When and How Do Students Benefit from Ethnic Diversity in Middle School?

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Abstract

The effects of school-based ethnic diversity on student wellbeing and race-related views were examined during the first year in middle school. To capture the dynamic nature of ethnic exposure, diversity was assessed both at the school-level (n=26) and based on academic course enrollments of African American, Asian, Latino, and White students (n=4,302; M = 11.33 years). Across all four pan-ethnic groups, school-level ethnic diversity was associated with lower sense of vulnerability (i.e., feeling safer, less victimized and less lonely) as well as perceptions of teachers' fair and equal treatment of ethnic groups and lower outgroup distance. Underscoring the role of individual experiences, exposure to diversity in academic classes moderated the association between school-level diversity and the two aforementioned race-related views.

Today --for the first time in history-- more than half of school age youth in the United States are ethnic minority or non-white (National Center for Education Statistics, 2015). Latinos are now the largest non-white ethnic minority group and Asians are the fastest growing ethnic group (U.S. Census 2014). In light of these demographic changes, it is reasonable to also expect increasing diversity in the ethnic composition of our nation's public schools. However, recent analyses suggest that K-12 schools are becoming *less* diverse. In several parts of the country, schools serving ethnic minority youth are more segregated today than in the 1960's (Orfield, 2014; Orfield & Lee, 2007). Increased school segregation is a cause for concern because it recreates unequal educational opportunities for different racial/ethnic groups and limits the kind of cross-ethnic contact that can reduce racial prejudice (e.g., Clotfelter, 2004). Additionally, lower school-level diversity contributes to feelings of vulnerability among societally marginalized ethnic groups (e.g., Graham, 2010; Juvonen, Nishina, & Graham, 2006). Unless the ethnic composition of schools keeps pace with demographic changes in the K-12 population, some of the known and hypothesized benefits of ethnic diversity could be compromised. In an era of increasing resegregation of schools,

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this is a critical time to further investigate how students' adjustment varies as a function of the ethnic diversity of their schools and classrooms.

In this article, we examine social-emotional outcomes and race-related views of ethnically diverse young adolescents attending schools that vary in ethnic composition. We focus on social-emotional outcomes such as perceived vulnerability (feelings of safety, peer victimization and loneliness) as opposed to academic outcomes because social and emotional adjustment is the domain in which contemporary research on school diversity is especially lacking (Linn & Welner, 2007). Racial attitudes of the multiple ethnic groups who now populate American public schools have also been relatively neglected in the K-12 school diversity literature, which is surprising given widely held beliefs that greater contact between different racial/ethnic groups (more diversity) can foster positive intergroup attitudes (Allport, 1954; Pettigrew & Tropp, 2006). We test hypotheses about relations between school diversity, perceived vulnerability, and interracial attitudes of youth from multiple ethnic groups recruited from middle schools that systematically varied in diversity. We utilized a novel measurement approach that allowed us to model school diversity as both a structural characteristic of the environment and a more dynamic construct that captured individual students' exposure to diverse peers in their academic courses.

Extending Past Research

Much recent research pertinent to understanding the benefits of school ethnic diversity examines the ways in which intergroup attitudes of White students differ across ethnically heterogeneous vs. homogenous settings. Consistent with the contact hypothesis (Allport, 1954, Pettigrew, 2008; Tropp & Pettigrew, 2005), White elementary school students show less negative stereotypes and biases when interpreting hypothetical situations involving outgroup members if they attend ethnically heterogeneous rather than homogenous schools (McGlothlin & Killen, 2010; Rutland, Cameron, Bennett, & Ferrell, 2005). Additionally, White children and adolescents enrolled in more racially diverse schools report greater perceived wrongfulness of interracial exclusion (Crystal, Killen, & Ruck, 2008; Killen, Kelly, Richardson, Crystal, & Ruck, 2010).

Compared to research with White students, we know less about the ways in which the school ethnic composition is related to the social perceptions of ethnic minority youth. For several decades, the most relevant knowledge came from school desegregation research that compared African American students across segregated and integrated Black-White schools (Ward, Schofield, & Hausmann, 2004). Largely focusing on self-esteem, that research highlighted the psychological downside of ethnically heterogeneous schools, inasmuch as African American students reported lower self-esteem when attending integrated rather than segregated schools (see review in Gray-Little & Hafdahl, 2000). However, more recent evidence suggests that when examining other aspects of psychosocial wellbeing, African American and other minority youth may benefit from school ethnic diversity. Operationalizing ethnic diversity as both the number of ethnic groups and their relative size, Juvonen et al. (2006) found that greater diversity in middle school was associated with lower social vulnerability among African American and Latino students whose representation systematically varied across the schools. Specifically, greater diversity of the student body,

both at the school and at the classroom level, was associated with less peer victimization and loneliness and greater sense of safety in 88 sixth-grade classrooms across 11 urban middle schools (see also Graham, Munniksma, & Juvonen, 2014). These researchers proposed that a greater numerical balance of power across multiple ethnic groups in diverse schools contributes to lower sense of vulnerability among African American and Latino students.

Based on past studies that differ in the target group (Whites vs. ethnic minorities) and the outcomes examined (intergroup relations vs. social-emotional wellbeing), it is difficult to gage whether school ethnic diversity is robustly associated with various indicators of social-emotional wellbeing and race-related views across all ethnic groups. Additionally, analyses of diversity often compare students across schools or classrooms that are *either* ethnically homogenous or heterogeneous. Hence, existing knowledge about different types of diverse educational environments is limited. For example, compared to an ethnically homogeneous school, the experience of attending a diverse school with two ethnic groups about equal in size can be very different from attending a diverse school with multiple ethnic groups about equally represented (Moody, 2001). Studies of the psychosocial consequences of school diversity need to move beyond dichotomous categories of schools as ethnically homogeneous versus heterogeneous.

