student centeredness as a concept is the institution-wide generation of programs dedicated to meeting both current and future student needs. The implementation of student centeredness occurs when schools expand on the concept and use it to design and carry out school practices.

Roundfield, Sánchez, and McMahon (2016) examined the concept school centeredness and its effect on school engagement among low-income, urban Latino adolescents. Roundfield, Sánchez, and McMahon found that students who perceived academic struggles, which entailed difficult courses, insufficient help with classes, not understanding material due to language barriers, or learning disabilities not being accommodated, felt less engaged in school. One of the participants in the study explained that she had no desire to attend school because as a student whose primary language was not English, she felt intellectually inferior to her peers. Similarly, Saeki and Quirk (2014) explored the idea that students' perception of whether or not their needs are met at school can have an effect on student satisfaction and student engagement. Specifically, Saeki and Quirk's study focused on students' psychological needs. Saeki and Quirk explained that when students are displaying problematic behaviors or experiencing internal turmoil they are often less engaged in school because those issues make it difficult for them to focus or learn in school. In comparison to students who are engaged in school, disengaged students show lower levels of school satisfaction. This research suggests that attempts to increase positive feelings of school engagement among students may be insufficient if such attempts do not also address students' needs.

Microaggressions

Literature also shows that students of color experience differential treatment in schools in the form of racial microaggressions. Huber and Solorzano (2015) describe racial microaggressions as a form of systematic, everyday racism used to marginalize individuals of color. Racial microaggressions can be verbal or non-verbal and are often carried out unconsciously. Huber and Solorzano also describe racial microaggressions as “layered assaults” that are based on race and its intersections with gender, class, sexuality, language, immigration status, and physical appearance. Allen (2012) expanded on the concept of racial microaggressions and demonstrated the subtle ways in which school staff communicate low expectations of students of color. Participants in the study stated that teachers would make comments like “You are so articulate” or “you are different than others,” which conveyed the idea that teachers did not expect students of color to be intelligent or be able to speak normally. Participants in the Allen study also explained that teachers appeared to have preconceived notions regarding Black students and deviant behavior because teachers often held their purses closer around Black students or appeared visibly nervous around such students.

School Belonging

Research on teacher support, student centeredness, and racial microaggressions demonstrate the importance of students’ perception of their interactions with adults at school. Students’ perceptions contribute to students’ sense of belonging and connectedness, that is, the extent to which students believe that adults and peers care about them as students as well as individuals (Centers for Disease Control and

Prevention, 2010). While there are other factors that contribute to students' overall feeling of school belonging, a large component of belonging is adult support. Students perceive high levels of adult support when they see school staff dedicate their time, attention, and emotional concern to them in school. The CDC posits that the extent to which students believe that adults in their lives care about them shapes their beliefs about themselves and their abilities.

High levels of school connectedness or belonging produce positive results in academics and school behavior. Research shows that students who believe that adults in the school care about them tend to be more dedicated to their own education (CDC, 2010). Also, students who feel supported by adults in their lives are more likely to be engaged in school than students who do not feel supported by adults. As a result, students who feel cared for and connected to school tend to stay in school longer, have higher grades and classroom test scores, and have better attendance rates than students who do not feel connected to school (CDC).

Research suggests that there are significant differences in student perceptions of school connectedness and belonging across racial subgroups. Voight, Hanson, O'Malley, and Adekanye (2015) found that in schools with large numbers of both Black and white students, Black students reported lower levels of safety and connectedness, as well as lower quality adult-student relationships than their white peers. The study used a sample that comprised 50 percent of all middle schools in the state of California and reflected similar student demographics, on average, as middle schools nationwide. Voight et al. also found that in comparison to white students, Latino students reported lower levels of

connectedness to school. The findings from this study show that school climate, in terms of student perceptions of safety, school connectedness, and adult-student relationships, may be a function of race. Findings also demonstrate that there is a significant relationship between the racial climate gap and the racial achievement gap for middle school students. Schools with larger Black-white gaps in perceived safety and connectedness had larger Black-white achievement gaps (Voight et al.). The same general findings were evident for disparities between white and Latino students, but to a lesser degree.

Student Engagement

Research also shows that social support from teachers is an important factor of school engagement (Brewster & Bowen, 2004). Brewster and Bowen found that teacher support had a significant effect on school engagement for at-risk Latino middle and high school students, beyond that of parental support. Specifically, research indicated that school engagement for Latino students is highly influenced by problem behavior and perceived school meaningfulness, which is defined by the degree to which students “like” school. Brewster and Bowen demonstrate that as the level of student perceptions of teacher support increased mean levels of problem behavior decreased and mean levels of perceived school influence increased, both beyond the influence of demographic controls and parental support.

Similarly, research shows that students’ relationships with teachers are associated with positive academic outcomes, in addition to increased school engagement. Chhuon and Wallace (2014) found that positive adult-student relationships may promote the

social and academic development of adolescents by cultivating feeling of confidence and connectedness. These feelings might, in turn, foster social and educational resiliency. Chhuon and Wallace use the idea of “being known” rather than the traditional definition of belonging. Being known goes beyond the “just teach” relationship between teachers and students to focus on a teacher’s unique position to promote students’ learning, adjustment, and personal development. In order to make students feel known, teachers make them feel they belong by creating a safe, respectful environment, as well as help them find answers to the questions “Who am I?” and “Who can I be?” (Chhuon & Wallace). The evidence shows that students who feel known and cared for by their teachers are more likely to learn and work out of respect for those teachers.

Effects of School Belonging and Student Engagement on School Success

Researchers have applied findings on associations between adult-student relationships and student functioning to gain a better understanding of the disparities in educational outcomes across racial groups. Bryan, Moore-Thomas, Gaenzle, Kim, Lin, and Na (2011) examined how school bonding, which was used interchangeably with terms like school attachment, engagement, and connectedness, influenced student academic outcomes and school delinquency. Similar to the idea of school connectedness, students who are bonded to their school feel as if school staff are interested in them, treat them fairly, support them, and provide good teaching. Bryan et al., looked at specific demographic variables, such as race/ethnicity, gender, socioeconomic status (SES), school urbanicity, and type of school, intersect with school bonding, previous and current academic achievement, and student behavior. Results from the study suggested that

certain aspects of school bonding, such as attachment to teachers, may have both a direct and indirect relationship to academic achievement through prior achievement and school delinquency.

In addition to being related to positive academic outcomes, school connectedness or belonging may also offset the negative effects of multiple risk factors that threaten academic success. Loukas, Roalson, and Herrera (2010) broadly examined the effects of school connectedness on all students and found that high levels of connectedness among middle school students served as a protective factor against negative family relations for boys and girls and the adverse effects of low levels of effortful control for girls. Also, findings demonstrated that school connectedness may protect middle school students from a variety of early conduct issues, such as violence, alcohol, cigarette and marijuana use, onset of sexual activity, running away from home, and vandalism. Results supported that school connectedness predicted early conduct problems, above that of negative family relations, effortful control, baseline conduct issues, and gender (Loukas, Roalson, and Herrera). Findings indicated that school connectedness not only helped decrease conduct issues over time, but it also compensated for poor family relationships. These findings suggest that school connectedness and belonging may minimize school conflict and peer rejection for which students low in effortful control are at an increased risk, which may decrease the likelihood of such students acting out (Loukas et al.).

