Title

The Antecedents and Consequences of Ethnically Diverse Early Adolescents' School Belonging and Academic Identity in Middle School

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The Antecedents and Consequences of Ethnically Diverse Early Adolescents' School

Belonging and Academic Identity in Middle School

A thesis submitted in partial satisfaction

of the requirements for the degree Master of Arts

in Education

by

Kara Heidi Akemi Kogachi

2013

ABSTRACT OF THE THESIS

The Antecedents and Consequences of Ethnically Diverse Early Adolescents' School

Belonging and Academic Identity in Middle School

by

Kara Heidi Akemi Kogachi

Master of Arts in Education

University of California, Los Angeles, 2013

Professor Sandra Graham, Chair

The present cross-sectional study used structural equation modeling (SEM) to examine

the links between early adolescents' perceptions of the school racial climate, sense of

belonging, academic identity, and academic performance in the spring of 6th grade. It

further explored whether the strength of model relationships differed based on

adolescents' ethnicity. The sample included 3,969 (52% female) students from 19

ethnically diverse urban middle schools. Based on self-reported ethnicity, 12.9% were

African-American/Black, 14.7% East/Southeast Asian, 17.9% White, and 37.8% Latino.

Findings revealed that within multiethnic schools, experiencing supportive racial norms

has important consequences for ethnic minority adolescents' academic outcomes. This

was partially mediated by youths' sense of belonging to school and academic identity. A

stronger relationship between racial climate and school belonging was found for Asian,

Latino, and White youth compared to African-American peers. The relationship between

racial climate and academic identity was strongest for Latino and African-American

youth. Finally, the relationship between racial climate and academic outcomes was

nonsignificant for White adolescents but significant for all ethnic minority youth.

Implications for future research are discussed.

The thesis of Kara Heidi Akemi Kogachi is approved.

Connie Kasari

Rashmita Mistry

Sandra Graham, Committee Chair

University of California, Los Angeles

2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

The Antecedents and Consequences of Ethnically Diverse Early Adolescents' School

Belonging and Academic Identity in Middle School

Psychological research addressing the underperformance and underachievement

of ethnic minority adolescents is often tied to concerns of academic identity and a sense

of belonging to school (Osborne & Jones, 2011; Steele, Spencer, & Aronson, 2002; Syed,

Azmitia, & Cooper, 2011; Walton & Cohen, 2007). As youth enter adolescence,

fundamental questions of identity, *"who am I?," "what is important to me?,"* and

belonging, *"do I fit in?," "do I belong here?,"* become increasingly important and have

implications for whether youth engage in or withdraw from school. While the effects of

academic identity on engagement and achievement are well established, research findings

are less clear about the processes that affect academic identification for youth of color,

and whether school belonging is truly associated with academic identity and subsequent

academic outcomes. Additionally, little research has directly examined the contextual

antecedents that inhibit and promote ethnic minority youths' academic identity and sense

of belonging to school. To address these limitations, this study tested the links between

academic identity and school belonging processes, perceived school racial climate, and

the academic outcomes of an ethnically diverse sample of sixth graders. It further

examined differences in the strength of model relationships among racial/ethnic groups.

Literature Review

Academic Identity and Achievement

While declines in motivation and school performance are quite normative at the

start of middle school, the persistence of achievement disparities between Black and

Latino students and their White and East Asian peers are well-documented (Clotfelter,

1

Ladd, & Vigdor, 2009; NCES, 2011), but less understood in the field of psychology

(American Psychological Association, 2012; S. Graham, 2011). A common theme

underlying psychological theories attempting to shed light on these achievement

differences is the importance of academic identity (for reviews see, Osborne & Jones,

2011; Syed, Azmitia, & Cooper, 2011). This is not surprising given that one's identity

has important motivational consequences. Identity in its broadest sense can be thought of

as personally valued aspects of the self that are accessible and made salient in particular

contexts (Brinthaupt & Lipka, 2002). Academic identity refers to the extent to which one

defines the self through a role or performance in school like being a good student

(Osborne et al., 2011). According to this theory, students who do not identify with

academics should have little motivation to succeed in school because good performance

is not especially important or intrinsically rewarding.

The direct effects of academic identification on youths' motivation and

achievement in school have been consistently demonstrated (Osborne, 1997; Voelkl,

1997). With the exception of research on stereotype threat, we know less about the

processes and pathways that lead to the maintenance and development of academic

identity for ethnic minority youth (Syed et al., 2011). Claude Steele and colleagues'

research on stereotype threat provides insight into the deleterious effects that threat to

one's social identity can have on the motivation, achievement, and academic identity of

members of socially stigmatized or intellectually stereotyped groups who strongly

identify with academics (Steele et al., 2002). Experiencing these threats may lead

students to underperform and withdraw from school or weaken identification with

academics over time (Osborne & Walker, 2006). Others have suggested that members of

stigmatized groups who face negative stereotypes about intelligence or academic performance may disidentify from academics in order to protect their sense of self (for reviews see, Crocker & Major, 1989). Finn (1989) argued that the process of disidentification could lead to disengagement and ultimately, school dropout.

Does school belonging matter?

Another line of research suggests that students' sense of belonging to school and those within it are essential for the development of youths' academic identity and success (for reviews see, Finn, 1989; Juvonen, 2006; Osterman, 2000; Roeser, Eccles, & Sameroff, 2000). Though different terms have been used to describe the relational context of school including school belonging (Anderman, 2002), school bonding (Catalano, Oesterle, Fleming, & Hawkins, 2004), and emotional engagement (Fredricks, Blumenfeld, & Paris, 2004), they are largely overlapping conceptually and tap into students' social and emotional connection to school as well as those within it.

When asked to identify the pressures and problems that affect their ability to engage in school settings, many students point to feelings of a lack of connection or not belonging (Crosnoe, 2011; Phelan, Yu, & Davidson, 1994). Quantitative research on school belonging and its association with motivational aspects of schooling such as achievement values, for example, have been well-established (Furrer & Skinner, 2003; Goodenow & Grady, 1993; Pittman & Richmond, 2007; Roeser, Midgley, & Urdan, 1996). Gillen-O'Neel and Fuligni (2012) found that school belonging helped high school students, even those struggling academically, to maintain high levels of motivation, continue to like school, and appreciate its usefulness. There is far less consensus in the literature, however, regarding the relationship between school belonging and academic

achievement. Some studies have found that students who have a greater sense of belonging to school have higher academic achievement outcomes (Anderman, 2002; Walton & Cohen, 2007). Others, however, have found no such association (Booker, 2006; Liu & Lu, 2011; Singh, Chang, & Dika, 2010). One reason for these discrepancies may be that school belonging is related to youths' academic outcomes indirectly, through more motivational constructs such as academic identity.

Moreover, when ethnic differences in these processes are examined, an even more inconsistent picture unfolds. Some studies have found ethnic differences in school belonging (Faircloth & Hamm, 2005), while others have not (Singh et al., 2010). For example, Johnson, Crosnoe, and Elder (2001) found that African American students reported lower levels of school belonging, but were more likely to show behavioral engagement than their White and Latino peers. Others have reported that African-American students had higher levels of belonging and valuing of school than White students, but their academic performance was not indicative of this (Voelkl, 1997). While the focus of the research has primarily been on African-American and White youth, findings suggest that the association between belonging and motivation may be especially strong for Latino students (Gillen-O'Neel & Fuligni, 2012; Goodenow & Grady, 1993). These preliminary and inconsistent findings suggest that looking for ethnic differences per se may not be as fruitful in our understanding of these processes than examining differences within the racial/ethnic context of school. Benner and Graham (2007) found that adolescents' sense of belonging declined across the transition to high school, particularly for those who experienced a change in ethnic congruence (proportion same ethnicity peers from middle to high school). This was especially salient for African-

4

American male students. This finding suggests that changes in the school context in terms of the ethnic composition of schools from middle to high school may negatively impact students' school-related affect. Emphasizing the school context, Walton and Cohen (2007) proposed that members of socially stigmatized groups experience uncertainty of the quality of their social connections when their social identities are made salient in particular environments. They coined this "belonging uncertainty," which over time, may lead members of a stigmatized group to conclude, "people like me do not belong here".

Additionally, another shortcoming of the school belonging and academic identity literatures reviewed is the focus on differences between African-American and White students, and to some extent Latino youth. Very few studies have included Asian adolescents, or parsed out the within group heterogeneity of this group. Asian students, particularly East Asian students, do not exhibit the educational disparities of other youth of color. This has led in part to the label of Asians as the model minority. Such a label, however, discounts the negative effects that this stereotype can have on Asian youth (Cheryan & Bodenhausen, 2000), the negative social experiences and effects of discrimination in school that have been documented (Rosenbloom & Way, 2004), as well as the heterogeneity of experiences of different Asian subgroups, such as Southeast Asian youth (Lee, 1994). It is therefore necessary to include these groups in our studies if we want to more fully understand for whom and under what conditions belonging and academic identity affect actual academic performance.