Structural and Dynamic School Diversity

Most prior analyses of social-emotional outcomes carried out at the school or classroom level have conceptualized ethnic diversity as a static structural variable. Whereas school-level diversity may indeed remain relatively unchanged over several years, this structural approach to measuring diversity does not take into account the dynamic variations that individual students experience in their courses. Starting in middle school, students frequently move from class to class throughout their day (Juvonen, Le, Kaganoff, Augustine, & Constant; 2004; Roeser & Eccles, 1998). For example, a student may be taking math with one set of classmates, English with a different set of classmates, and science or social studies with a combination of math and English classmates. Thus, the ethnic diversity that each student experiences in his or her courses may differ from the overall ethnic diversity of the school. The experiences of students attending classes that are less diverse than what one would expect based on the school demographics are likely to differ from experiences in classes that match the ethnic composition of the school. Lower levels of diversity exposure in classes compared to school may reflect within-school or *de facto* segregation which could compromise the effects of school diversity by highlighting unequal status between ethnic groups (Conger, 2005; Mickelson, 2015). Such inequality might heighten racial tensions and negative attitudes toward ethnic outgroups (e.g., Goldsmith, 2004).

The Current Study

Recognizing the growing ethnic diversity of the school-aged population in the United States and gaps in pertinent research, we were guided by two main goals in the research presented here. Our first goal was to examine whether school-level diversity is related to social vulnerability and race-related views across four of the largest pan-ethnic groups in the U.S. We recruited a large sample of African American, Asian, Latino, and White youth from 26

middle schools in southern and northern California. The schools varied in ethnic diversity, such that each of the four ethnic groups was represented across a continuum of diversity. The representation of each ethnic group ranged from numerical majority in relatively less diverse schools to one of several similar size groups in very diverse schools. Extending past research on African American and Latino youth, and consistent with the balance of power hypothesis (Juvonen at al., 2006), we expected that greater diversity would be related to lower sense of social vulnerability (i.e., feeling safer in school, less victimized, and less lonely) across all four pan ethnic groups. Our sampling plan also enabled us to test whether the associations between diversity and our socio-emotional outcomes were moderated by ethnicity.

Extending past research further, we also broadened the relevant outcomes examined to include race-related views. We assessed a racial climate indicator as measured by student perceptions of teachers' fair and equal treatment of different ethnic groups and intergroup attitudes as measured by students' preference for ingroup over outgroup peers (i.e., outgroup distance). The hypothesized relation between school diversity and these variables tapping racial intergroup dynamics was less straightforward than for perceived vulnerability. On the one hand, greater school diversity might result in. a more positive racial climate and less outgroup distance. This would be consistent with analyses based on contact theory (Allport, 1954, Pettigrew, 2008). On the other hand, contact theory also acknowledges that greater diversity might exacerbate negative intergroup racial dynamics if there are status differences among ethnic groups or competition rather than cooperation between these groups. Consistent with this view Goldsmith (2004) found that perceived racial conflict actually increased in more diverse high schools, especially when academic tracking was widely used. Benner and Graham (2013) also reported that high school students from different ethnic groups rated the school ethnic climate more negatively as school ethnic diversity increased. Thus, there may be both benefits and challenges of school diversity and our choice of outcomes allowed us to test for this possibility,

Focusing only on school diversity as a structural variable may provide an incomplete picture of the impact of ethnic diversity on perceived vulnerability and race-related views if students' exposure to diverse peers varies across the school day and is, in fact, different from the average exposure measured at the school-level. Thus our second goal was to examine this more dynamic exposure to ethnic diversity. Relying on course schedules and class rosters, we were able to calculate average diversity exposure across each participant's academic courses. If there are unique effects of diversity measured at the individual level, we expected that they would emerge with our race-related outcomes because those variables are most likely affected by daily contact with classmates from different ethnic groups. We were particularly interested in whether such individual exposure moderated school-level diversity effects on race-related outcomes. We predicted that the effect of school diversity on race-related outcomes would vary depending on students' exposure to diversity in their academic courses. If students experience less than expected diversity in their courses, possibly mirroring within school or *de facto* segregation, some of the positive effects of school diversity may be undermined. We hypothesized that less diversity exposure across students' academic courses (compared to when their exposure matches or exceeds school-level

diversity) would give rise to greater outgroup distance and increased doubt about teachers' fair and equal treatment of all ethnic groups.

We tested our hypotheses about (1) school diversity, perceived vulnerability, and race-related views; and (2) the cross-level interaction between school diversity and individual exposure to course diversity with an ethnically diverse sample during the first year of middle school. We focused on early adolescence and middle school because this is the developmental period when race and ethnicity take on heightened meaning (Umaña-Taylor et al., 2014), some of the vulnerability indicators (e.g., peer victimization) peak during this time (Devoe & Murphy, 2011; Rivara & Le Menestral, 2016), and the organization of instruction becomes fully departmentalized in middle school such that, for the first time, students rotate through different classes throughout the day (e.g., Juvonen et al., 2004). Ethnic predictor variables were assessed during the fall of 6th grade while the adjustment indicators were assessed at the spring of the year. We presume that the effects of ethnic diversity are not necessarily immediate, but rather that ethnic contact shapes feelings of vulnerability and race-related views over the course of the school year.

Methods

Participants

Participants were drawn from a larger sample of 5,991 sixth grade students participating in the UCLA Middle School Diversity Project. Students were enrolled in one of 26 middle schools in northern and southern California carefully selected to represent a variety of ethnic compositions. Six schools were ethnically diverse such that no single ethnic group represented a numerical majority in the population, and members of each of the four major pan-ethnic groups (i.e., African American, Asian, Latino, and White) were present in the student population; 9 schools had two large and relatively equal ethnic groups (e.g., Latino and Asian) with very few members of other ethnic groups; and 11 schools had a clear numerical majority ethnic group (either African American, Asian, Latino, or White) with a smaller number of members from each of the other ethnic groups. Based on student self-report, this sampling strategy resulted in an ethnically diverse sample that was 31% Latino, 19% White, 13% East or Southeast Asian, 11% African American. The remaining 26% of the sample was comprised of students who self-reported as Native American, Middle Eastern, Pacific Islander, South Asian, multiethnic, or Other. Due to their small size or because most of these groups are not recognized as ethnic categories in school demographic data made available by the California Department of Education that was used to compute school ethnic diversity, they were also excluded from the analyses. The analytic sample for the current study was therefore limited to four pan-ethnic groups: African American, Asian, Latino, and White. Additionally, students were excluded if they resided in academic courses with too few participating classmates (see Measures section below). The final sample consisted of 4,302 participants (51% female; $M = 11.33$ years) with an ethnic composition that was 41% Latino, 26% White, 18% East/Southeast Asian, and 15% African American. About 75% of Latino and Asian participants were second generation (at least one parent born outside of the U.S.).