Research Gaps in Previous Studies

There are a number of gaps in the research on racial disparities in educational outcomes, how CRT can help us understand the disparities, and the role of school

belonging. Specifically, though CRT has not been frequently used in studies that focus on school belonging or adult-student relationships. Also, few studies have examined the simultaneous effects of teacher support, student centeredness, and microaggressions. One specific gap that can be addressed is the lack of comprehensive research on the construct of student centeredness; though there is some literature that conceptualizes the term, there is not extensive research that explores the effects or implications of the concept in the educational setting. Also, Bryan et al., (2011) confirmed that racial disparities in academic achievement did exist and that school connectedness played a large role in academic outcomes, yet they did not examine how the two findings could be related.

Goals of Proposed Study

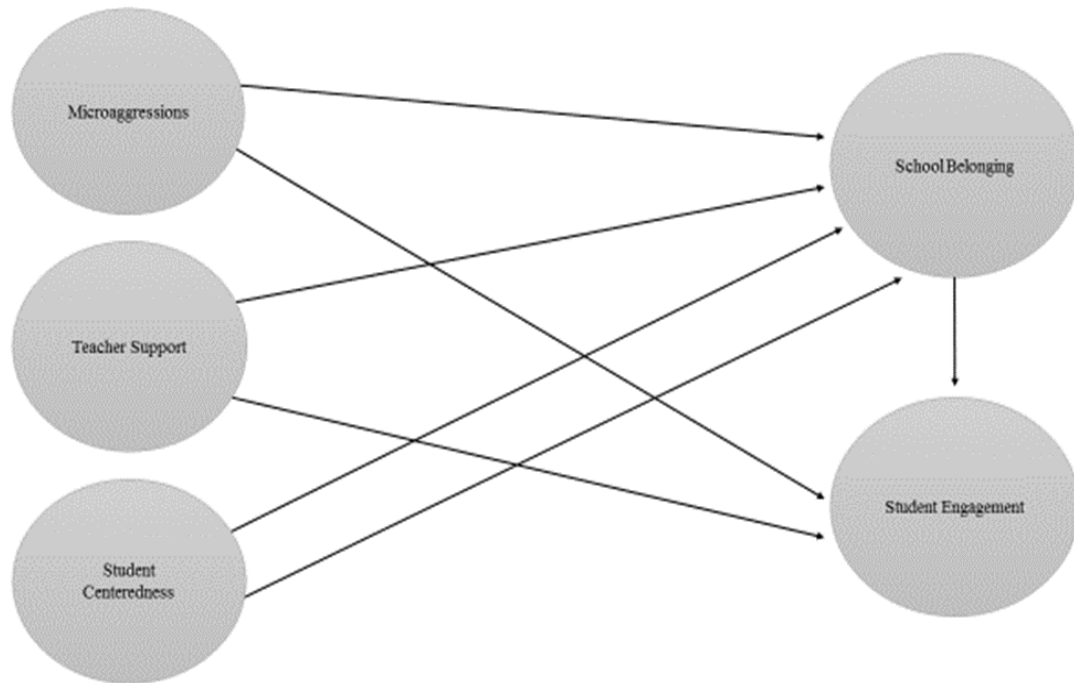
Given evidence of disparities, CRT, and previous empirical work, this study seeks to further explore how differences in student perceptions of teacher support, student centeredness, and microaggressions contribute to differences in students' sense of belonging and engagement in school. A second goal of this study is to examine the effects of race on student's perception of these constructs, based on the main premise of CRT. An additional goal of this study is to expand on current knowledge of the concept of student centeredness. The ultimate aim of this study is to provide empirical evidence to guide further research on aspects of school environment and inform future school practices.

Hypothesis

Using CRT as a guiding framework in combination with knowledge of existing research, we aim to see if perceptions of school environment differ by race and ethnicity. In this study we hypothesize that there is a significant relationship between student perceptions of teacher support, student centeredness, and microaggressions and sense of school belonging and engagement among Black, Latino, and white students. We also hypothesize that Black and Latino students will report that they received less teacher support, that the school made less efforts to accommodate their needs in comparison to the needs of other students, and that they experienced more microaggressions from school staff than their white counterparts. Consequently, Black and Latino students will report a weaker sense of school belonging and engagement, which could translate in their ability or desire to adequately perform on national assessments. This study uses a diverse sample of 9536 middle and high school students. We will use structural equation modeling to test our hypotheses.

Figure 1

Conceptual Model for All Three Racial Groups



Method

Source of Data

We used data collected online using the School Success Profile (SSP) (Bowen, Rose, Bowen, 2005) from middle and high school students over the years from 2009 to 2014. Data were provided by Gary L. Bowen, professor at the School of Social Work at The University of North Carolina. The SSP is a social environmental assessment used to help school staff better understand and address students' strengths and threats to their school success. The current study uses a cross-sectional survey design.

Sample

This study analyzes data from a large, diverse sample of 9536 middle and high school students from 66 schools in eight states. For this study we used data from 8674 middle and high school students who identified as Black, white, or Latino (n=8674). We reduced the sample size by removing students who belonged to a race other than white, Black, or Latino. Of the 8674 total students 45.8 percent of the students in the study were white, 25.7% were African American, and 19.5% were Latino. 49.5% of the total sample were female while 50.5% were male.

Due to missing data on indicators of all five variables in the analysis, we lost 247 total cases from our sample. For white students we lost 35 out of 4370 cases (0.805). We

lost 189 out of 2449 cases for Black students (7.7%). For Latino students we lost 23 cases out of 1855 (1.3%).

Figure 2
Sample Details by Race

	Black	Latino	White	Total
Male	1274 (52%)	918 (49.5%)	2187 (50%)	4379 (50.5%)
Female	1175 (48%)	937 (50.5%)	2183 (50%)	4295 (49.5%)
Total	2449 (100%)	1855 (100%)	4370 (100%)	8674 (100%)

Dependent Variables

School Belonging. School belonging is measured by 7 items on the SSP. In this section students are given a statement about their school, teachers, and peers. The students choose from one of three items that measure the degree to which the statement describes them (A- Not Like Me, B- A Little Like Me, C-A Lot Like Me). Statements on this scale include “I get along well with teachers at this school” and “I feel like I belong at this school.”

Engagement. Engagement is measured by 4 items on the SSP. In this section students are provided with a statement about their school. The students choose from one of three items that measure the degree to which the statement describes them (A- Not Like Me, B- A Little Like Me, C-A Lot Like Me). This scale consists of statements such as “I look forward to going to school” and “I find school fun and exciting.”

Independent Variables

Teacher Support. Teacher support is measured by 8 items on the SSP. The items are measured on a four-point Likert Scale (A= Strongly Disagree, B= Disagree, C= Agree, D= Strongly Agree). In this section students are given a statement such as “My teachers care about me” or “My teachers care whether or not I come to school,” to which they respond with one of four answer options.

Student centeredness. Student centeredness is measured by 7 items on the SSP. The items are measured by a four-point Likert scale. This section includes statements like “Teachers at this school care about students” and “Student needs come first at this school.”

Microaggressions. Microaggressions are measured by 13 items on the SSP. In this section students are provided with a statement to which they respond with never, once or twice, or more than twice. For example, statements on this section include “Someone at school acted surprised when you did something really well” and “Someone at school yelled a racial slur or racial insult at you.”

Control Variables

Gender. In our analysis we controlled for gender to see if it is predictive of belonging and engagement.