The Racial/Ethnic Context: School Racial Climate

The research on academic identity and school belonging suggests that individuals develop beliefs about who they are and where they fit in not only from their

experiences, but their experiences within particular contexts. How does the school context help or hinder feelings of belonging and academic identity development? Research on contexts that threaten belonging of members of stigmatized groups in academic settings include underrepresentation of ingroup (Delisle, Guay, Senécal, & Larose, 2009), discriminatory interactions with others (Logel et al., 2009), racially stratified academic tracking (Steele et al., 2002) and the physical environment of the classroom (Cheryan, Plaut, Davies, & Steele, 2009). Much of this discussion has revolved around ethnic minority youths' numerical minority status or underrepresentation in school. Issues of critical mass, and having more same-ethnicity peers is beneficial for feelings of belonging (Benner & Graham, 2007; Crosnoe, Johnson, & Elder, 2004; Fuller-Rowell & Doan, 2010). Being a numerical minority can make one's racial/ethnic group status salient and jeopardize youths' sense of belonging within those settings due to increased experiences of stigmatization and discrimination (Booker, 2006; Fuller-Rowell & Doan, 2010). While the issue of critical mass is important, an often overlooked and especially salient aspect of the school social context for youth of color are perceptions of the racial climate (García Coll et al., 1996). The school racial climate captures the degree to which teachers and students support positive cross-ethnic interactions and relationships between students of different racial/ethnic groups (supportive racial norms) (Green, Adams, & Turner, 1988). More broadly, the school racial climate may encompass what McKown (2012) refers to as signal influences, or social events that signify to members of stigmatized or intellectually stereotyped groups that they are devalued due to their group membership. For example, differential treatment by teachers due to a student's racial/ethnic group membership can signal whether the

intellectual ability of that group is valued. This is in line with the cues that may trigger stereotype threat and belonging uncertainty, or the global concern about a lack of belonging in school (Cohen & Garcia, 2008). The studies suggest that the environment and context can undermine or enhance social belonging, which is particularly salient for members of groups threatened by negative intellectual stereotypes who may be especially sensitive to belonging cues in academic settings. It further suggests the relation between racial climate, school belonging, and academic outcomes should be stronger for youth from stigmatized and negatively stereotyped groups.

Surprisingly few researchers have examined youths' perceptions of the racial climate (Chang & Le, 2010), and even fewer have linked these perceptions to their academic outcomes (Benner, 2011; Mattison & Aber, 2007). The limited findings suggest that for youth in multiracial/ethnic schools, perceptions of the school racial climate have important effects on the school performance of ethnic minority youth (Benner & Graham, 2012; Brand, Felner, Shim, Seitsinger, & Dumas, 2003; Green et al., 1988; Stone & Han, 2005; Tan, 2001). A few studies have linked perceptions of the racial climate to racial/ethnic discrimination (Benner & Graham, 2011; Stone & Han, 2005). The emerging literature documenting the experiences of discrimination from teachers, school leaders, and peers, indicates that such differential treatment due to one's race/ethnicity, particularly from teachers, have detrimental effects on youths' academic outcomes (e.g., Benner & Graham, 2012; Rosenbloom & Way, 2004; Stone & Han, 2005). School contexts in which teachers and peers communicate messages of devaluation of particular groups of students based on their racial/ethnic group may undermine those youths' feelings of belonging to school and motivation to identify and engage academically.

While numerical minority status may increase the likelihood of perceiving the school racial climate as more negative, experiencing a supportive and positive school racial climate is likely to be an important factor for maintaining youths' sense of belonging and academic identity if they have few same ethnic peers.

In bringing these bodies of literature together, I argue that one path that may affect the academic outcomes of stigmatized and negatively stereotyped groups are perceptions of whether teachers and peers are supportive of interactions between peers of different racial/ethnic groups and treat all students equally. These perceptions, in turn, will have important effects on ethnic minority youths' sense of belonging to school and academic identity. Experiencing a positive and supportive racial climate (i.e., association and perceived norms) will promote a sense of belonging to school and reflect a community in which youths' motivation is maximized and they are able to maintain and develop strong academic identification and performance in school.

The Present Study

Drawing upon evidence of associations between the racial climate and feelings of belonging, as well as findings of relations between academic identity and academic outcomes, the first aim of the present investigation was to evaluate a model linking perceptions of the racial climate to academic outcomes through adolescents' sense of belonging to school and academic identity (see Figure 1). A second aim of this study was to examine whether the strength of the model constructs differed across ethnic groups. In doing so, I extend the current literature by examining some of the psychological processes that affect the racial achievement gap in middle school and bring conceptual clarity to these constructs that have often been studied indirectly, separately, or within

8

laboratories using experimental paradigms. Guided by the research reviewed, the present

study addressed three main questions:

Figure 1
Conceptual model of school effects on adolescents' academic outcomes.
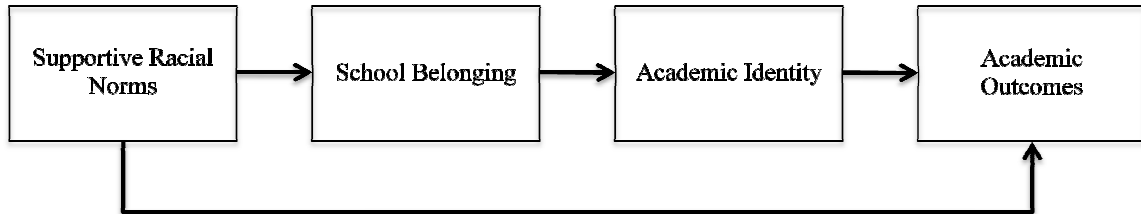
1.   How do perceptions of the racial climate affect youths' sense of

belonging to school, academic identity, and subsequent academic

outcomes?

2.   Is the relationship between school racial climate and academic

outcomes mediated by a sense of belonging to school and adolescents'

academic identity?

3.   Do the strength of these relationships vary for youth of different

racial/ethnic groups?

I hypothesized that direct relationships would emerge between perceptions of the

school racial climate and school belonging, between school belonging and academic

identity, and between academic identity and academic outcomes. In line with previous

research, I expected that youths' academic identity would in part mediate the

relationships between their sense of belonging to school and actual academic outcomes. I

hypothesized that youths' sense of belonging to school would partially mediate the

relationship between perceptions of the school racial climate and academic identity.

Thus, I expect that youth who perceive the school racial climate as more positive and

supportive and will feel a greater sense of belonging, which will in turn be associated with maintaining or developing a stronger identification with academics and better academic outcomes. Finally, I expected that students' racial/ethnic group will moderate the associations between model constructs, specifically paths from supportive racial norms. The racial climate was expected to be more strongly associated with feelings of belonging, academic identity, and academic outcomes for historically marginalized and academically stereotyped youth of color including African-American and Latino students.

Method

Participants

The current study included data from the UCLA Middle School Diversity Project, an ongoing longitudinal study designed to examine ethnic diversity and adolescent socio-emotional adjustment. The analytic sample for this study included 3,969 sixth grade students (52% girls) who were surveyed in the spring of 6th grade. Based on students' self-reported ethnicity, the sample was 12.9% African-American/Black, 14.7% East/Southeast Asian, 17.9% European-American/White, and 37.8% Latino/Mexican-American. Students were drawn from 19 urban middle schools in northern and southern California. Schools were selected to represent a range of ethnic compositions including nondiverse schools (i.e., majority Latino, majority African-American, majority Asian, and majority White) and ethnically diverse schools (i.e., no single ethnic group comprised a majority of the population). To avoid confounding ethnicity and socioeconomic status (SES) in school selection, the sample was restricted to lower-middle/lower-SES (working class) communities. This was based on the percentage of students receiving free/reduced lunch (our school-level proxy for SES) and census data

(e.g., median income, number of males and females in the work force) for the neighborhoods in which the selected schools were located. Schools with average enrollments of 900-1200 students and with average reading and math achievement (40th to 60th percentile on standardized tests) were selected.