To avoid confounding ethnicity and socioeconomic status (SES) in school selection, the sample was restricted to middle SES and working class communities. This was based on the percentage of students receiving free or reduced lunch 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. We also did not want the schools to vary greatly in achievement and size. Selected schools had average enrollments of 900–1200 students and with average reading and math achievement (40th to 60th percentile on standardized tests). All of the schools were regular public middle schools in California located in urban districts that offered the ethnic diversity needed for testing our main hypotheses.

Procedure

Participants were recruited in three consecutive yearly cohorts in the fall of 6th grade beginning in 2009. To increase return rates of parental consent forms, two $50 gift cards were raffled in each school for students who returned their parent consent form, regardless of whether their parent granted permission. Additionally, two iPods were raffled among study participants within each school. Across the 26 schools, participation rates ranged from 74% to 94% ($M = 84\%$). Surveys were group administered and read aloud by a trained graduate student researcher. Participants answered corresponding questions in survey booklets as a second trained research assistant circulated around the classroom to assist students as needed. On average, the survey took 1 hour to complete. Students received $5 for completing each of the Fall and Spring surveys in 6th grade.

Measures

Diversity predictors.

School ethnic diversity.: School ethnic diversity was measured based on school-level ethnicity data collected from the California Department of Education (CDE) and using Simpson's diversity index (1949):

$$D_S = 1 - \sum_{i-1}^{g} P_i^2$$

where P is the proportion of students in the school who are in ethnic group i. This proportion is squared (P_i^2), summed across g groups, and then subtracted from 1. D_S gives the probability that any two students randomly selected from a school will be from different ethnic groups. Values can range from 0 to approximately 1, where higher values indicate greater diversity (i.e., more ethnic groups that are relatively evenly represented with no clear numerical majority). D_S ranged from .48 to .77, (M = .63, SD = .08) indicating moderate to high diversity. The range of D_S values at the low end was constricted because there were no schools in the sample in which one ethnic group comprised more than 80% of the population.

Average core class diversity.: As a measure of individual-level diversity exposure, each participant's unique course schedule was obtained from school records and coded to identify the self-reported ethnicity of classmates within each of the four core academic courses (English, math, science, social studies) (see Echols & Graham, 2016). Simpson's diversity index was then computed for each student's four academic classes using the same formula outlined above. Because we had a high rate of participation within schools ($M = 84\%$) this is a good estimate of students' actual exposure to 6th grade peers of different ethnic groups in academic classes. However, some students were in classrooms too small to reliably calculate Simpson's index. Participants (n = 720) in more than one class that had less than 7 students in the sample (2 SDs below the mean of 21 students) were removed from the analyses. For participants in the analysis sample (n = 4,302), we then averaged the diversity scores across their academic courses. The exposure to ethnic diversity based on Simpson's index across students' academic classes ranged from 0 to .83 ($M = .63$, $SD = .15$). Although the average diversity exposure in academic classes and in school was similar, the range of diversity measured at the student level was greater.

Individual Level Covariates.

Proportion same ethnic peers in school.: To be able to take into account the size of participants' ethnic group, we relied on school-level race/ethnicity data from the CDE website. CDE data were aggregated into four primary racial/ethnic categories: African-American, Asian, Latino, and White. Percent same-ethnicity peers reflects the proportion of same-grade students in the school that matched students' ethnicity category. The values of this measure ranged from 0 to .68, indicating substantial differences in the relative size of ethnic groups across schools.

Parent education.: As a proxy for student socioeconomic status (SES), the parent or guardian with whom the student lived was asked to complete a measure indicating their highest level of education. A score assessing education level was computed, with higher scores indicating more educational attainment. The measure ranged in values from 0 to 5 (0 = *elementary or junior high* to 5 = *graduate degree*) ($M = 2.86$, $SD = 1.59$).

Teacher-rated academic engagement.: The extent to which students are engaged in their academic classes may be related to feelings of social vulnerability (Juvonen et al., 2006). We therefore controlled for teacher ratings of students' engagement in one of their classes. For each participant, we recruited one 6th grade teacher, who rated that student on the 5-item Teacher Report of Engagement Questionnaire (TREQ; Wellborn & Connell, 1991). Items assessed the degree to which students were engaged in their schoolwork (e.g., *"In my class, this student concentrates on doing his/her schoolwork"*) and 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 ($\alpha = .90$).

Outcome measures.

Perceived school safety.: The 6-item school safety subscale from the Effective School Battery (ESB; Gottfredson, 1986) was used to assess how safe students felt in school. Example items were, "*How often do you feel safe at school?*" and "*How often are you afraid*

that someone will hurt or bother you in your school restrooms?" (reverse coded). Items were rated on a 5-point scale (1 = *never* to 5 = *always*), with higher averages denoting greater sense of safety (α = .80).

Self-perceived peer victimization.: Perceptions of personal experiences of victimization by peers were measured using a modified four-item version of the Peer Victimization Survey (Neary & Joseph, 1994). To reduce social desirability bias (Harter, 1985) respondents were first asked to decide which of two options (types of students) is more like them (e.g., ''*Some kids are often picked on by other kids, BUT Other kids are not picked on by other kids.*''). Participants then indicate whether that option is *sort of true for me* or *really true for me*. Items were scored on a 4-point scale, and a mean of the four items was computed, such that higher scores indicate higher levels of peer victimization (α = .77).

Loneliness.: Relying on 5 items of the measure developed by Asher and Wheeler (1985), we assessed loneliness and social dissatisfaction. The items (e.g., *"I have nobody to talk to"*) were rated on a 5-point scale (1 = *not at all* to 5 = *all the time*). A higher mean score reflects greater loneliness (α = .91).

Perceptions of teachers' fair and equal treatment.: To capture student perceptions of teachers' fair and equal treatment of all ethnic groups, we relied on three items from the School Interracial Climate Scale (Green, Adams, & Turner, 1988) that examine the extent to which youth felt that the teachers in their school treated all students the same (e.g., "*teachers are fair to students of all ethnic groups*"). Ratings ranged from 1 (*no way*) to 5 (*for sure yes*), with higher scores denoting a more positive perceptions (α = .80).