Data Analysis

We used Mplus version 7.4 for all analyses. Because our data were ordinal, we specified the variables as categorical and used the weighted least squares means and variance adjusted estimator. First we established that the measurement model was adequate. We tested for measurement non-invariance for the five constructs across the three racial/ethnic groups. We found measurement non-invariance for all constructs between whites and the combined Black/Latino group. Therefore, we tested our theoretical models separately for white students and Black and Latino students. There were only minor measurement differences within the combined Black and Latino group. Within the combined Black and Latino group, we tested for invariance in the theoretical paths using a recommended sequence of tests (Bollen 1989).

Results

Measurement Results

Because of measurement non-invariance between students of colors and white students, two measurement models are presented, one for each group. The structure of the measurement model was the same across the two groups, but most factors loadings and many thresholds in the model for Whites differed compared to students of color. Figure 3 presents the measurement model for Black and Latino students. Two unstandardized loadings were freed within the Black and Latino group, but other parameters were constrained to be equal and the measurement model as a whole was considered invariant across Black and Latino students. Figure 4 presents the model for white students. Both models had adequate fit.

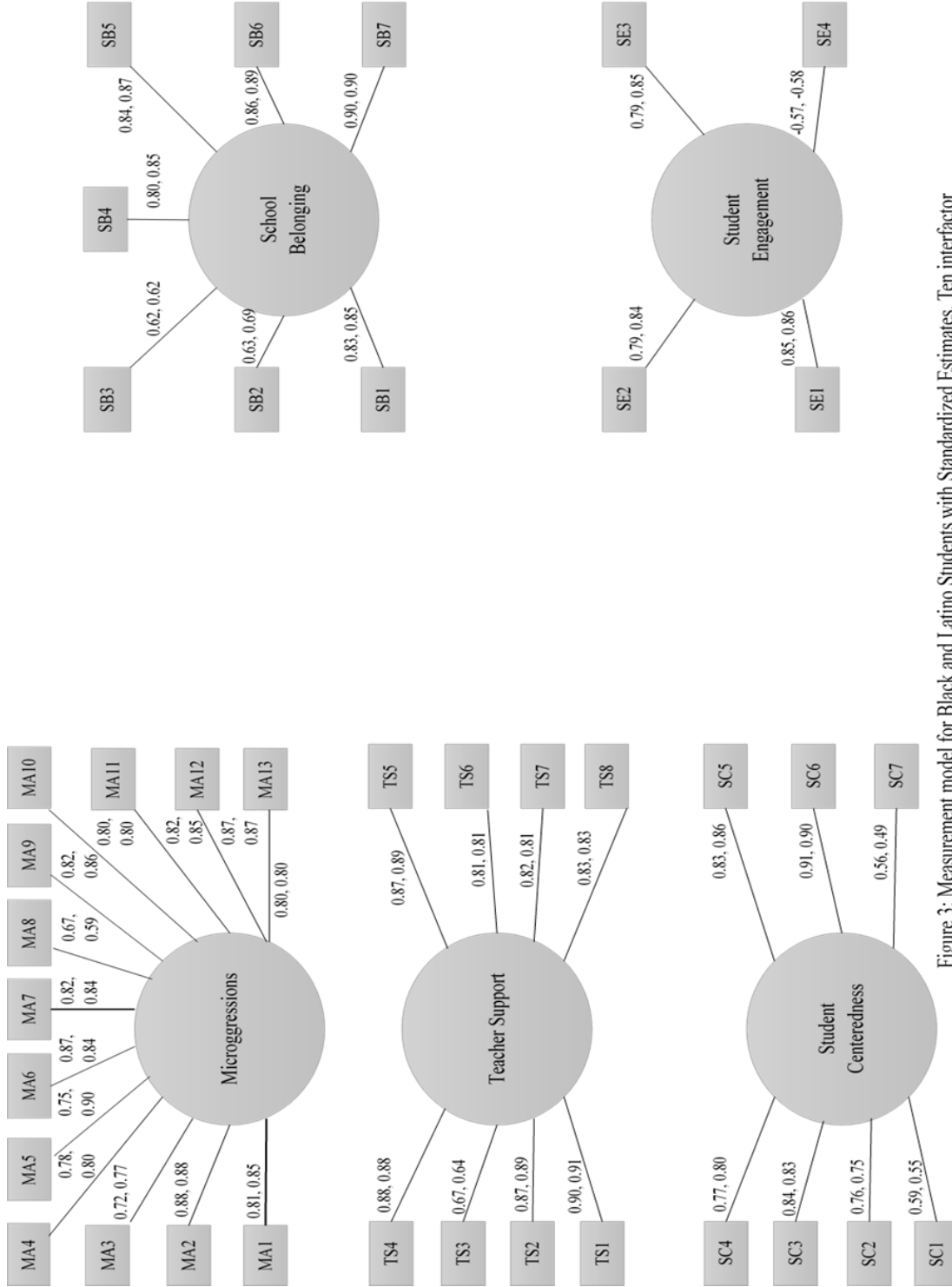


Figure 3: Measurement model for Black and Latino Students with Standardized Estimates. Ten interfactor correlations not shown. Note: Although standardized estimates appear slightly different, unstandardized loadings for Black and Latino students were constrained to be equal, except for MA17 and SC.