Procedures

Participants were recruited in the fall of their 6th grade from one of 19 middle schools that met eligibility criteria as described above. Participants were recruited in two cohorts in the Fall of 6th grade and surveyed 4 times (i.e., fall and spring of 6th grade and spring of 7th and 8th grade). Informed consent forms were translated into Spanish or Vietnamese as needed. Two ipods were raffled in each school for students who returned their parent consent form regardless of whether the parent agreed to let their child participate. Students received honoraria of $5 for Waves 1 and 2 in 6th grade. No student was allowed to participate in the study without a signed parental consent form granting permission. All student measures were assembled in booklet form and group administered by two researchers in the classroom.

Measures

School processes.

Student perceptions of school racial climate. Three items from the supportive racial norms subscale ($\alpha = .76$) from the School Interracial Climate Scale (Green et al., 1988) were used to measure whether teachers supported positive relationships between students of different ethnic groups. Students rated items on a 5-point scale ranging from 1 (*for sure yes!*) to 5 (*no way!*). Negative items were reverse-coded such that higher scores indicate more positive interracial interactions.

Psychological processes.

Academic Identity. Academic identity (α = .72) was measured using 4 adapted items from the Identification With Academics Scale (Osborne, 1997) assessing the importance of school and being a good student, rated on a 5-point Likert-type scale (1 = For sure yes! to 5 = No way!). Items included *"being a good student is an important part of who I am"* and *"I think a lot about school and how important it is to me."*

Student perceptions of school belonging. Four items from the school climate subscale of the Effective School Battery (ESB; Gottfredson, 1986) (α = .87) were used to examine school belonging. These items assessed the degree to which students feel that they belong: *"I feel like I am a part of this school", "I feel close to people at this school", "I feel that I belong in this school", and "I feel respected and valued at this school"*. Items were rated on a 5-point scale (from 1 = "no way" to 5 = "for sure, yes!"). Negatively worded items were reverse coded such that higher scores reflected more positive perceptions of school belonging.

Academic outcomes.

Teacher-rated Academic Engagement. Student academic engagement was measured by the 5-item Teacher Report of Engagement Questionnaire (TREQ; Connell & Wellborn, 1991) (α = .91). Items assessed the degree to which students were perceived by their teacher as engaged as opposed to disaffected from school activities including, *"In my class, this student concentrates on doing his/her schoolwork"*. Items were rated on a 4-point scale (1 = *not at all characteristic of this student* to 4 = *very characteristic*). Means were computed, with higher scores indicating higher levels of academic engagement.

Grade point average (GPA). Students' grades for 6th grade were collected from their school report cards at the end of the school year. Grades for all courses were coded on 12 points (A+ = 4, F = 0) and then averaged to create a composite GPA for each student for the 6th grade school year.

Individual-level covariates.

Analyses included gender and proportion same ethnicity peers as covariates. Students self reported their gender and ethnicity. Gender was binary-coded, with females assigned values of 1 and males assigned values of 0. The proportion of same ethnic peers in school was calculated for each student using school-level race/ethnicity data collected from the California Department of Education (CDE). CDE data were aggregated into four primary racial/ethnic categories: African-American, Asian (Asian, Pacific Islander, Filipino), Latino, and White. Percent same-ethnicity peers reflect the proportion of students in the school that matched students' racial/ethnicity category. Thus, if an Asian student attended a middle school that was 25% Asian and 75% Latino, the students' proportion same-ethnicity peers score would be .25.

Data Analytic Strategy

A latent variable structural equation modeling (SEM) technique was used to test the relations among the study constructs. One advantage of using SEM over an ordinary least squares regression approach is the ability to simultaneously test for the direct and indirect effects and account for the reliability of observed variables by representing each construct as a latent variable or factor (Bentler, 2006). The model was estimated using EQS 6 (Bentler, 2006). A planned missingness 3-form design (Graham, Taylor, Olchowski, & Cumsille, 2006) was implemented for the school belonging and academic

identity measures. This design involved administering different items to different participants in order to reduce the amount of time it takes each participant to complete a survey and ask more questions than could be answered in a set amount of time by a single participant. These variables were therefore treated as missing completely at random (MCAR) as the missing data mechanism was ignorable and valid estimates could be obtained without an explicit model of it. EM computational procedures were used for estimating parameters of these variables (Bentler, 2006).

Normality of the data was evaluated using Mardia's normalized multivariate Kurtosis, which should be +3 to -3 range (Bentler, 2006). For this model, the multivariate kurtosis was very large (Mardia's normalized coefficient = 78.79) indicating the assumption of normality was violated. Statistics based on normal theory such as the ML model and χ^2 test may be valid for nonnormal data, however, normal theory requires that errors of latent factors are independent and that factors and errors are independent (Yuan & Bentler, 2000). Because this is difficult to evaluate in practice, robust corrections for data that are not multivariate normal were used. This includes the Satorra-Bentler scaled test statistic, which has been found to correct the problematic behavior of T_{ML} and performs well under a variety of nonnormal conditions. In addition to this, the comparative fit index (CFI; Bentler, 1990) and root mean squared error of approximation (RMSEA; Steiger, 1998) were used to evaluate model fit as they have been shown to also perform well (Hu & Bentler, 1998). The chi-square test indicates "badness of fit," the CFI compares the hypothesized model to a completely uncorrelated model, and the RMSEA assesses model fit adjusting for model complexity. A nonsignificant chi-square, a CFI above .95 (Bentler, 1990), and the RMSEA below .05 (MacCallum, Browne, &

Sugawara, 1996) indicate good model fit and that the model adequately describes the relationships observed in the observed data. Finally, to test for moderation in the strength of associations in model constructs by ethnicity, multigroup analyses were conducted. The model was first run separately within each ethnic group to examine the tenability of the model. Once good fit within each ethnic group was established, the model was estimated simultaneously in all groups with no constraints, providing the baseline estimates to which all subsequent models were compared. Increasingly restrictive constraints were then placed on all factor loadings to determine invariance in the measurement model, and on regression coefficients to determine invariance in the structural model.

Results

Formation of Latent Variables

A measurement model for the latent school racial climate, school belonging, academic identity, and academic outcomes variables was first estimated in order to determine whether observed variables could be modeled as a single latent construct. This provides a more parsimonious representation of the constructs and a better way to account for the individual contribution of each item by more precisely modeling measurement error (Bollen, 1989). Adolescents' responses to three items from the supportive racial norms subscale of the school racial climate measure made up the supportive racial norms latent factor. Four items from the school climate measure were used to create a latent variable of school belonging. The academic identity factor comprised four items from the academic identification scale. And finally, the mean score of the teacher-rated academic engagement measure and average grade point average

15

(GPA) were used to create a latent factor of academic outcomes. One of the loadings for

each latent variable was fixed at 1 in order to properly identify the model. Fixed factor

loadings were chosen for observed variables that were theoretically strongest or the best

indicators of the latent variable. For all latent variables, individual loadings were

generally comparable, and all were statistically significant at a minimum probability level

of .05 (see Table 1).

Table 1
Unstandardized and Standardized Factor Loadings for Final Model

	Factor Loadings	
Latent Factor	Unstandardized	Standardized
Supportive racial norms		
Teachers at this school are fair to students of all ethnic groups	1.016	.787
Teachers at this school pay attention to students of all ethnic groups	1.000	.853
Teachers here like students of different ethnic groups to get along	.715	.671
School Belonging		
I feel like I am a part of this school	.973	.837
I feel close to people at this school	.750	.713
I feel that I belong in this school	1.000	.875
I feel respected and valued at this school	.865	.750
Academic Identity		
Being a good student is an important part of who I am (r)	.762	.856
I feel proud when I do well in school (r)	.986	.783
I think a lot about school and how important it is to me (r)	.522	.714
School is very boring for me, and I'm not learning what I feel is important	1.000	.856
Academic Outcomes		
Teacher-rated Engagement[a]	1.000	.824
GPA	.959	.771

Note. All parameter estimates significant at $p < .05$. r = reverse coded. [a] Based on
composite (mean) scores rather than measured items.