Ethnic outgroup distance.: Ethnic outgroup distance was computed using 16 items assessing the degree to which students wanted to associate with ethnic ingroup and outgroup members (Bogardus, 1933). Participants were asked to rate on a 5-point scale (1 = *no way!*, 5 = *for sure yes!*) whether they would like to eat lunch, get together at their house, dance together at a party, or sit together on a school bus with peers from four different ethnic groups who were in their grade. The ethnic groups included Asian, African American, Latino, and White youth. Following methods outlined by Knifsend and Juvonen (2014), we computed for each participant an aggregated measure of social distance from all three ethnic outgroups. Social distance was calculated by subtracting the average of the 12 items for three ethnic outgroups from the average of 4 items for members of one's own ethnic ingroup (α = .93). Thus, positive scores indicate greater preference for one's ingroup relative to outgroups (i.e., more outgroup distance). On average, adolescents in this sample preferred their ethnic ingroup over outgroups (M = .55, SD = .76).

Results

Descriptive statistics and correlations among variables are presented in Table 1. Given the subjective nature of our outcomes, we expected that a relatively small amount of their variance would be accounted for by differences between schools. Intra-class correlations (ICCs) indicated that 6% of the total variance of school safety, 7% of perceived peer victimization, 1% of loneliness, 4% of perceived teacher fairness and equal treatment of all

ethnic groups, and 3% of ethnic outgroup distance was accounted for by differences between schools.

Analytic Plan for Main Analyses

To examine the effect of school ethnic diversity and diversity exposure in academic courses for each individual student, a series of two-level multilevel models was estimated. The first model assessed school-level diversity effects, and the second model added the effects of individual level diversity exposure in core classes and the interaction between school-and individual-level diversity. All models included a random intercept, allowing the mean of each outcome to vary across schools. The possibility of a random slope for student-level exposure to ethnic diversity was tested, but it was not significant in any of the models and was therefore removed. That is, the relation between exposure to ethnic diversity in academic classes and our indices of social-emotional wellbeing and race-related views did not vary across schools. In all analyses, we controlled for gender (0 = boy, 1 = girl), parent education, ethnicity (reference group = White), proportion same-ethnic peers at school, and teacher-rated academic engagement. School-level ethnic diversity was grand-mean centered and individual-level continuous predictors were group-mean centered to ease the interpretation of the results and obtain less biased within-school estimates (Enders & Tofighi, 2007; Snijders & Bosker, 2011). The outcome data are reported for Spring of 6th grade. Baseline (Fall of 6th grade) measures of the dependent variables were not included as predictors in any of the models because their inclusion can result in overestimating coefficients of the baseline measures and underestimating coefficients of other predictors in the model (Bhargava & Sargan, 1983).

In Model 1, school-level diversity was entered as the main predictor along with all demographic and individual control variables. In Model 2, individual exposure to diversity across students' academic classes was introduced, along with all possible 2- and 3-way individual- and cross-level interaction terms between school-level ethnic diversity, individual exposure to ethnic diversity, and participant ethnicity. Non-significant interactions were removed in a stepwise approach.

All analyses were conducted using Mplus software (Muthén & Muthén, 1998-2014, version 7.3). Because the loneliness variable was part of a planned missingness design (one third of participants did not complete this measure in Spring of 6th grade), the estimation procedure MLR was specified for handling missing loneliness data through full-information maximum likelihood (FIML). FIML allows for the inclusion of all available data in the analyses by fitting the covariance structure model directly to the observed raw data for each participant (Enders, 2010). The MLR estimator also provides standard errors that are robust to non-normality.

Multilevel Models

Model 1 and Model 2 effects are displayed in Table 2. Turning first to the main effects of the covariates in Model 1, girls reported a lower sense of school safety by the spring of 6th grade and greater perceived fair and equal treatment by teachers than did boys. Higher parent level of education was related only to greater sense of school safety and less peer victimization.

Compared to White students, African American and Latino students felt safer in school and less lonely, but more victimized by peers. They also perceived teachers as less fair and equitable to all ethnic groups. Asian and Latino youth reported greater distance from outgroups than did White students. A greater proportion of same-ethnic grade mates was also related to greater outgroup distance. Finally, teacher-rated academic engagement predicted all of the outcome variables in the direction of less vulnerability and more positive race-related views.

Controlling for the covariates, we turn next to Level 2 school diversity main effects in Model 1. These main effects indicated that youth in schools that were more ethnically diverse felt safer ($b = 1.15$, $p < .001$), less victimized by their peers ($b = -1.29$, $p < .01$), and less lonely ($b = -.45$, $p < .001$) by the end of their first year in middle school. These results replicate the Juvonen et al. (2006) findings across all four pan ethnic groups. Extending past findings, greater school-level diversity was also associated with more positive perceptions of teachers' fair and equal treatment of all ethnic groups ($b = .16$, $p < .05$) and lower outgroup distance ($b = -.37$, $p < 01$). Thus, school-level ethnic diversity was associated with a wide range of psychosocial benefits.

We then tested the unique effects of individual ethnic diversity exposure in academic classes over and above school ethnic diversity as well as their interactions in Model 2. In contrast to school ethnic diversity, students' individual exposure to ethnic diversity was not related to any of the vulnerability indicators (safety, victimization, loneliness). However, exposure to ethnic diversity in academic classes independently predicted more positive perceptions of teachers' fair and equal treatment ($b = .36$, $p < .001$) and lower outgroup distance ($b = -.61$, $p < .001$). Neither of the main effects was moderated by ethnicity or percentage of same ethnic peers, indicating that the pattern of findings was similar for all ethnic groups and regardless of their ethnic representation in a given school.

To examine whether the effect of school-level diversity varies depending on the diversity exposure that individual students experience in their core classes, we tested the cross-level interaction between the two diversity indicators. A significant cross-level interaction between school and individual core class diversity was found for both perceived fair and equal treatment by teachers ($b = 2.39$, $p < .001$) and outgroup distance ($b = -5.70$, $p < .01$). These interactions are depicted in Figures 1 and 2. Tests of simple slopes were conducted for students high in average core class ethnic exposure relative to the school diversity (1 *SD* above mean), at the mean, and for students low in individual exposure relative to their school's diversity (1 *SD* below the mean).