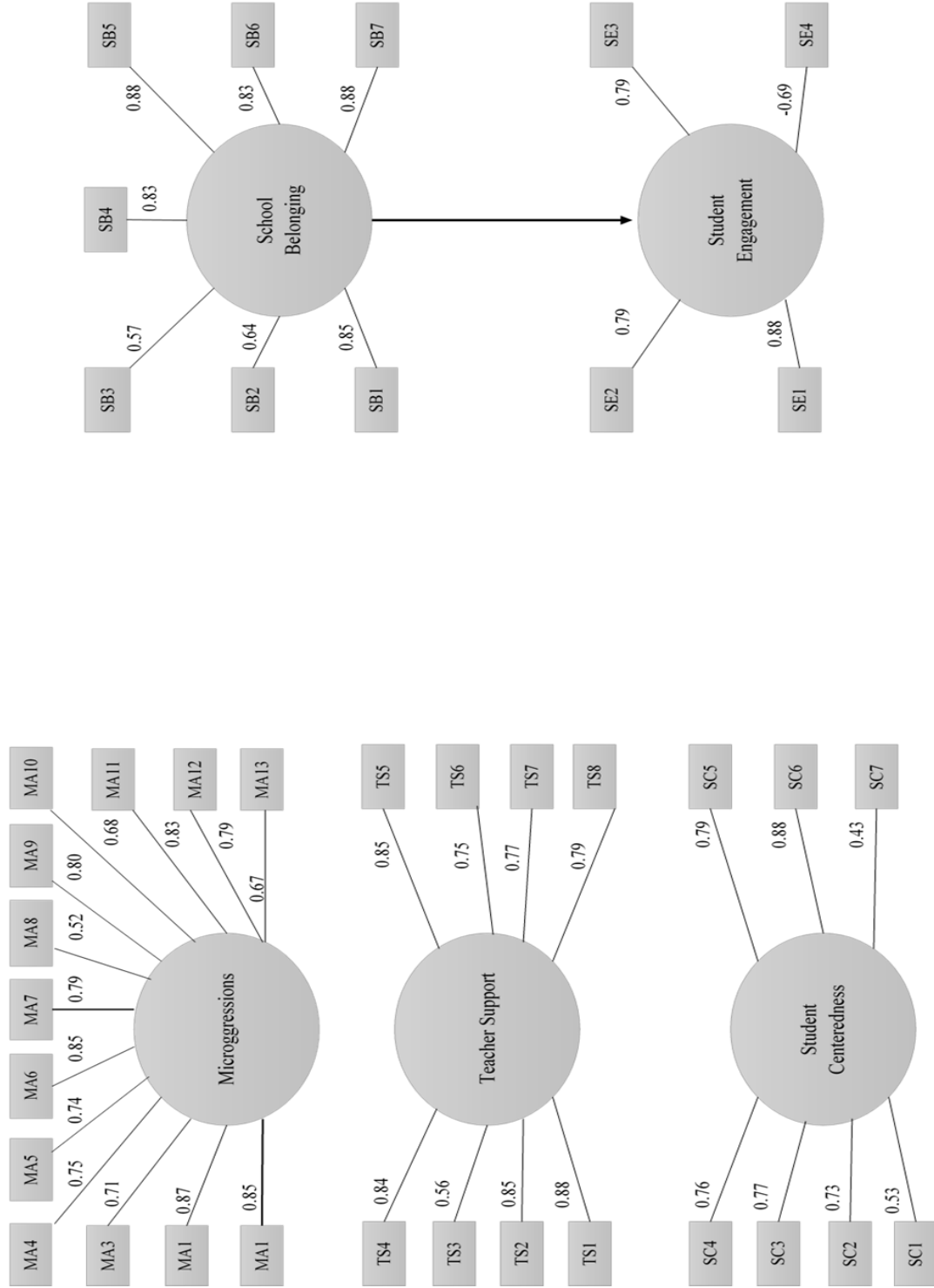


Figure 4: Measurement model for white students with Standardized Estimates. Ten interfactor correlations not shown.

Structural Results

Figures 5 and 6 present the results of the structural test of the model for the Black and Latino group and for white students. The Chi-Square value for the model for Black and Latino students was 2953.940, with a p value of 0.00. The Chi-Square contribution for the Black student group was 1598.273 and 1355.666 for Latino students. The Root Mean Square Error of Approximation (RMSEA) estimate for the Black/Latino model is 0.021, with an upper confidence interval of 0.022. The Comparative Fit Index (CFI) and The Tucker-Lewis index (TLI) for the Black/Latino model is 0.982.

The Chi-Square value for the model for white students was 2322.798, with a p value was also zero. The RMSEA for the white model is 0.022, with an upper confidence level of 0.023. The CFI and TLI for the white model 0.974 and 0.972, respectively.

The Chi-Square values for both the combined Black and Latino group and the white group demonstrate statistical significance, which was expected given the size of our student sample. The results from the two models confirm that there is goodness of fit of the model in both groups of students.

The Black/Latino model demonstrates that Black and Latino students' perceptions of teacher support, student centeredness, and microaggressions are significantly associated with their sense of belonging at school. In the Black/Latino student group, the unstandardized value for teacher support on school belonging (0.233) corresponds to a small, positive effect size given the standardized coefficient (0.261). The model shows a moderate, positive relationship between student centeredness and school belonging (0.498, 0.472). The model also shows that microaggressions had a small, negative effect

on Black and Latino students' sense of school belonging (-0.102, -0.103). The p value for all three independent variables is 0.00, demonstrating statistical significance. After controlling for gender we discovered that there is no significant relationship between gender and Black and Latino students' perception of school belonging. The three variables capturing Black and Latino students' perceptions of school treatment explains 54% of their sense of belonging at school.

The Black/Latino model shows that there is a statistically significant relationship between Black and Latino students' perceptions of teacher support, student centeredness, and microaggressions and their sense of student engagement. The model for Black and Latino students demonstrates that students' perception of teacher support has a small, positive effect on student engagement (0.233, 0.142). The p value for teacher support on student engagement was 0.00, demonstrating statistical significance. The model shows that there is a small, negative relationship between student centeredness and student engagement for Black and Latino students (-0.098, -0.088), with p values of 0.040 and 0.041. The model also demonstrates that there is a small, positive relationship between microaggressions and student engagement (0.059, 0.057), with a significant p value of 0.007 and 0.008, respectively. The Black/Latino model shows a large, positive effect of student engagement on school belonging for Black and Latino students (0.722, 0.687) with a p value of 0.00. Students' perception of student centeredness had both a direct and indirect effect on engagement, which demonstrates that Black and Latino students' perception of school belonging has a partial mediation on their perception of engagement. The model also shows that the intercept for school belonging for Latino students (0.278)

is higher than that of Black students (0.00), which demonstrates that Latino students report a higher sense of belonging to their school in comparison to Black students. Similar to the results for school belonging, the model shows that gender is not a significant predictor of student engagement among Black and Latino students. The model demonstrates that 50.5% of Black and Latino students' sense of engagement is explained by their perception of teacher support, student centeredness, and microaggressions.

Although most of the conclusions to be drawn from the white model are the same as those from the Black and Latino model, there are a few notable differences. The white model demonstrates that gender is a significant predictor of school belonging and student engagement among white students ($p= 0.00$). The model also shows that student centeredness does not have a significant direct effect on students' perception of engagement in school ($p= 0.452, 0.453$). However, there is a statistically significant indirect effect between student centeredness and engagement. There is a moderate, positive relationship between student centeredness and school belonging with a p value of 0.00, given the unstandardized and standardized coefficients (0.563, 0.488). Also, there is a large, positive relationship between student engagement and school belonging (0.639, 0.606). Results from the model indicate that the effect of student centeredness on engagement is fully mediated by sense of school belonging for white students. The model shows that 47.8% of white students' sense of engagement and 54% of their sense of school belonging is explained by their perception of microaggressions, student centeredness, and teacher support.

Though both the Black/Latino and white models demonstrate strong relationships between teacher support, student centeredness, and microaggressions and students' perception of school belonging and engagement, multiple differences in the models' results show that race contributes to student perceptions of school more than our original hypothesis assumed. Prior research has shown that the microaggressions scale does not operate equivalently for African American and Latino students versus white students (Stewart & Bowen, in press). We tested the other constructs in the model for invariance across those two groups (students of color and white students). Like the microaggressions measure, the measures of teacher support, student-centeredness, belonging, and engagement all had too many statistically different factor loadings across the groups ($p < .05$) to be considered equivalent measures. Therefore, we had to run the model of the relationship between perceptions of school environment and student outcomes separately for students of color and white students. Because each construct meant something different for each group based on its pattern of factor loadings, we could not analyze the groups together, nor could we compare mean levels on the latent variables across groups.