Intercorrelations, means, and standard deviations for all endogenous variables in

the model are presented in Table 2. The specification of this model can be seen in Figure

2, which includes all significant path coefficients transformed into a standardized metric

in the final model. The analysis from the final model resulted in a model fit of χ^2 (78, $N =$

3,969) = 582.50, $p < .000$, CFI = 0.974, RMSEA=0.040. Given the large sample size, the

power of the χ^2 test is high and thus rejection at the 5% level may reflect trivial

deviations from the model. To determine whether there were misspecifications in the

Table 2

Means, Standard Deviations, and Intercorrelations Among Modeled Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Teachers at this school are fair to students of all ethnic groups	1												
2. Teachers at this school pay attention to students of all ethnic groups	.671**	1											
3. Teachers here like students of different ethnic groups to get along	.502**	.558**	1										
4. I feel like I am a part of this school	.211**	.211**	.218**	1									
5. I feel close to people at this school	.141**	.156**	.171**	.570**	1								
6. I feel that I belong in this school	.183**	.195**	.205**	.739**	.613**	1							
7. I feel respected and valued at this school	.178**	.181**	.192**	.606**	.590**	.672**	1						
8. Being a good student is an important part of who I am	.266**	.271**	.254**	.548**	.409**	.530**	.439**	1					
9. I feel proud when I do well in school	.281**	.270**	.233**	.554**	.390**	.514**	.427**	.670**	1				
10. I think a lot about school and how important it is to me	.214**	.222**	.226**	.495**	.405**	.478**	.435**	.624**	.524**	1			
11. School is very boring for me and I'm not learning what I feel is important	.206**	.205**	.201**	.598**	.440**	.548**	.464**	.734**	.689**	.606**	1		
12. Teacher-rated Engagement	.153**	.135**	.133**	.105**	.046**	.107**	.063**	.234**	.189**	.144**	.124**	1	
13. GPA	.173**	.174**	.148**	.101**	.062*	.095**	.067**	.217**	.190**	.134**	.109**	.638**	1
M	4.21	4.25	4.33	3.68	3.75	3.72	3.62	4.19	3.65	4.44	3.71	2.87	3.04
SD	.97	.90	.82	.87	.79	.86	.87	.89	1.26	.73	1.17	.76	.77
N	5671	5663	5654	5603	5603	5603	5603	5603	5603	5603	5603	5685	4680

Note. *p < .05. **p < .01. ***p < .001

17

model, standardized residuals were examined. Both the average absolute standardized residual (0.0183) and the average off-diagonal absolute standardized residual (0.0209) were small, and the largest standardized residual was .046, indicating that misspecifications are trivial. All paths were significant and the model accounted for 14% of the variance in academic outcomes.

Testing Direct Paths

Given that the overall model fit the data well, the strength of the direct path coefficients was evaluated. In testing the direct effects, I examined whether supportive racial norms predicted school belonging, whether school belonging predicted academic identity, and whether academic identity, in turn, predicted students' academic outcomes. The direct effect of school racial climate on academic outcomes was also examined. This model controlled for gender and percentage of same ethnic peers within the student's school. The results take into account all other modeled relationships (predictors, mediators etc.). As seen in Figure 2, experiencing a supportive racial climate was associated with a greater sense of school belonging ($\beta = .300$, $p < .05$). A greater sense of school belonging was in turn strongly related to adolescents' academic identity ($\beta = .701$, $p < .05$). Academic identity was predictive of adolescents' academic outcomes (final overall grade-point average for 6th grade and teacher-rated academic engagement) ($\beta = .564$, $p < .05$). Supportive racial norms were directly related to academic outcomes, although less strongly ($\beta = .275$, $p < .05$). Consistent with the hypothesized model, standardized regression coefficients were significant (ps $< .05$) and in the expected direction.

Indirect Effects Estimates

18

Figure 2
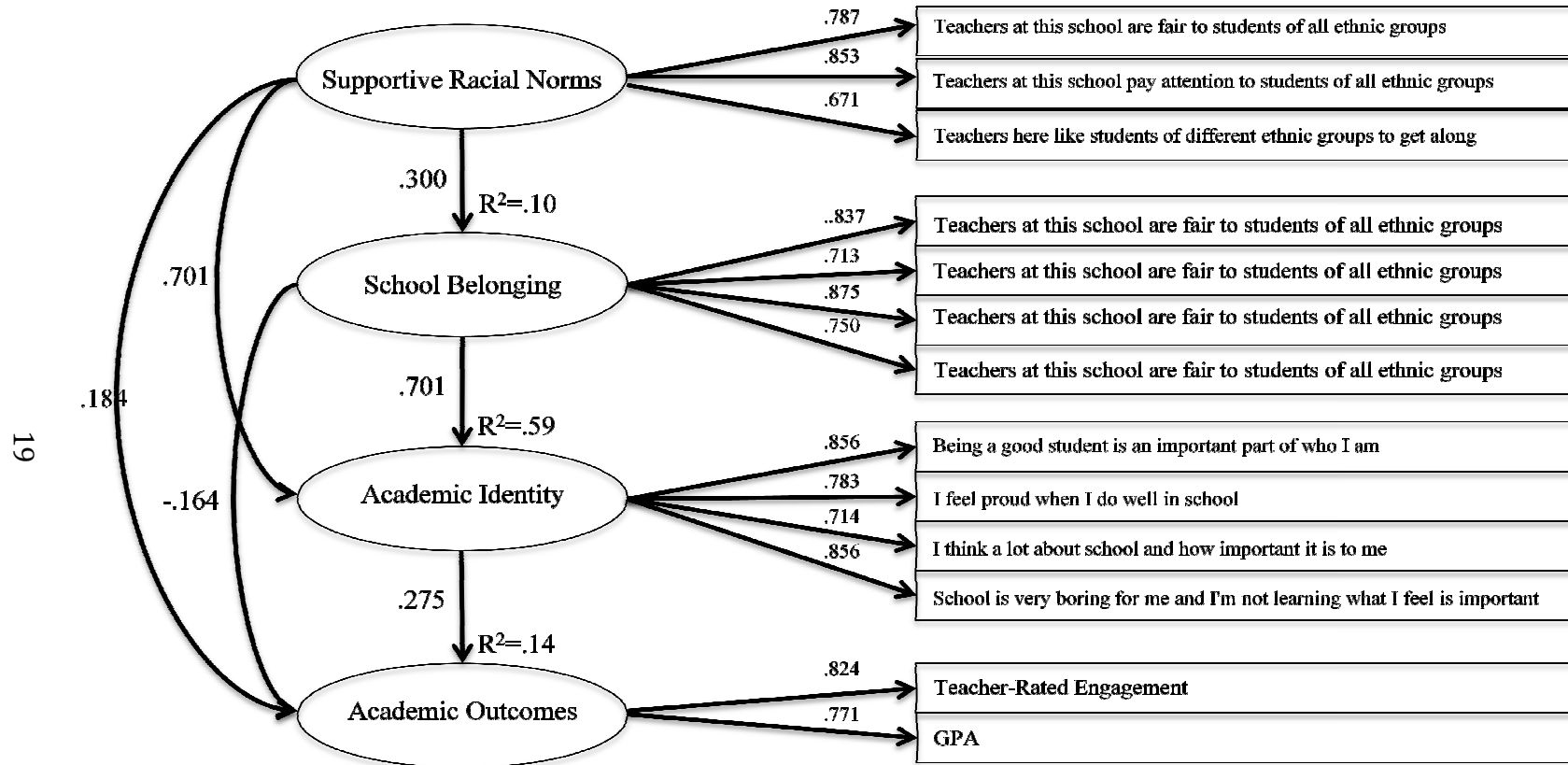
Empirical Results for Final Model

Figure 2. *Standardized coefficients for model of supportive racial norms, school belonging, and academic identity on adolescents' academic outcomes with a model fit of,* χ^2 *(78, N = 3,969) = 582.50, p < .000, CFI = 0.974, RMSEA=0.040. Covariates included gender and proportion same-ethnicity peers. Only significant paths are shown.* *p < .05*

Paths for possible indirect effects were also tested. This included the indirect effect of perceived racial climate on academic identity through school belonging, school belonging on academic outcomes through academic identity, and the full three path sequential model where the indirect effect of racial climate on academic outcomes through school belonging and academic identity was also tested. The test for an indirect effect was based on the EQS estimation of indirect effects, a modified Sobel test (Bentler, 2006). Using the nonstandardized parameter indirect effects, the indirect effect of perceived supportive racial norms on academic identity was significant and very large, the largest indirect effect in the model (see Table 3). The indirect effect of school belonging on academic outcomes was also significant. Procedures outlined by Taylor, MacKinnon, & Tein (2008) were used for testing the full three path sequential mediation model. This revealed a small but significant indirect effect of supportive racial norms on academic outcomes through school belonging and academic identity.

Table 3
Tests of the Indirect Effect

Indirect Pathways	Z	P
Supportive racial norms (School Racial Climate) → School Belonging → Academic Identity	13.671	< .05
School Belonging → Academic Identity → Academic Outcomes	7.894	< .05
Supportive racial norms (School Racial Climate) → School Belonging → Academic Identity → Academic Outcomes	5.925	< .01

Unexpectedly, the association between school belonging and academic outcomes was negative, indicating that those who have a higher sense of belonging have worse academic outcomes (β = -.164, $p < .05$). This latter direct effect, however, is less than the associated strong positive indirect effect (β = .210, $p < .05$) consistent with hypotheses, leaving the corresponding total effect significant and positive (standardized value = .028).