Figure 1 shows that for students high in core class exposure compared to their school (dotted line, $b = .66$, $p < .001$) or at their school mean (dashed line, $b = .36$, $p < .001$), perceptions of teachers' fair and equal treatment were more positive as school diversity increased. However, for students whose average core class diversity was lower than school diversity, school diversity did not predict their perceptions of teachers' fair and equal treatment (solid line, $b = .05$, *ns*). Figure 2 shows a similar and stronger pattern of findings for outgroup distance. For students with high diversity exposure (dotted line, $b = -1.32$ $p < .001$) in their academic classes compared to their school or at the school mean (dashed line, $b = -.61$, $p < .$

001), outgroup distance decreased as school diversity increased. In contrast, school diversity was unrelated to outgroup distance for students whose average core class diversity was lower than school diversity (solid line, $b = .13$, *ns*). In other words, the figures show that the advantages of school diversity were maximized for perceptions of teachers' fair and equal treatment as well as outgroup distance when students were exposed to higher than expected levels of diversity. However, when students were in core classes that were less diverse than their school, there were no advantages associated with greater school diversity for perceived fair treatment by teachers or lower outgroup distance.

To probe these interactions further, the Johnson-Neyman regions of significance (ROS) test (Johnson & Neyman, 1936) was conducted to determine the levels of school diversity at which the simple slopes significantly differed from one another (Preacher, Curran, & Bauer, 2006). The results indicated that when school diversity exceeded .10 (approximately 1.25 standard deviations above the mean), individual exposure to diversity significantly predicted more positive perceptions of teachers' fair and equal treatment (vertical line Figure 1). For outgroup distance, when school diversity exceeded .03 (approximately one-third of a standard deviation above the school mean), individual exposure to diversity significantly predicted outgroup distance (vertical line in Figure 2). Thus, individual exposure to diversity mattered for predicting perceptions of fair and equal treatment by teachers and outgroup distance when schools were very diverse.

Discussion

School ethnic diversity has robust psychosocial benefits for multiple ethnic groups. Consistent with the balance of power hypothesis and replicating previous findings with African American and Latino students (Juvonen et al., 2006), we documented that as the ethnic diversity of middle school increased, African American, Latino, Asian, and White youth all reported a lower sense of social vulnerability, defined as feeling safer at school, less victimized, and less lonely. More ethnic groups of relatively equal size – the hallmark of school diversity – may be protective because the numerical balance of power is less likely to be tipped in favor of one or more large ethnic groups exerting their influence over one or more small ethnic groups. Other researchers using similar measures of school diversity have also documented relations between increasing diversity and less peer victimization (Felix & You, 2011) as well as lower levels of aggression (Hoglund & Hosan, 2012). Extending the analyses beyond these vulnerability indicators, school ethnic diversity in the current study was also positively related to perceptions of teachers' fair and equal treatment of all ethnic groups and to more favorable attitudes toward ethnic outgroups. These effects were documented when controlling for a number of relevant factors, including parent level of education, ethnicity, and ethnic group representation. As far as we know, our findings are the first to demonstrate such a wide range of positive outcomes associated with school ethnic diversity across multiple racial/ethnic groups, including both societally high status and low status groups.

Dynamic Variations in Diversity Exposure

As typically measured by Simpson's index or similar indices (Budescu & Budescu, 2012), school ethnic diversity is a static structural variable that defines the overall opportunities for intergroup contact available to all students within a particular school. However, this structural approach does not take into account the dynamic changes in diversity that might occur at the level of individual course-taking in middle school when, for the first time, students are exposed to different classmates throughout the day. Using each student's class schedules, we were able to calculate the diversity (i.e., Simpson's index) for each student's academic courses. Averaging these indices across English, math, science, and social studies yielded a measure of diversity exposure across the school day that was unique to each student.

Ideally, students' exposure to ethnic diversity in their courses should align closely with the overall diversity of the school. Our cross-level interactions between school-level diversity and the average core course diversity that individual students experienced documented the effects of achieving or deviating from that alignment. These analyses showed that the school-level diversity effects on perceptions of fair treatment by teachers and outgroup distance were amplified for students who were enrolled in core academic courses reflecting, or exceeding, school-level diversity. Exposure to diverse classmates throughout the school day therefore appeared to boost the positive effects of school diversity on race-related perceptions. On the other hand, for students whose average exposure to diversity in their core classes was less than expected, there were no improvements in perceived fair and equal treatment by teachers or outgroup attitudes as school diversity increased. Hence, the benefits of school-level diversity were undermined when students' exposure to diverse classmates was less than that provided by the overall diversity of the school.

Why might the school-level diversity effects on race-related outcomes vanish when students attend core classes with lower than expected levels of ethnic diversity? A lower diversity score in core classes compared to school could indicate that one ethnic group was particularly large (overrepresented) compared to the school, that there were only two groups of about equal size when the school was comprised of multiple equal-sized groups, or that some ethnic groups were small or not present at all (underrepresented) in a student's classes. Such configurations would be consistent with the practice of academic tracking in which, for example, White and Asians students are more likely to be grouped together in higher track academic courses while African American and Latino students are more likely to be clustered together in lower track classes (Oakes, 2005). Indeed, researchers who study school desegregation (and increasingly resegregation) in elementary or secondary schools have attributed within-school segregation based on class assignment to racialized academic tracking (e.g., Clotfelter, 2004; Conger, 2005; Mickelson, 2015). We did not have data on the extent to which middle schools in our sample practiced academic tracking; nor did we have access to the kind of information about classmates that would allow us to decompose participants' course schedules to document racialized tracking. But if the less than expected diversity exposure of students in our sample resembled this kind of restricted contact with particular ethnic groups, then it is not surprising that their perceptions of teachers' fair

treatment of all students and their willingness to interact with outgroup members did not improve as school diversity increased.