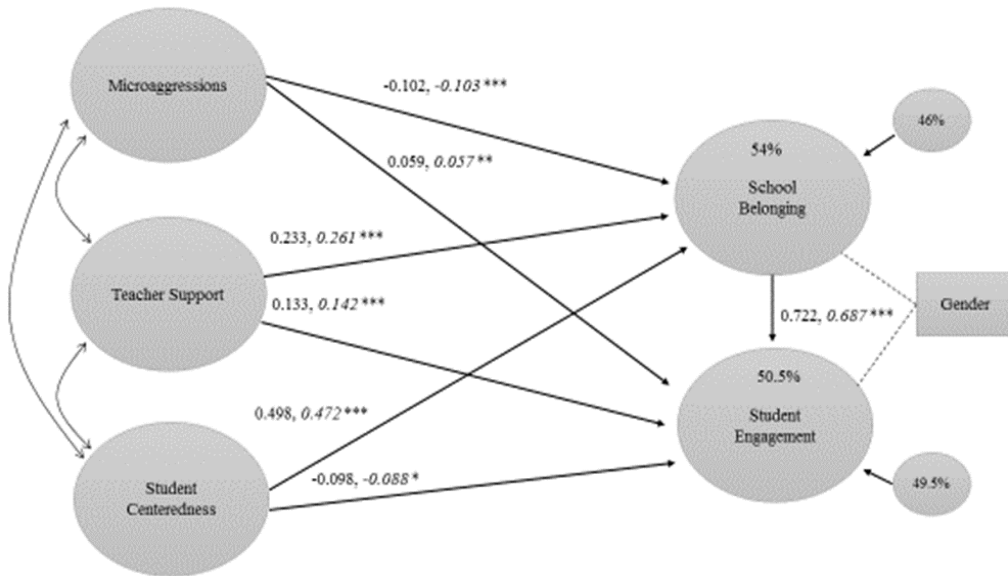


Figure 5: Results Diagram for the Black/Latino Model with Unstandardized and *Standardized* Path Coefficients
 Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$

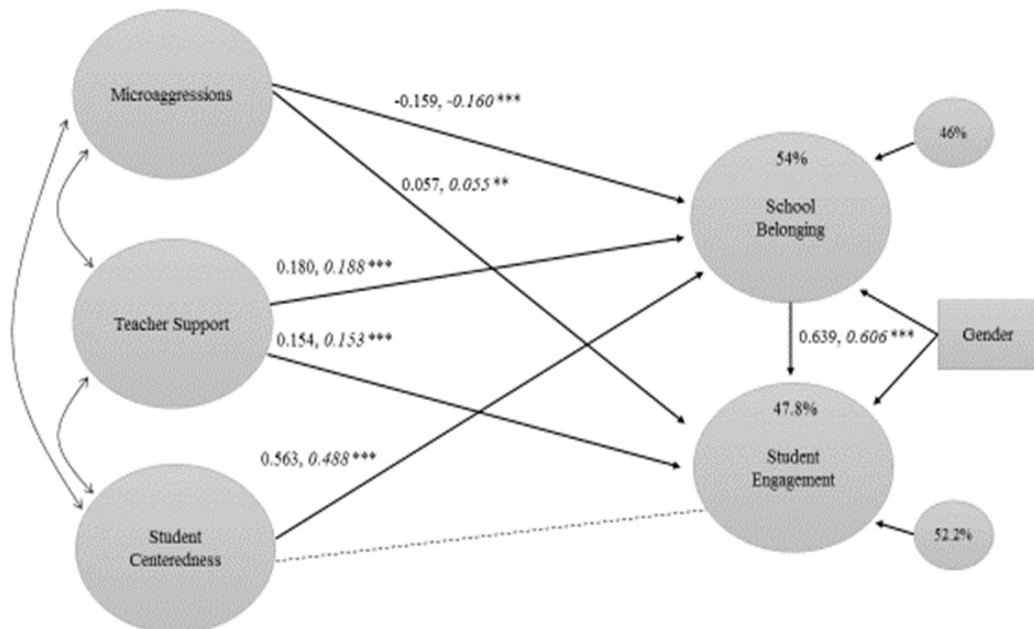


Figure 6: Results Diagram for the White Model with Unstandardized and *Standardized* Path Coefficients
 Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$

Discussion

The overall purpose of this study was to explore how differences in student perceptions of school belonging and engagement contribute to the current racial disparities in educational outcomes, and to expand on current knowledge of the concept and importance of student centeredness. After reviewing existing literature on CRT and the effects of teacher support, student centeredness, and microaggressions on students' sense of belonging and engagement at school, we hypothesized that Black and Latino students would report a weaker sense of school belonging and engagement due to perceived differences in school experiences, particularly teacher support, microaggressions, and student centeredness. Ultimately, the goal of this study was to provide a potential explanation behind the current racial disparities in educational outcomes and inform future research and practices to address the issue.

Results from the study demonstrated that student perceptions of teacher support, student centeredness, and microaggressions were significantly related to sense of belonging and engagement in school for Black, Latino, and white students. Among students of color, however, all effects on school engagement were partially mediated by school belonging, while for whites the effects were fully mediated. For both groups, school belonging plays a significant role in students' sense engagement. It is important to note that while Black and Latino students experienced statistically similar levels of

teacher support, student centeredness, and microaggressions, on average, Latino students reported a stronger sense of school belonging than Black students.

Among Black and Latino students, gender was not significantly associated with outcomes. In comparison, the white model showed that gender was significantly associated with the two outcome variables.

After analyzing the results from each model we discovered a few unexpected findings. The model demonstrated that while student centeredness did not have a direct effect on student engagement it did have an indirect effect on the outcome, showing that the effect of student centeredness on engagement is fully mediated by sense of school belonging for white students. Similarly, we found that student centeredness had a negative direct effect on school engagement for Black and Latino students, however, its total effects was positive—including its positive indirect effect on student engagement through school belonging (partial mediation).

Given our prior knowledge on the weaknesses of the microaggressions scale, we found that the measures of teacher support, student centeredness, belonging, and engagement could not be considered equivalent measures due to different factor loadings across groups. One of the original goals of this study was to compare results from the Black/Latino model and the white model to see if Black and Latino students reported more negative experiences of teacher support, student centeredness, and microaggressions in school and a weaker sense of school belonging and engagement than their white peers. However, due to the non-invariance in factor loadings and thresholds in the measurement model we were unable to analyze the students of color and white

students together or compare mean levels on the latent variables across groups. This finding shows that teacher support, student centeredness, and microaggressions hold a different meaning for Black and Latino students than they do for white students. As a result, we had to run two separate models of the relationship between the five tested variables, one for Black and Latino students and one for white students.

Although we could not test our original hypothesis about differences in the school experiences of white, Black, and Latino students and the effects of those experiences on sense of belonging and engagement, the study's findings support two other main hypotheses. Results demonstrate that, regardless of race/ethnicity, students' perceptions of teacher support, student centeredness, and microaggressions predict their sense of belonging and engagement in school, and that belonging plays an important role in the relationship between perceptions of the school environment and student engagement. The amount of belonging and engagement explained by the three types of school experience was similarly large for whites and students of color. Given previous research on the relationships between student perceptions of school environment, in conjunction with literature on the academic impact of students' sense of belonging and engagement in school, our study contributes to a deeper understanding of how the five constructs we examined provide part of the explanation behind current disparities in educational outcomes.

Additionally, the study's findings supported the idea that race is predictive of student perceptions of school environment. We modeled our study according to CRT's main premise, which posits that racism is a permanent and pervasive feature of American

society and institutions. Results from the study show that race is intrinsically tied to perceptions of the school environment. This finding suggests that existing educational disparities may be due in part to differences in the fundamental interpretation of experiences in the school environment.