However, inconsistent mediation (suppression effect) may be present here given the estimate of the total effect is less than the negative direct effect (MacKinnon, Krull, & Lockwood, 2000). Overall, results of this model indicate that the hypothesized process model fit the data very well and that supportive racial norms has a direct effect on academic outcomes as well as an indirect effect through a sense of belonging and academic identity.

Multigroup Analyses

To address the final goal of the study, tests for moderation using multigroup analyses were conducted to determine whether the strength of associations between model constructs differed by adolescent's ethnicity. First, to explore the plausibility of the final model for African-American/Black, East/Southeast Asian, Latino, and White students, identical models were run for each group separately. Once good fit in each group was established, the models were then run simultaneously with no constraints. The fit of this baseline model provided the value against which all subsequent models were compared. Increasingly restrictive equality constraints were placed first on the measurement model (i.e. factor loadings, F→V), then structural equations or paths (i.e. regression coefficients, F→F) to identify which parameters were invariant across groups.

The resultant models for each ethnic group estimated separately fit the data well, indicating that the proposed model held for all groups. For African-American adolescents, χ^2 (78, N =513) = 133.56, p < .000, CFI = 0.975, RMSEA= 0.037; East/Southeast Asian, χ^2 (78, N = 584) = 189.09, p < .000, CFI = 0.964, RMSEA= 0.049; Latino, χ^2 (78, N = 1,500) = 244.89, p < .000, CFI = 0.978, RMSEA= 0.038; and White adolescents, χ^2 (51, N = 710) = 138.81, p < .000, CFI = 0.979, RMSEA=0.033. Given

21

this, a baseline multigroup model with no cross-group constraints (i.e. all parameters were allowed to vary across ethnic groups) was specified for comparison (Byrne, 2006). The resultant model fit was very good, χ^2 (312, $N = 3,307$) = 703.52, $p < .000$, CFI=0.975, RMSEA=0.039. All factor loadings were significant for the unconstrained model in all four groups, which can be found in Table 4.

Table 4
Standardized Factor Loadings for Unconstrained Model in African-American/Black, East/Southeast Asian, Latino, and White Adolescents.

	African-American / Black	East/ Southeast Asian	Latino	White
Teachers at this school are fair to students of all ethnic groups	.809	.693	.789	.775
Teachers at this school pay attention to students of all ethnic groups	.857	.817	.836	.885
Teachers here like students of different ethnic groups to get along	.574	.638	.721	.629
I feel like I am a part of this school	.823	.822	.835	.846
I feel close to people at this school	.746	.768	.678	.708
I feel that I belong in this school	.843	.924	.865	.879
I feel respected and valued at this school	.742	.751	.731	.808
Being a good student is an important part of who I am (r)	.812	.871	.857	.865
I feel proud when I do well in school (r)	.702	.839	.800	.791
I think a lot about school and how important it is to me (r)	.667	.724	.714	.689
School is very boring for me, and I'm not learning what I feel is important	.808	.869	.868	.858
Teacher-rated Engagement	.769	.817	.798	.806
GPA	.817	.728	.781	.719

Invariance in the measurement model was then tested to examine whether the observed variables in the model measured the same factors in each of the groups. Equality constraints were placed on all freely estimated factor loadings (V → F) (Bentler, 2006). Given that the robust Satorra-Bentler adjusted chi-square test was used in all analyses due to the nonnormality of the data, corrected chi-square difference tests were

conducted as outlined by Satorra & Bentler (2001). The *LM* test was used to evaluate whether specific restrictions in a model were appropriate, an advantage of using EQS. The addition of constraints on factor loadings significantly worsened the fit of the model $\Delta\chi^2(27) = 42.39$, $p = .03$, indicating that some observed and latent variables were different across the four groups. Examination of the *LM* test revealed that the constraints on the factor loading of the observed variable *"teachers here like students of different ethnic groups to get along"* on the supportive racial norms factor were not operating equivalently across African-American and Asian adolescents. Additionally, the factor loading of the observed variable *"I feel like I am a part of this school"* on the school belonging factor was not operating equivalently across Latino and White adolescents. Full invariance of all parameters, and even invariance among key parameters, is only rarely achievable (Byrne, Shavelson, & Muthén, 1989) and can be more difficult with greater numbers of samples (Bentler, 2006). Despite the significant $\Delta\chi^2$ after imposing equality constrains on all appropriate factor loadings, the multigroup model still exhibited a good fit to the data (CFI=0.974; RMSEA=0.038; 90% C.I.=0.034, 0.042). Releasing these two constraints, however, resulted in a better fit, $\Delta\chi^2 = 23.39$ (25) , $p > .05$; CFI=0.975; RMSEA=0.037. Therefore, these two constraints were released in all subsequent analyses.

Invariance of the structural model was tested using partial measurement invariance (Byrne et al., 1989). All previously imposed equality constrains were retained except the two factor loadings found to be noninvariant, which were allowed to be freely estimated for the corresponding groups. The use of partial measurement invariance requires that there are multiple indicator variables used in measuring each latent

23

construct, with at least one invariant indicator (other than those fixed to 1.00 for identification purposes), which was met here. To evaluate the invariance of paths between model constructs across groups, paths between factors or regression weights were systematically constrained to be equal and resulting fit indices were compared to the unconstrained, baseline model (see Table 5). Increasingly restrictive

Table 5
Effects of Race/Ethnicity on Model Relationships

Constrained path	χ^2 (*df*)	*p* (for $\Delta\chi^2$)
1. None (Baseline Model)	790.57 (255)	—
2. Measurement model	23.40 (25)	*ns*[a]
3. Structural Model		
Supportive Racial Norms → School Belonging	**41.42 (28)**	**.05**
School Belonging → Academic Identity	41.37 (31)	*ns*
Academic Identity → Academic Outcomes	47.01 (34)	*ns*
Supportive Racial Norms → Academic Identity	**53.79 (37)**	**.04**
Supportive Racial Norms → Academic Outcomes	**55.71 (40)**	**.05**
School Belonging → Academic Outcomes	56.95 (43)	*ns*

Note. These nested models are hierarchically related to one another such that each step includes current constrains as well as constraints imposed in all previous steps. Bolded pathways indicate significant moderation effects and differences across racial/ethnic groups. *ns* = nonsignificant differences. [a]The measurement model includes two freely estimated factor loadings.

constraints were imposed and adjusted chi-square difference tests were conducted to examine whether doing so led to significant differences in model fit. Given the nonindependence of these tests, it is possible that an alternative series of tests might lead to quite different results (Byrne et al., 1989). Based on my substantive interest in this process model, the sequential model-fitting procedures were deemed reasonable. The multigroup analysis results indicated significant differences across groups between

supportive racial norms and school belonging, $\Delta\chi^2(28) = 41.42$, $p = .04$, supportive racial norms and academic identity, $\Delta\chi^2(37) = 53.79$, $p = .05$, and supportive racial norms and academic outcomes, $\Delta\chi^2(48) = 55.71$, $p = .05$.

These results suggest that these particular path coefficients or the strength of the association among these latent factors appear different for adolescents of different ethnic groups. Examination of the path coefficients for each group revealed that perceptions of the school racial norms were most highly predictive of a sense of school belonging for East/Southeast Asian ($\beta = .341$, $p < .05$), Latino ($\beta = .330$, $p < .05$), and White adolescents ($\beta = .321$, $p < .05$), followed by African-American adolescents ($\beta = .278$, $p < .05$). The relationship from supportive racial norms to academic identity was strongest for African-American ($\beta = .184$, $p < .05$) and Latino adolescents ($\beta = .188$, $p < .05$) followed by white ($\beta = .140$, $p < .05$) and East/Southeast Asian adolescents ($\beta = .131$, $p < .05$). Finally, the direct relationship between supportive racial norms and academic outcomes was not significant for White adolescents ($\beta = .058$, ns), but was significant for all ethnic minority youth (East/Southeast Asian: $\beta = .149$, $p < .05$; African-American: $\beta = .148$, $p < .05$; Latino: $\beta = .104$, $p < .05$). Thus, the multigroup analyses indicated that while the model fit in all groups, subtle differences in the magnitude of the coefficients across African-American/Black, East/Southeast Asian, Latino, and White adolescents, for each pathway linking supportive racial norms to all other model constructs were found.