Relevant to this point, our sensitivity analyses (regions of significance) showed that the interactions of school diversity and individual exposure to diversity on the two race-related perceptions were strongest at high levels of ethnic diversity. Thus, particularly when studying interracial dynamics, it may not be enough to simply focus on school diversity. Rather, it is just as important to examine whether the organization of instruction or other policies are producing classrooms with racial compositions that are less diverse than the overall racial composition of the school. Ignoring individual students' diversity exposure within schools might lead to the erroneous conclusion that school diversity does not have positive effects on intergroup attitudes (see Thijs & Verkuyten, 2014) or that the effects are more robust than they actually are.

Limitations and Future Directions

Although we examined the ways in which ethnic diversity is related to social-emotional wellbeing and race-related views by the end of the first year in middle school, it is possible that our findings reflect implicit school selection effects. That is, urban middle students differ in systematic ways from the outset (e.g. Mouw & Entwisle, 2006). One likely selection factor is geographic proximity: some students attend their neighborhood middle school whereas other students may benefit from parents with the social capital to enroll their children in non-neighborhood public schools with better reputations. It is possible that these factors are related to some of the indicators of social-emotional wellbeing or racial views assessed in this study. To capture possible selection effects that might differentiate students across schools from the outset, it is necessary to have data prior to students' transition to middle school. Lacking such data, we included relevant control variables to test the robustness of our findings. For example, higher parent level of education was related to greater perceptions of school safety and lower reports of peer victimization. However, our school-level ethnic diversity effects for these two outcomes held even when controlling for differences in parent level of education, suggesting that the diversity effects are not due to SES selection effects.

Although we presume that a balance of numerical power and equal status across ethnic groups help account for our positive school diversity findings, we do not have direct measures of power or equal status; nor do we test any specific mediating mechanisms that could explain the documented associations. We speculate about inequality based on the differences between school-level diversity and the diversity that students encounter in their academic classes, but do not know whether such differences reflect any systematic biases in course placement. In addition to equal status and shared power among groups, another possible mechanism accounting for the associations between greater diversity and social-emotional wellbeing involves close relationships. Graham et al. (2014) showed that while greater school ethnic diversity was associated with lower social vulnerability, these school-level associations were mediated by cross-ethnic friendships. Middle school students who were in the position to take advantage of their diverse settings to form interracial friendships felt less vulnerable. Cross-ethnic friendships are also known to reduce racial prejudice

among adolescents (e.g., Feddes, Noack, & Rutland, 2009; Swart, Hewstone, Chris, & Voci, 2011) and hence could help account for the relation between greater course diversity exposure and more favorable outgroup perceptions.

Based on current knowledge about social vulnerability in middle school, we do not know whether our findings generalize to other phases of schooling (i.e., elementary or high schools) or have any long-term effects. We focused on middle schools because the social vulnerabilities that we studied are known to peak during the middle school years (Rivara & Le Menestral, 2016) and because the transition to middle school involves multiple changes in the school environment including a departmentalized curriculum (Eccles & Roeser, 2009). It is possible that increased diversity is not associated with positive outcomes for ethnic minority youth in high school (see Benner & Graham, 2013; Seaton & Yip, 2009) when racialized academic tracking is more pervasive and when close friendships are increasingly ethnically homogenous (Clotfelter, 2004). Additional research is also needed to examine the effects of diversity exposure in other than academic classes. For example, recent evidence suggests that ethnically diverse extracurricular activities promote cross-ethnic friendships, which in turn predict lower outgroup distance in middle school (Knifsend & Juvonen, 2016).

Our data were gathered in California – arguably one of the most racially and ethnically diverse states in the nation. With its own unique immigration history, California has the largest Latino and Asian populations of any state (U.S. Census, 2014), making it an ideal setting for testing hypotheses about the psychosocial consequences of school ethnic diversity. Whether our findings can be replicated in other parts of the U.S. with different immigration patterns and racial/ethnic configurations remains to be seen. However, insights from California may foreshadow the challenges in other parts of the country of meeting the needs of an increasingly diverse school age population.

Although we emphasized the robustness of our diversity findings across four pan-ethnic groups, there were ethnicity main effects that alert us to the need for a nuanced approach to racial differences in social vulnerability independent of school ethnic diversity. Compared to Whites, African American and Latino students felt safer at school and less lonely, but more victimized by peers. We suspect that our peer victimization items (e.g., being picked on, called bad names, excluded from the group) may be eliciting race-based unfair treatment – or perceived discrimination – which is more prevalent among African American and Latino youth than their White counterparts (e.g., Umaña-Taylor, 2016). If these ethnic minority youth are experiencing more race-based discrimination from peers, then it is not surprising that they also were less confident that teachers treated all ethnic groups fairly and equally. As the populations in developmental research on social vulnerability become more ethnically diverse, there should be more cross-fertilization between the literatures on peer victimization and race-based discrimination, with the goal of uncovering commonalities and differences as well as greater understanding of how each literature can inform the other.

A Final Note

This is a critical time for studying the psychosocial benefits of school ethnic diversity. As we stated at the beginning of this article, the school-aged population in this country is becoming more ethnically diverse but our public schools are more segregated now than they have been

in the past 40 years (Orfield, 2014). A recent bi-partisan U. S. congressional report concluded that the number of poor and highly segregated public schools more than doubled between 2001 and 2014 (Government Accounting Office, 2016). School segregation breeds social inequality: disparate access to society's resources and less acceptance of people who differ across multiple social identities.

As we were writing this article, a long-awaited and landmark U.S. Supreme Court decision affirmed the use of race conscious policies to increase diversity in public colleges and universities (*Fisher v. University of Texas*, 2016). The Court concluded that it is in our "compelling interest" to do so. In the last 40 years, the Supreme Court has been much less supportive of race conscious policies to increase diversity in K-12 education (Chemerinsky, 2005). The most recent Supreme Court case in 2007 (*Parents Involved in Community Schools*, 2007) struck down the use of such policies to achieve diversity in the public schools of Seattle, Washington and Louisville, Kentucky. That Court did not see K-12 diversity as a compelling interest and it questioned whether social science research had adequately justified the use of race conscious policies (Tropp, Smith, & Crisby, 2007). One antidote to such views is methodologically rigorous research with multiple racial/ethnic groups that tests hypotheses about the benefits and challenges of school diversity *for all youth.* We hope that the research reported here can stimulate new thinking about testable hypotheses that embrace multi-faceted approaches to conceptualizing school ethnic diversity and that can guide policy initiatives and legal options for promoting school diversity.