Limitations and Strengths of the Study

Due to the nature of this study's design, there are certain limitations that need to be acknowledged. The results of this study were derived from data collected with the SSP using a cross-sectional design. Although this design allows us to analyze relationships between variables, it does not allow us to make causal claims on the effects of the variables on each other. Based on the findings of our study we can state that there are significant relationships between student perceptions of teacher support, student centeredness, and microaggressions and students' sense of school belonging and engagement. We can also claim that the study's result show that students' race is associated with their perceptions of the five tested variables. These results allow us to make further hypotheses regarding the potential causes of racial disparities in educational outcomes, but we cannot yet make causal statements on the tested variables.

Despite the limitations associated with the study's design, there are several strengths associated with this study. The SSP is an established and validated environmental assessment. The dataset used for the current analyses contained data from a large and diverse sample of students. We employed the appropriate estimator and analysis matrix for the ordinal SSP data, and we tested the racial/ethnic invariance of the measures before conducting hypothesis tests. We altered our analysis procedures based

on the finding that measures did not work the same across for whites and students of color.

Implications on Future Research and Practice

The findings of our study provide valuable insight that can help inform future educational research. The finding that the measures on the SSP do not work equivalently across racial groups suggests the need to routinely investigate the invariance of measures of students' perceptions of school environment. The finding suggests that researchers should use caution in interpreting previous literature reporting on studies in which data from diverse students have been analyzed together.

The findings indicating that student perceptions of teacher support, student centeredness, and microaggressions have a significant effect on their sense of belonging and engagement in school provide justification for researchers to further explore the impact of these variables on other variables that directly contribute to measures of school outcomes, such teaching styles, classroom characteristics, curricula, and school grading processes. Also, due to the exploratory nature of previous research on the construct of student centeredness and the unexpected results of the construct on student engagement, future research could focus on gaining a better understanding of its effect on students' educational experience. Though gender was not a large focus in this study results did show that gender had an effect on sense of belonging and engagement among white students, which suggests that future research should further examine the possible intersection of race and gender on educational outcomes. Lastly, it may be beneficial for

future researchers to analyze the potential reciprocal effects of school belonging and student engagement.

In addition to future research, the findings from this study provide useful information that could guide future school practices. This study showed that there is a significant relationship between variables related to school environment and student outcomes, which gives school practitioners reason to devote more effort towards improving student perceptions of their environment. The finding that measures of teacher support, student centeredness, microaggressions, belonging, and engagement all work differently for Black and Latino students than they do with white students suggests that an additional goal of future school practices should be to understand what each construct means for Black and Latino students. Once researchers and practitioners have a stronger understanding of Black and Latino students' differing perceptions of these constructs, they can make better-informed decisions on how to create policies and practices to improve students' experiences at school and in the classroom. This study demonstrates that race is such an influential factor in the current that researchers cannot even compare self-report data from Black and Latino students to that of white students because the measured variables mean something different for the two groups. What this suggests is that the school practices that characterize the current educational system need to be reformed in order to better address racial issues. If researchers and school practitioners can learn to understand the racial differences that exist in the education system, then they can help address the racial disparities that hinder the effectiveness of the current system.

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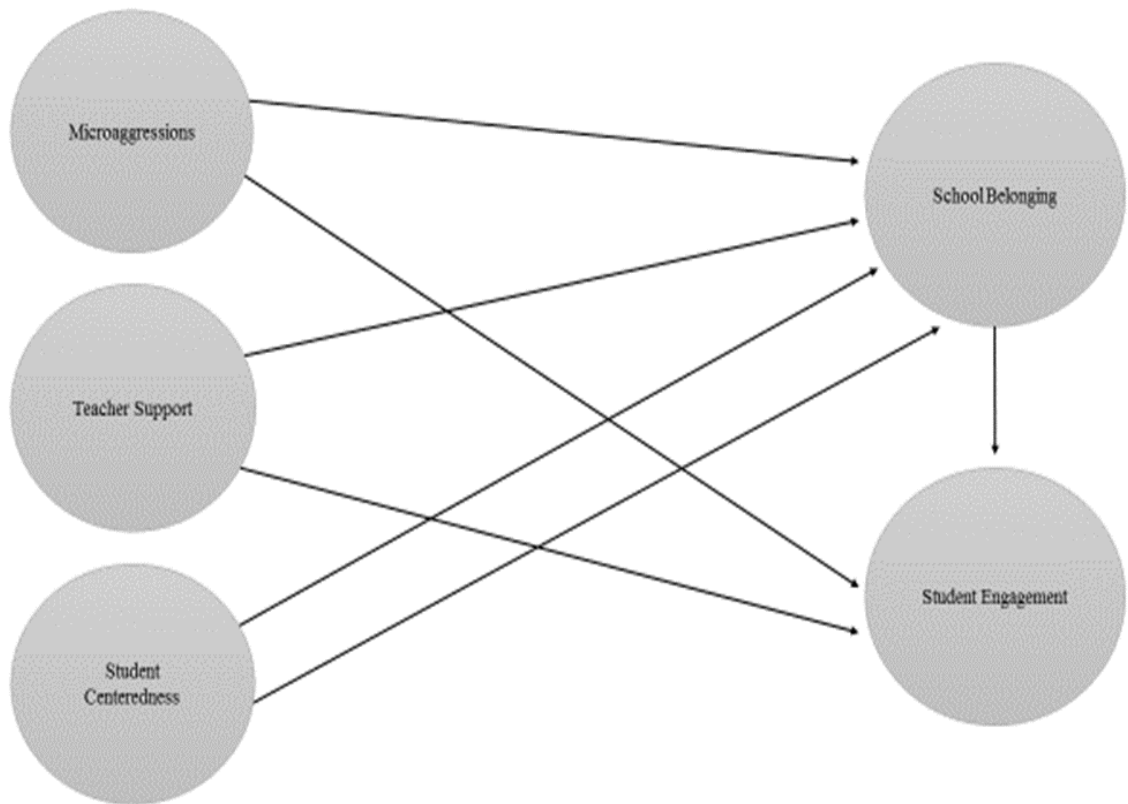
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Appendix A



	Black	Latino	White	Total
Male	1274 (52%)	918 (49.5%)	2187 (50%)	4379 (50.5%)
Female	1175 (48%)	937 (50.5%)	2183 (50%)	4295 (49.5%)
Total	2449 (100%)	1855 (100%)	4370 (100%)	8674 (100%)