Discussion

This study tested the effects of an ethnically diverse sample of early adolescents' perceptions of the school racial climate on school belonging and academic identity processes, and their actual academic performance in the sixth grade. These findings

supported the hypotheses that perceptions of the racial climate had an indirect effect on adolescents' academic outcomes through their sense of school belonging and academic identity, and a direct effect for ethnic minority youth. These findings indicate that students' sense of belonging and academic identity in part explain the effects of unsupportive racial climates on achievement, and suggest that reinforcing and stabilizing school belonging and academic identity can have important effects on students' motivation and achievement in school. Furthermore, the findings suggest the importance of social processes for motivation and achievement, and considering the social context within which motivation and achievement strivings unfold. Drawing from an ethnically diverse sample of students, the moderating effect of ethnicity on the strength of relationships between perceived supportive racial norms and model constructs was examined and also supported. While previous studies have identified links between school belonging, academic identity, and academic outcomes separately, this study contributes to the existing body of work by including all constructs concurrently. It further examined the role of supportive racial norms, an aspect of the school context that may be particularly important for ethnic minority youth.

Indirect Effects

Overall, the results revealed that perceptions of the racial climate are partially exerting their effects on academic outcomes through a sense of belonging to school and academic identity. In particular, much of the effect of school belonging on academic outcomes is through adolescents' academic identity. Therefore, academic identity, an important determinant of achievement, is likely to be affected by the school racial climate and school belonging and should be studied more longitudinally. Previous research on

26

stereotype threat suggests that ethnic minority youth who most strongly identify with academics are at risk for disengaging from school when experiencing negative stereotypes or unsupportive school climates (Osborne & Walker, 2006). Thus, when looking to improve academic outcomes, increasing students' feelings of belonging to school is one potential target for intervention, but may not be enough. Promoting a more positive academic identity for all students and creating school environments that support caring for and doing well in school can further buffer some of the negative effects of unsupportive racial climates and directly improve adolescents' academic performance.

This study identified an unexpected negative relationship in the direct path from school belonging to academic outcomes, indicating that the more connected adolescents felt to their school, the worse they did academically. While the overall total effect of the direct and indirect paths was positive, it was smaller than the unexpected negative direct path suggesting this may be a suppression effect (Mackinnon et al., 2002). While this negative relationship was not expected, there are a number of possible explanations. A stronger sense of belonging may be associated with lower academic outcomes because the mediators are counterproductive or that there are oppositional meditational processes for the effect of school belonging (MacKinnon, Fairchild, & Fritz, 2007). Prior academic performance or how much a student values academic achievement, and the achievement levels of peers and their school were not examined but are important when understanding the underachievement of ethnic minority youth (Graham, Taylor, & Hudley, 1998). Depending on their frame of reference, a student might feel that they belong, for example, because of his or her friends or peer group. If friends or valued peers are low achieving, a high sense of belonging but low academic performance is possible. Previous

27

research has shown that social bonds and high needs to fit in can actually promote school disengagement (Fuligni, Eccles, Barber, & Clements, 2001). Participation in nonacademic school activities can also promote belonging, but may not necessarily impact academic outcomes. This further suggests that promoting a connection to the broader school collective where the norms emphasize both positive relationships in school as well as valuing and caring about academics is important for academic success.

The Moderating Effect of Ethnicity

As hypothesized, the direct paths from supportive racial norms to each of the other model constructs (school belonging, academic identity, and academic outcomes) differed across ethnic groups. The hypothesis that these associations would be strongest for historically marginalized and intellectually stereotyped groups, however, was not fully supported. Supportive racial norms were more strongly related to feelings of belonging for East/Southeast Asian, Latino and White youth compared to African-American adolescents. These differences, however, were subtle and the relationship between supportive racial norms and belonging were relatively strong for all students. Furthermore, specific group comparisons were not tested to determine where the moderating effect of ethnicity lies. Testing the differences between particular groups is an important next step in determining whether specific group differences are statistically significant and meaningful. Supportive racial norms were more strongly associated with academic identity for Latino and African-American youth compared to their White and East/Southeast Asian peers. The direct relationship between supportive racial norms and academic outcomes were not significantly related for White adolescents, but were for all ethnic minority youth.

28

These findings suggest that within multiethnic/racial schools, the school racial climate matters for the academic outcomes for ethnic minority youth and the development of a sense of belonging to school and academic identity for all adolescents. The relationship between supportive racial norms and academic identity and academic outcomes may be stronger for African-American students compared to other ethnic groups given greater experiences of racial discrimination or disproportionate discipline from school staff and societal institutions (Mattison et al., 2007; Rosenbloom et al., 2004). Furthermore, awareness of bias may also lead African-American students to be more sensitive to the racial climate of their school in general (Benner et al., 2012). These dynamics, however, are complex and within group heterogeneity based on gender, numerical minority status, and prior achievement levels are important next steps for future research. The finding that the association between supportive racial norms and academic outcomes was not as strong for Latino students compared to other groups may be due to the strong effect of the indirect path through feelings of belonging and academic identity. This finding may be further made clear by considering generational status. Research on the immigrant paradox showing lower school performance among second and third generation students as they assimilate into U.S. society may be an important factor for Latino youth (Crosnoe & Fuligni, 2012). Additionally, first generation students may be less aware of the historical racial/ethnic context of the U.S. and of biases that exist against their group. While these patterns of associations were just as strong for East/Southeast Asian students, examining differences among East Asian compared to Southeast Asian students, for example, and by generational status could reveal greater heterogeneity within these processes as well. For White students, the racial

29

climate was positively associated with a sense of belonging to school and academic identity, however, these aspects of the school context did not affect their actual academic outcomes.

Limitations

While the research here contributes to our understanding about some of the processes that influence ethnic minority adolescents' educational outcomes, there are a number of limitations. First, the multilevel nature of the data was not accounted for in these analyses. Basic statistical theory underlying SEM models assumes that the observations are independently and identically distributed (Bentler, 2006). Given that students are nested within schools and students in the same school are more likely to share characteristics than students from other schools, these assumptions could be violated. Multilevel structural equation modeling (MSEM) is therefore most appropriate as it can deal with nonindependent observations by explicitly modeling the clustered nature of multilevel data (Muthén, 1994). In this case, because the within person processes are of interest and there are no between school effects modeled, a partially saturated model could be employed to account for any between school differences (Ryu & West, 2009). Second, missing data was handled using EM imputation on variables with a planned missingness design. Using full information maximum likelihood (FIML) estimates, however, would allow all available data to be used in analyses and a better way to handle missing data (Bentler, 2006). Third, while the overall mean of supportive racial norms was high indicating that most early adolescents in our sample are experiencing supportive racial norms, there were differences by ethnic group. Being able to examine whether these mean differences are significant within the full model would add to the

present findings. Finally, given that all the data were measured at a single time point, causal conclusions cannot be made. Rival theories were not tested, nor the reverse direction of the causal arrows and whether this affects model fit (MacCallum, Wegener, Uchino, & Fabrigar, 1993). Over time, these relationships may differ and this pathway is likely to be bidirectional.

Future Directions

This study highlights the complexity of understanding ethnic differences in the psychological determinants of the racial/ethnic achievement gap and suggests a few potential paths for future research. First, studies could further examine for whom and under what conditions a higher sense of belonging to school promotes better academic outcomes for ethnically diverse adolescents and when a greater sense of belonging might actually be ineffective or even counterproductive. Additionally, as Baumeister and Leary (1995) state, belonging is a broad and integrative construct. Belonging has been defined and differentiated in a number of ways including social belonging, academic belonging, and belonging or fit within a domain. As research continues, it may be necessary to explicitly define different types of belonging and examine the potentially differing ways in which they influence motivation and achievement. Understanding feelings of belonging for particular courses or academic belonging appears to be a promising direction (Good, Rattan, & Dweck, 2012). Furthermore, examining peer organizational features using social network analysis would also be an interesting direction. Schools that provide more opportunities for students to diversify their connections and limit racial stratification in practices such as academic tracking is one potential path. One could imagine a school in which groups of students are insular as opposed to schools whose

peer groups are interconnected through weaker and more diverse ties (heterophiliy) and the effects this might have on a sense of community and shared norms of achievement. Second, incorporating a broader conception of racial climate including more proximal indicators of supportive racial norms including those of peers or other school staff will be important to include in future work. In addition, more distal contexts such as neighborhood and societal norms that are negative could also intersect with youths' belonging to school and academic identity. A promising line of research in understanding racial/ethnic disparities in academics is on school worldviews regarding race and ethnicity which includes not only measures of the school racial climate, but also rule fairness, institutional mistrust, harshness of school discipline, and perceived discrimination (Graham, 2011). Third, gender and proportion of same ethnicity peers were controlled for in these analyses, however, the intersections of ethnicity and gender, and ethnicity within school ethnic context are necessary to examine in future work. In doing so, the rich within group heterogeneity can be further explored. Finally, this study is a snapshot in the lives of early adolescents. How these relationships unfold over time using cross-lagged models are an important next step to test these causal processes and whether bidirectionality is influencing model results. Adolescents' academic engagement and prior achievement are likely to influence their sense of school belonging and academic identity. Experiencing negative norms or threats may lead some students to underperform and withdraw from school or weaken identification with academics over time (Osborne et al., 2006). This pernicious recursive cycle could create even larger disparities between students over time. Others, however, may take a different path in coping with experiencing unsupportive racial norms and may maintain a strong academic

32

identity and work even harder (Wong, Eccles, & Sameroff, 2003). These differing

trajectories will be interesting for future longitudinal studies to understanding risk and

resiliency. Despite its limitations, this study contributes to our understanding of one

pathway by which perceptions of the school racial climate influence academic outcomes,

while shedding new light on some of the psychological processes that affect the

underperformance and underachievement of ethnically diverse adolescents.