Acknowledgments

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Figure 1.
Two-way interaction between school diversity and exposure to core class diversity for individual students predicting perceptions of teachers' fair and equal treatment of all ethnic groups at the spring of 6th grade; dotted vertical line represents the upper bound of the ROS.
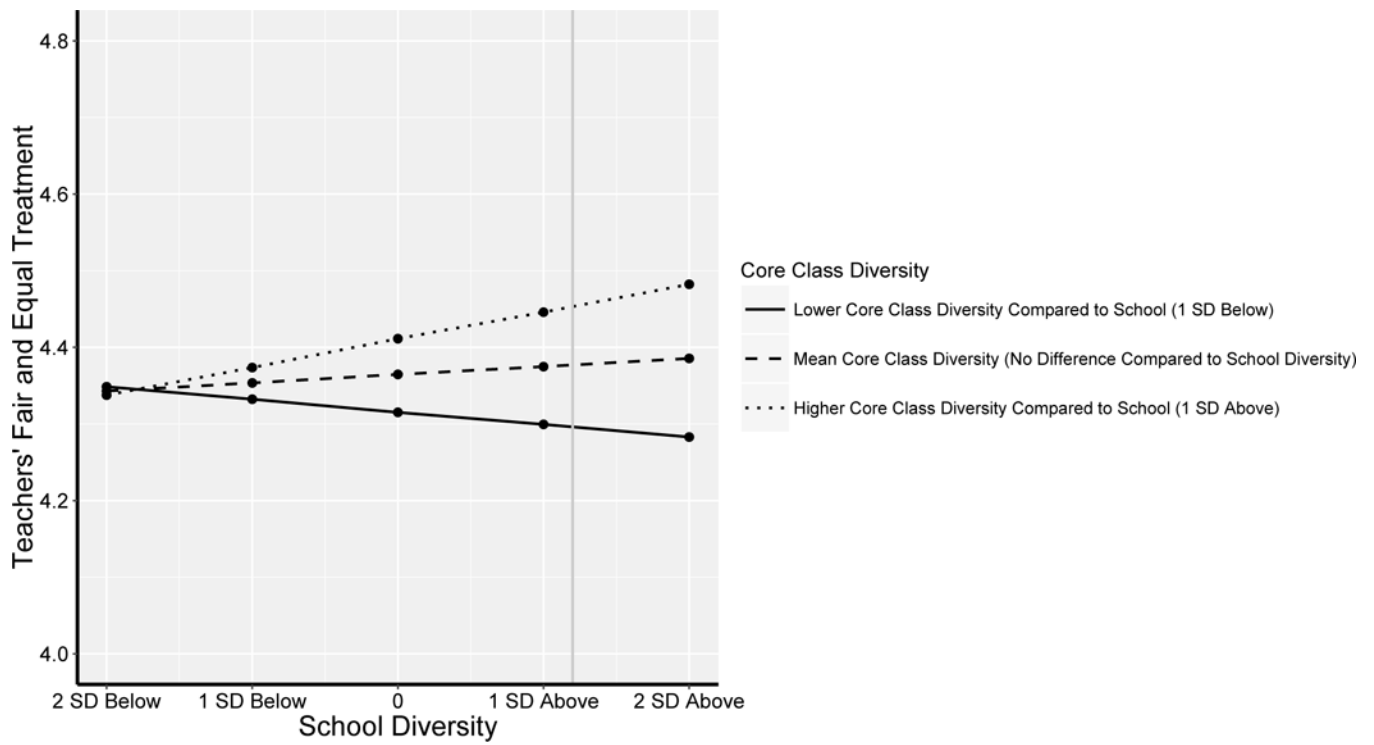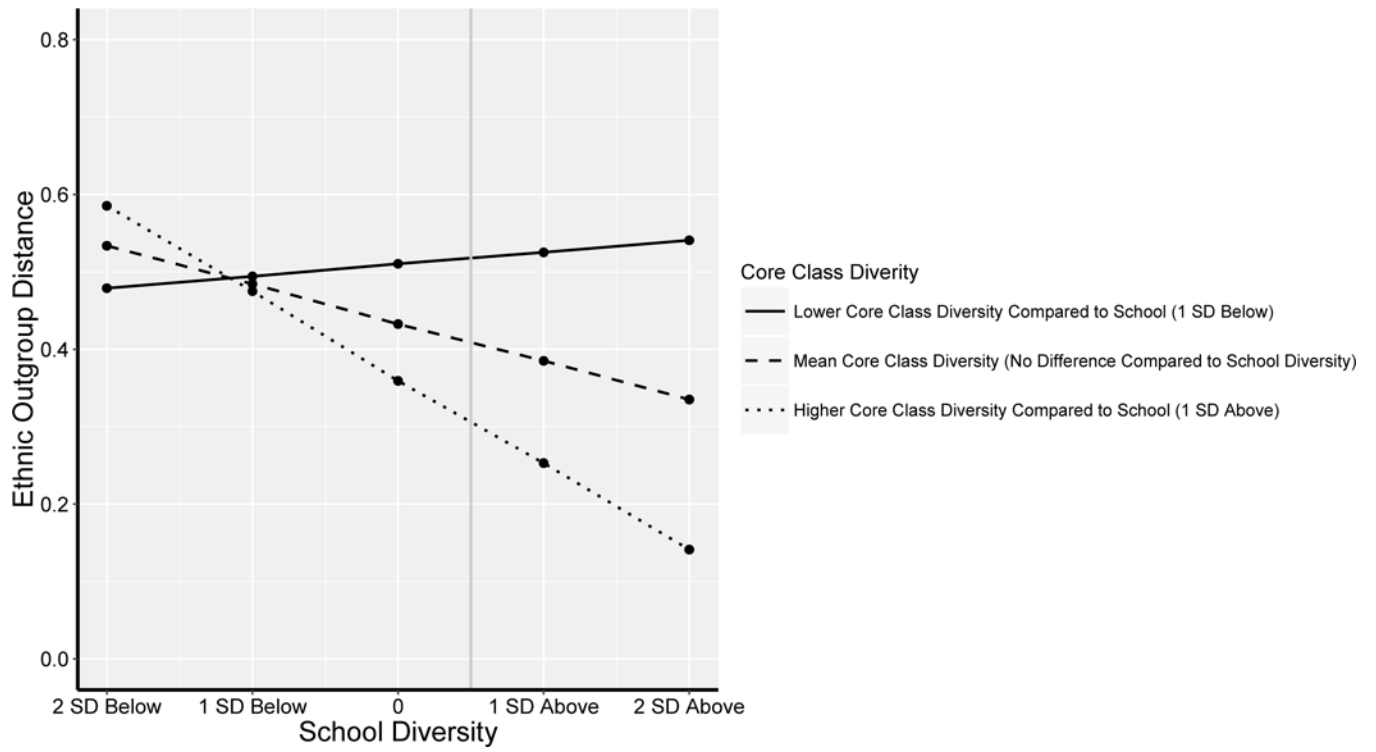
Figure 2.
Two-way interaction between school diversity and exposure to core class diversity for individual students predicting ethnic outgroup distance at the spring of 6th grade; dotted vertical line represents the upper bound of the ROS.