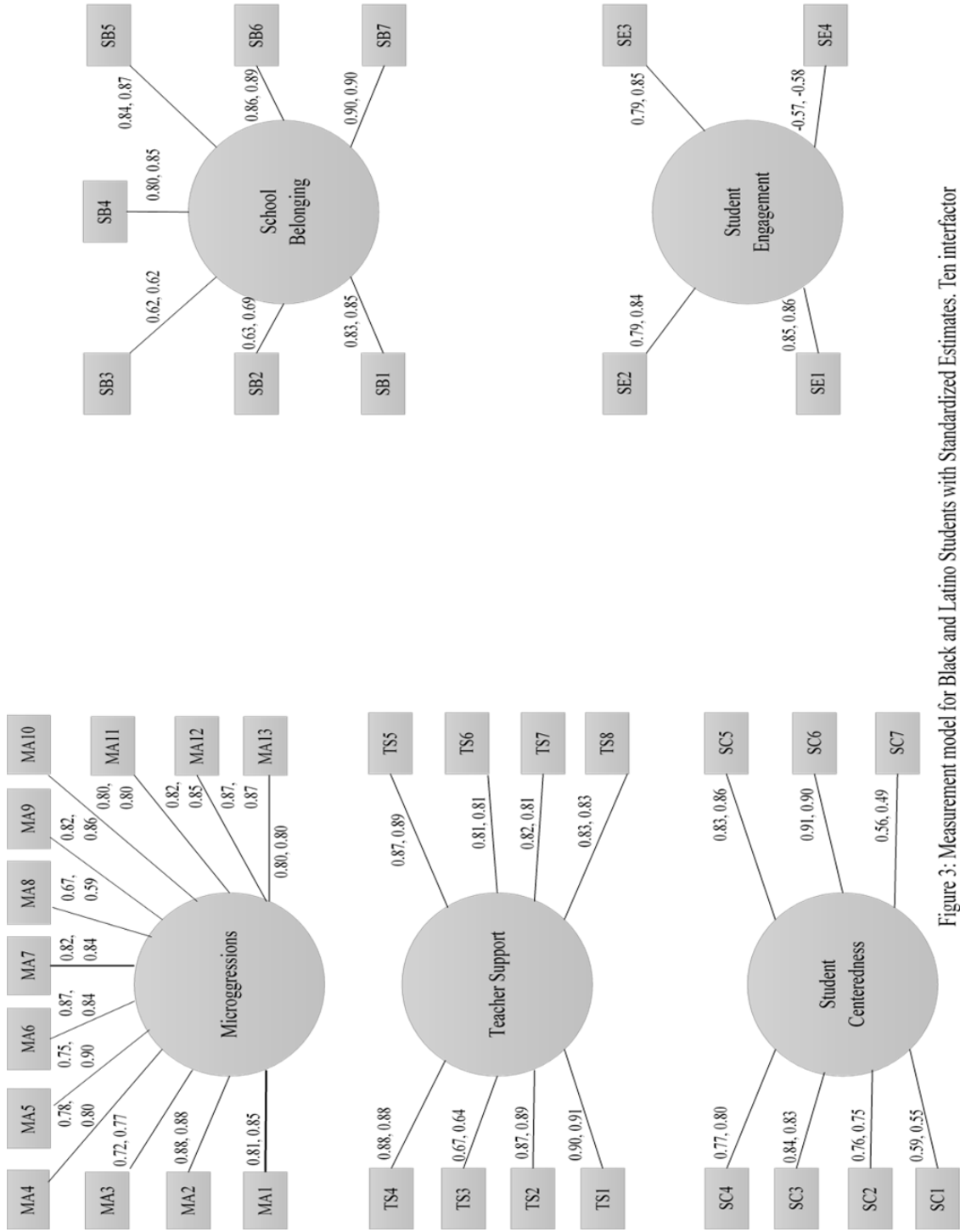


Figure 3: Measurement model for Black and Latino Students with Standardized Estimates. Ten interfactor correlations not shown. Note: Although standardized estimates appear slightly different, unstandardized loadings for Black and Latino students were constrained to be equal, except for MA17 and SC.

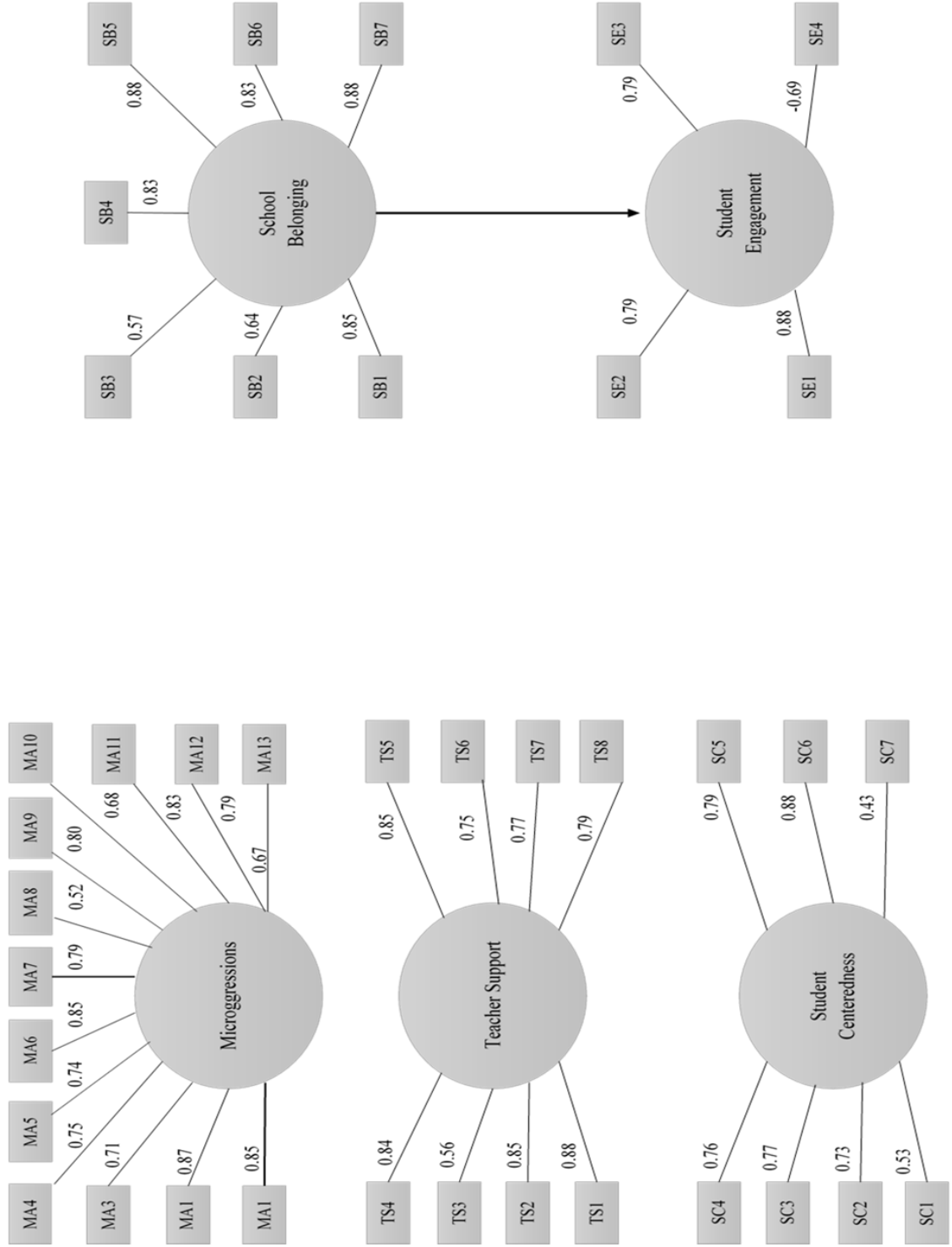


Figure 4: Measurement model for white students with Standardized Estimates. Ten interfactor correlations not shown.