References

American Psychological Association, P. T. F. on E. D. (2012). Ethnic and Racial
   Disparities in Education: Psychology's Contributions to Understanding and
   Reducing Disparities. Retrieved January 4, 2013, from
   http://www.apa.org/ed/resources/racial-disparities.aspx

Anderman, E. M. (2002). School effects on psychological outcomes during adolescence.
   Journal of Educational Psychology, *94*(4), 795–809.
   doi:http://dx.doi.org/10.1037/0022-0663.94.4.795

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal
   attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3),
   497–529. doi:http://dx.doi.org/10.1037/0033-2909.117.3.497

Benner, A. D. (2011). Latino adolescents' loneliness, academic performance, and the
   buffering nature of friendships. *Journal of Youth and Adolescence*, *40*(5), 556–
   567. doi:http://dx.doi.org/10.1007/s10964-010-9561-2

Benner, A. D., & Graham, S. (2007). Navigating the Transition to Multi-Ethnic Urban
   High Schools: Changing Ethnic Congruence and Adolescents' School-Related
   Affect. *Journal of Research on Adolescence*, *17*(1), 207–220.
   doi:http://dx.doi.org/10.1111/j.1532-7795.2007.00519.x

Benner, A. D., & Graham, S. (2012). The Antecedents and Consequences of
   Racial/Ethnic Discrimination During Adolescence: Does the Source of
   Discrimination Matter? *Developmental Psychology*.
   doi:http://dx.doi.org/10.1037/a0030557

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*(2), 238–246. doi:http://dx.doi.org/10.1037/0033-2909.107.2.238

Bentler, P. M. (2006). *EQS structural equations program manual*. Encino, CA: Multivariate Software.

Bollen, K. A. (1989). *Structural equations with latent variables*. Wiley.

Booker, K. C. (2006). School Belonging and the African American Adolescent: What do We Know and Where Should We Go? *High School Journal*, *89*(4), 1–7.

Brand, S., Felner, R., Shim, M., Seitsinger, A., & Dumas, T. (2003). Middle school improvement and reform: Development and validation of a school-level assessment of climate, cultural pluralism, and school safety. *Journal of Educational Psychology*, *95*(3), 570–588. doi:http://dx.doi.org/10.1037/0022-0663.95.3.570

Brinthaupt, T. M., & Lipka, R. P. (2002). *Understanding Early Adolescent Sel: Applications and Interventions*. SUNY Press.

Byrne, B. M. (2006). *Structural Equation Modeling With Eqs: Basic Concepts, Applications, And Programming*. Taylor & Francis.

Byrne, B. M., Shavelson, R. J., & Muthén, B. (1989). Testing for the equivalence of factor covariance and mean structures: The issue of partial measurement invariance. *Psychological Bulletin*, *105*(3), 456–466. doi:10.1037/0033-2909.105.3.456

Catalano, R. F., Oesterle, S., Fleming, C. B., & Hawkins, J. D. (2004). The Importance of Bonding to School for Healthy Development: Findings from the Social

Development Research Group. *Journal of School Health*, *74*(7), 252–261.

doi:10.1111/j.1746-1561.2004.tb08281.x

Chang, J., & Le, T. N. (2010). Multiculturalism as a dimension of school climate: The

impact on the academic achievement of Asian American and Hispanic youth.

Cultural Diversity and Ethnic Minority Psychology, *16*(4), 485–492.

doi:http://dx.doi.org/10.1037/a0020654

Cheryan, S., & Bodenhausen, G. V. (2000). When Positive Stereotypes Threaten

Intellectual Performance: The Psychological Hazards of "Model Minority" Status.

Psychological Science, *11*(5), 399–402. doi:10.2307/40063548

Cheryan, S., Plaut, V. C., Davies, P. G., & Steele, C. M. (2009). Ambient belonging:

How stereotypical cues impact gender participation in computer science. *Journal

of Personality and Social Psychology*, *97*(6), 1045–1060. doi:10.1037/a0016239

Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2009). The Academic Achievement Gap in

Grades 3 to 8. *Review of Economics and Statistics*, *91*(2), 398–419.

doi:10.1162/rest.91.2.398

Cohen, G. L., & Garcia, J. (2008). Identity, belonging, and achievement: A model,

interventions, implications. *Current Directions in Psychological Science*, *17*(6),

365–369. doi:http://dx.doi.org/10.1111/j.1467-8721.2008.00607.x

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A

motivational analysis of self-system processes., 43–77.

Crocker, J., & Major, B. (1989). Social stigma and self-esteem: The self-protective

properties of stigma. *Psychological Review*, *96*(4), 608–630.

doi:http://dx.doi.org/10.1037/0033-295X.96.4.608

Crosnoe, R. (2011). Fitting in, standing out: Navigating the social challenges of high school to get an education., x, 267.

Crosnoe, R., & Fuligni, A. J. (2012). Children From Immigrant Families: Introduction to the Special Section. *Child Development*, *83*(5), 1471–1476. doi:10.1111/j.1467-8624.2012.01785.x

Crosnoe, R., Johnson, M. K., & Elder, G. H. (2004). School Size and the Interpersonal Side of Education: An Examination of Race/Ethnicity and Organizational Context. *Social Science Quarterly*, *85*(5), 1259–1274. doi:10.1111/j.0038-4941.2004.00275.x

Delisle, M. N., Guay, F., Senécal, C., & Larose, S. (2009). Predicting stereotype endorsement and academic motivation in women in science programs: A longitudinal model. *Learning and Individual Differences*, *19*(4), 468–475. doi:10.1016/j.lindif.2009.04.002

Faircloth, B. S., & Hamm, J. V. (2005). Sense of Belonging Among High School Students Representing 4 Ethnic Groups. *Journal of Youth and Adolescence*, *34*(4), 293–309. doi:http://dx.doi.org/10.1007/s10964-005-5752-7

Finn, J. D. (1989). Withdrawing From School. *Review of Educational Research*, *59*(2), 117–142. doi:10.3102/00346543059002117

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research*, *74*(1), 59–109. doi:10.3102/00346543074001059

Fuligni, A. J., Eccles, J. S., Barber, B. L., & Clements, P. (2001). Early adolescent peer

   orientation and adjustment during high school. *Developmental Psychology*, *37*(1),

   28–36. doi:http://dx.doi.org/10.1037/0012-1649.37.1.28

Fuller-Rowell, T. E., & Doan, S. N. (2010). The Social Costs of Academic Success

   Across Ethnic Groups. *Child Development*, *81*(6), 1696–1713.

   doi:10.1111/j.1467-8624.2010.01504.x

Furrer, C., & Skinner, E. (2003). Sense of relatedness as a factor in children's academic

   engagement and performance. *Journal of Educational Psychology*, *95*(1), 148–

   162. doi:http://dx.doi.org/10.1037/0022-0663.95.1.148

García Coll, C., Crnic, K., Lamberty, G., Wasik, B. H., Jenkins, R., García, H. V., &

   McAdoo, H. P. (1996). An Integrative Model for the Study of Developmental

   Competencies in Minority Children. *Child Development*, *67*(5), 1891–1914.

   doi:10.1111/j.1467-8624.1996.tb01834.x

Gillen-O'Neel, C., & Fuligni, A. (2012). A Longitudinal Study of School Belonging and

   Academic Motivation Across High School. *Child Development*, n/a–n/a.

   doi:10.1111/j.1467-8624.2012.01862.x

Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of

   belonging and women's representation in mathematics. *Journal of Personality

   and Social Psychology*, *102*(4), 700–717. doi:http://dx.doi.org/10.1037/a0026659

Goodenow, C., & Grady, K. E. (1993). The Relationship of School Belonging and

   Friends' Values to Academic Motivation Among Urban Adolescent Students. *The

   Journal of Experimental Education*, *62*(1), 60–71.

   doi:10.1080/00220973.1993.9943831

Gottfredson, G. D. (1986). *Using the Effective School Battery in School Improvement and Effective Schools Programs.* (p. 41). Retrieved from http://search.proquest.com/docview/63245700/138AF469B2958EB7CFD/1?acco untid=14512

Graham, J. W., Taylor, B. J., Olchowski, A. E., & Cumsille, P. E. (2006). Planned missing data designs in psychological research. *Psychological Methods*, *11*(4), 323–343. doi:http://dx.doi.org/10.1037/1082-989X.11.4.323

Graham, S. (2011). School racial/ethnic diversity and disparities in mental health and academic outcomes. (G. Carlo, Ed.), *57*, 73–96. doi:http://dx.doi.org/10.1007/978-1-4419-7092-3_4

Graham, S., Taylor, A. Z., & Hudley, C. (1998). Exploring achievement values among ethnic minority early adolescents. *Journal of Educational Psychology*, *90*(4), 606–620. doi:http://dx.doi.org/10.1037/0022-0663.90.4.606

Green, C. W., Adams, A. M., & Turner, C. W. (1988). Development and validation of the school interracial climate scale. *American Journal of Community Psychology*, *16*(2), 241–259. doi:10.1007/BF00912525

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, *3*(4), 424–453. doi:http://dx.doi.org/10.1037/1082-989X.3.4.424

Johnson, M. K., Crosnoe, R., & Elder, G. H. (2001). Students' Attachment and Academic Engagement: The Role of Race and Ethnicity. *Sociology of Education*, *74*(4), 318–340. doi:10.2307/2673138

Juvonen, J. (2006). Sense of Belonging, Social Bonds, and School Functioning. In P. A. Alexander & P. H. Winne (Eds.), *Handbook of educational psychology* (pp. 655–674). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Lee, S. J. (1994). Behind the Model-Minority Stereotype: Voices of High- and Low-Achieving Asian American Students. *Anthropology & Education Quarterly*, *25*(4), 413–429. doi:10.2307/3195858

Liu, Y., & Lu, Z. (2011). Trajectories of Chinese students' sense of school belonging and academic achievement over the high school transition period. *Learning and Individual Differences*, *21*(2), 187–190. doi:http://dx.doi.org/10.1016/j.lindif.2010.12.007

Logel, C., Walton, G. M., Spencer, S. J., Iserman, E. C., Von Hippel, W., & Bell, A. E. (2009). Interacting with sexist men triggers social identity threat among female engineers. *Journal of Personality and Social Psychology*, *96*(6), 1089–1103. doi:10.1037/a0015703

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*(2), 130–149. doi:http://dx.doi.org/10.1037/1082-989X.1.2.130

MacCallum, R. C., Wegener, D. T., Uchino, B. N., & Fabrigar, L. R. (1993). The problem of equivalent models in applications of covariance structure analysis. *Psychological Bulletin*, *114*(1), 185–199. doi:http://dx.doi.org/10.1037/0033-2909.114.1.185

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation Analysis. *Annual review of psychology*, *58*, 593. doi:10.1146/annurev.psych.58.110405.085542

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the

Mediation, Confounding and Suppression Effect. *Prevention Science*, *1*(4), 173–

181. doi:10.1023/A:1026595011371

Mattison, E., & Aber, M. (2007). Closing the Achievement Gap: The Association of

Racial Climate with Achievement and Behavioral Outcomes. *American Journal of

Community Psychology*, *40*(1), 1–12. doi:10.1007/s10464-007-9128-x

McKown, C. (2012). Social Equity Theory and Racial-Ethnic Achievement Gaps. *Child

Development*, n/a–n/a. doi:10.1111/cdev.12033

Muthén, B. O. (1994). Multilevel Covariance Structure Analysis. *Sociological Methods

& Research*, *22*(3), 376–398. doi:10.1177/0049124194022003006

Osborne, J. W. (1997). Identification with Academics and Academic Success among

Community College Students. *Community College Review*, *25*(1), 59–67.

doi:10.1177/009155219702500105

Osborne, J. W., & Jones, B. D. (2011). Identification with Academics and Motivation to

Achieve in School: How the Structure of the Self Influences Academic Outcomes.

Educational Psychology Review, *23*(1), 131–158.

Osborne, J. W., & Walker, C. (2006). Stereotype Threat, Identification with Academics,

and Withdrawal from School: Why the Most Successful Students of Colour Might

Be Most Likely to Withdraw. *Educational Psychology*, *26*(4), 563–577.

Osterman, K. F. (2000). Students' Need for Belonging in the School Community. *Review

of Educational Research*, *70*(3), 323–367. doi:10.3102/00346543070003323

Phelan, P., Yu, H. C., & Davidson, A. L. (1994). Navigating the Psychosocial Pressures of Adolescence: The Voices and Experiences of High School Youth. *American Educational Research Journal*, *31*(2), 415–447.

Pittman, L. D., & Richmond, A. (2007). Academic and psychological functioning in late adolescence: The importance of school belonging. *Journal of Experimental Education*, *75*(4), 270–290. doi:http://dx.doi.org/10.3200/JEXE.75.4.270-292

Roeser, R. W., Eccles, J. S., & Sameroff, A. J. (2000). School as a Context of Early Adolescents' Academic and Social-Emotional Development: A Summary of Research Findings. *The Elementary School Journal*, *100*(5), 443–471.

Roeser, R. W., Midgley, C., & Urdan, T. C. (1996). Perceptions of the school psychological environment and early adolescents' psychological and behavioral functioning in school: The mediating role of goals and belonging. *Journal of Educational Psychology*, *88*(3), 408–422. doi:http://dx.doi.org/10.1037/0022-0663.88.3.408

Rosenbloom, S. R., & Way, N. (2004). Experiences of Discrimination among African American, Asian American, and Latino Adolescents in an Urban High School. *Youth & Society*, *35*(4), 420–451. doi:10.1177/0044118X03261479

Ryu, E., & West, S. G. (2009). Level-Specific Evaluation of Model Fit in Multilevel Structural Equation Modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *16*(4), 583–601. doi:10.1080/10705510903203466

Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, *66*(4), 507–514. doi:10.1007/BF02296192

Singh, K., Chang, M., & Dika, S. (2010). Ethnicity, Self-Concept, and School Belonging:

> Effects on School Engagement. *Educational Research for Policy and Practice*,
> *9*(3), 159–175.

Steele, C. M., Spencer, S. J., & Aronson, J. (2002). Contending with group image: The

> psychology of stereotype and social identity threat. In Mark P. Zanna (Ed.),
> *Advances in Experimental Social Psychology* (Vol. Volume 34, pp. 379–440).
> Academic Press. Retrieved from
> http://www.sciencedirect.com/science/article/pii/S0065260102800090

Steiger, J. H. (1998). A note on multiple sample extensions of the RMSEA fit index.

> *Structural Equation Modeling: A Multidisciplinary Journal*, *5*(4), 411–419.
> doi:10.1080/10705519809540115

Stone, S., & Han, M. (2005). Perceived school environments, perceived discrimination,

> and school performance among children of Mexican immigrants. *Children and
> Youth Services Review*, *27*(1), 51–66.
> doi:http://dx.doi.org/10.1016/j.childyouth.2004.08.011

Syed, M., Azmitia, M., & Cooper, C. R. (2011). Identity and Academic Success among

> Underrepresented Ethnic Minorities: An Interdisciplinary Review and Integration.
> *Journal of Social Issues*, *67*(3), 442–468. doi:10.1111/j.1540-4560.2011.01709.x

Tan, G. (2001). "I Want My Teachers to Like Me": Multiculturalism and School Dropout

> Rates among Mexican Americans. *Equity & Excellence in Education*, *34*(2), 35–
> 42. doi:10.1080/1066568010340206

Taylor, A. B., MacKinnon, D. P., & Tein, J.-Y. (2008). Tests of the Three-Path Mediated Effect. *Organizational Research Methods*, *11*(2), 241–269. doi:10.1177/1094428107300344

Voelkl, K. E. (1997). Identification with School. *American Journal of Education*, *105*(3), 294–318. doi:10.2307/1085508

Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, *92*(1), 82–96. doi:http://dx.doi.org/10.1037/0022-3514.92.1.82

Wong, C. A., Eccles, J. S., & Sameroff, A. (2003). The Influence of Ethnic Discrimination and Ethnic Identification on African American adolescents' School and Socioemotional Adjustment. *Journal of Personality*, *71*(6), 1197–1232. doi:10.1111/1467-6494.7106012