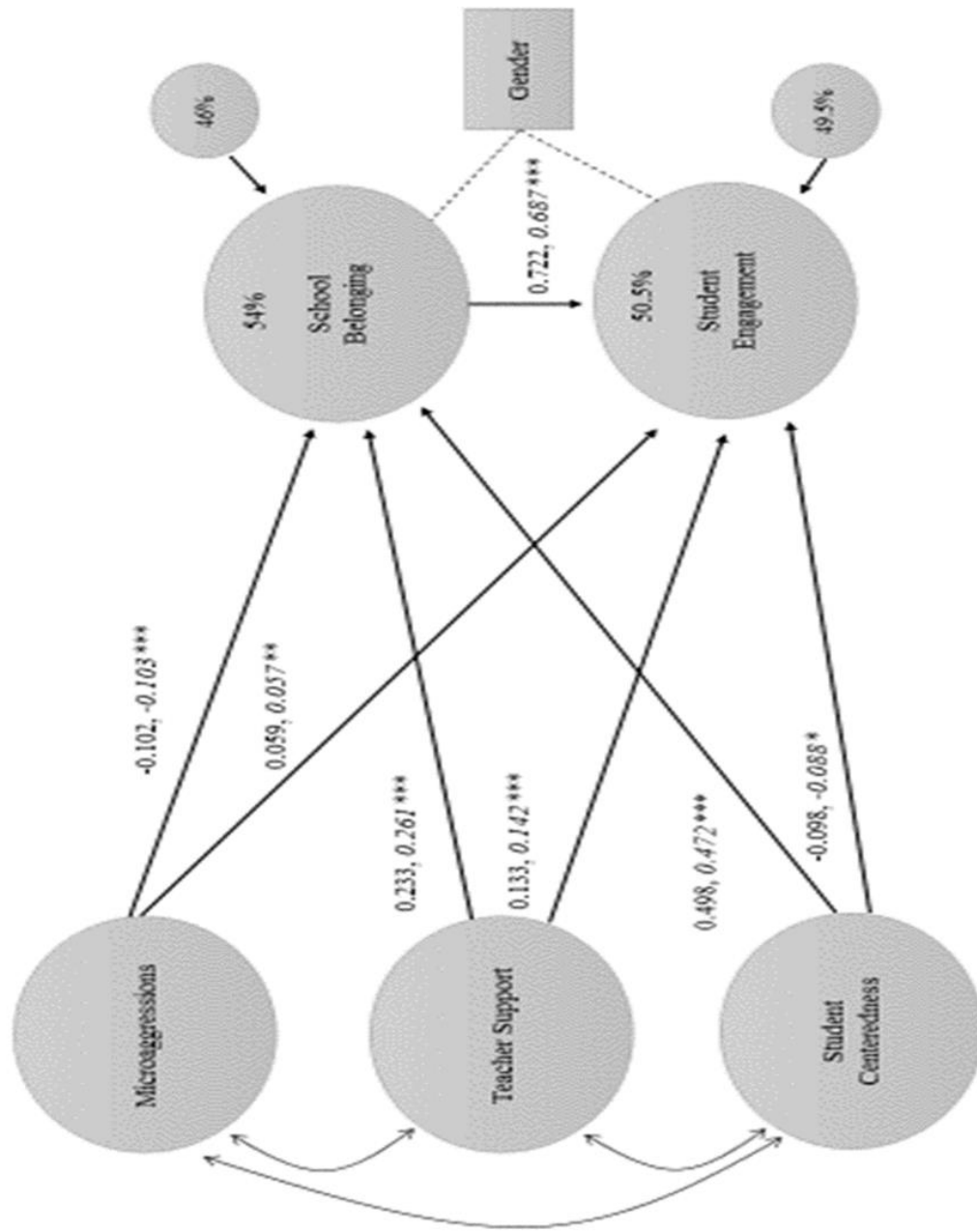


Figure 5: Results Diagram for the Black/Latino Model with Unstandardized and Standardized Path Coefficients

Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$

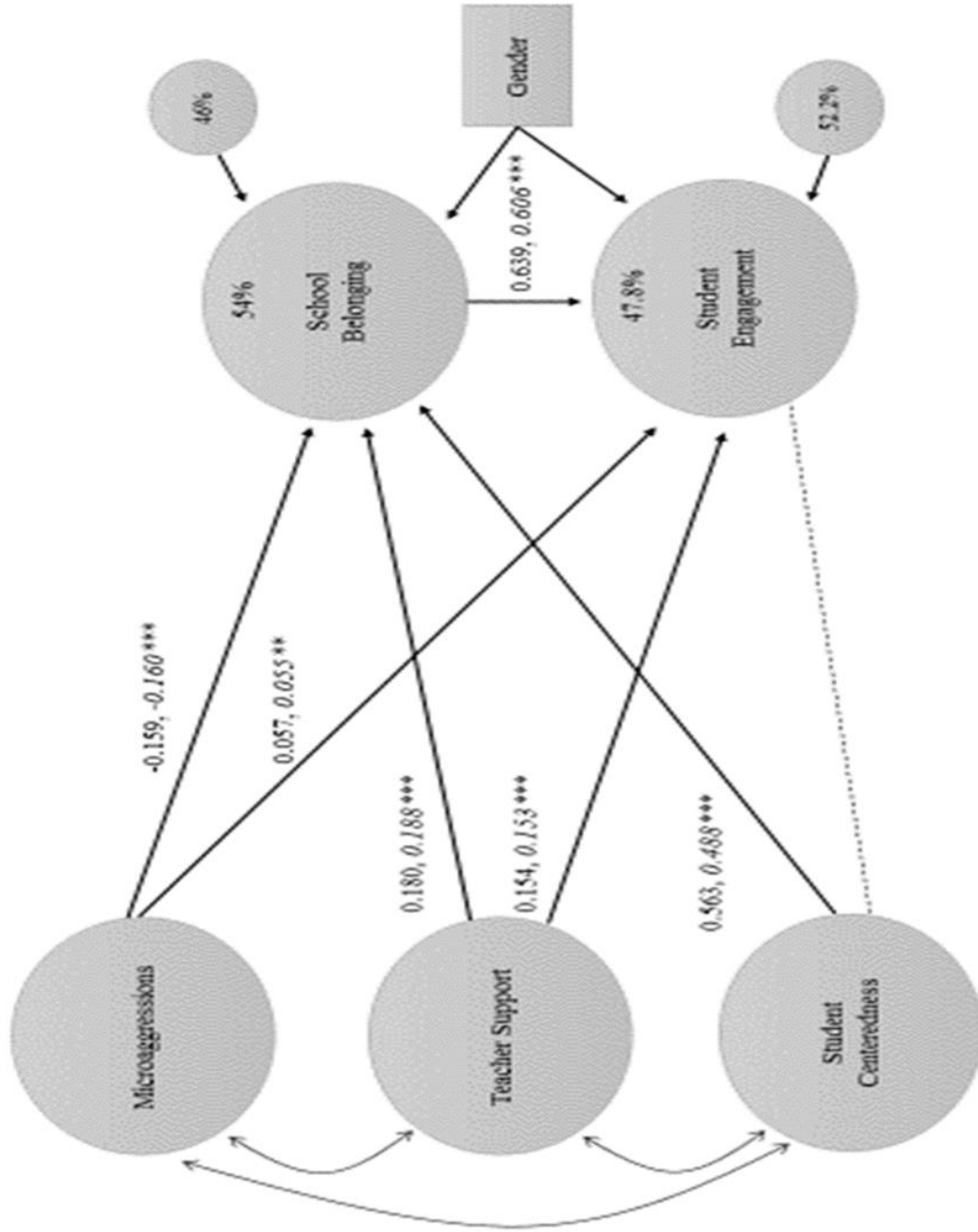


Figure 6: Results Diagram for the White Model with Unstandardized and Standardized Path Coefficients
 Note: * = $p < .05$, ** = $p < .01$, *** = $p < .001$