Table 1.

Intercorrelations, means, and standard deviations for level 1 and 2 variables.

	1	2	3	4	5	6	7	8	9	10
Level 1										
1. Parent Education	—									
2. Proportion same ethnic peers at school, F	-.26**	—								
3. Average diversity of core classes, F	.33**	-.44**	—							
4. Teacher-rated academic engagement, F	.16**	-.03*	.09**	—						
5. School safety, S	.09**	-.05**	.11**	.09*	—					
6. Perceived peer victimization, S	-.19**	.09**	-.19**	-.21**	-.37**	—				
7. Loneliness, S	.02	.03	-.03	-.01	-.40**	.24**	—			
8. Teachers' fair and equal treatment, S	.05**	.01	.08**	.17**	.25**	-.18**	-.10**	—		
9. Ethnic outgroup distance, S	-.10**	.066**	-.12**	-.08**	-.13**	.14**	.05**	-.19**	—	
Level 2										
10. Fall school ethnic diversity	.28**	-.46**	.53**	.06**	.11**	-.18**	-.01	.04**	-.05**	—
Means	2.86	.39	.63	2.77	4.22	2.00	1.63	4.26	.55	.63
SD	1.59	.18	.15	.74	.67	.80	.76	.77	.76	.08
Range	0 – 5	0 – .68	0 – .83	0 – .4	1 – 5	1 – 5	1 – 4	1 – 5	-3 – 4	.48 – .77
N	3,963	4,302	4,302	4,027	4,168	3,993	2,694	4,165	4,125	4,302

Note. F= Fall, S= Spring,

*
$p < .05.$

**
$p < .01.$

Table 2.

Coefficients From Final Multilevel Models Predicting Spring School Safety, Perceived Victimization, Loneliness, Supportive Ethnic Climate, and Ethnic Outgroup Distance (level 1 n = 4,301; level 2 n = 26).

	School Safety		Perceived Victimization		Loneliness		Teachers' Fair and Equal Treatment of Ethnic Groups		Ethnic Out-group Distance	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
				(SE)						
Intercept	4.11 (.04) ***	4.13 (.04) ***	1.88 (.04) ***	1.89 (.04) ***	1.76 (.04) ***	1.73 (.04) ***	4.36 (.03)	4.37 (.04) ***	.37 (.04) ***	.40 (.03) ***
Level 1 predictors										
Gender	.07 (.02) ***	.07 (.02) ***	−.04 (.03)	−.05 (.03)	−.05 (.03)	−.06 (.03)	.06 (.03) *	.06 (.03) *	.00 (.02)	.00 (.02)
SES (Parent Education)	.02 (.01) *	.01 (.01)	−.03 (.01) ***	−.02 (.01) ***	.00 (.01)	.01 (.01)	−.01 (.01)	−.02 (.01)	−.01 (.01)	−.01 (.01)
Race/ethnicity										
African American	.23 (.03) ***	.22 (.03) ***	.19 (.05) ***	.18 (.05) ***	−.24 (.05) ***	−.24 (.05) ***	−.27 (.04) ***	−.27 (.04) ***	.05 (.05)	.05 (.05)
Asian	−.04 (.05)	−.06 (.05)	.09 (.06)	.09 (.05)	.06 (.06)	.07 (.06)	−.11 (.06)	−.11 (.06)	.33 (.06) ***	.33 (.06) ***
Latino	.12 (.03) ***	.11 (.03) ***	.20 (.04) ***	.19 (.04) ***	−.15 (.04) ***	−.13 (.05) **	−.21 (.03) ***	−.21 (.03) ***	.17 (.05) ***	.17 (.05) ***
% Same Ethnic Peers	.14 (.08)	.10 (.08)	−.01 (.10)	−.10 (.08)	.01 (.10)	.04 (.10)	.14 (.07)	.18 (.08) *	.12 (.09) *	.12 (.09)
Teacher-Rated Engagement	.09 (.02) ***	.08 (.02) ***	−.18 (.02) ***	−.17 (.02) ***	−.05 (.02) *	−.03 (.02)	.15 (.02) ***	.15 (.02) ***	−.07 (.02) ***	−.07 (.02) ***
Avg Core Class Diversity	—	**0.02 (.17)**	—	**−.12 (.27)**	—	**−.07 (.28)**	—	**.36 (.10) *****	—	**−.61 (.14) *****
Level 2 predictor										
School Diversity	**1.15 (.36) *****	**1.03 (.36) ****	**−1.29 (.28) *****	**−1.45 (.29) *****	**−.43 (.22) ***	**−.27 (.23)**	**.16 (.31)**	**.13 (.34)**	**−.37 (.22) ***	**−.35 (.21)**
Cross-level interaction										
Avg Class Diversity × School Diversity	—	**1.14 (1.54)**	—	**−.62 (2.50)**	—	**1.10 (1.98)**	—	**2.39 (.08) *****	—	**−5.70 (2.04) ****
Variance components										
Intercept	.42 (.02) ***	.41 (.02) ***	.56 (.02) ***	.56 (.02) ***	.58 (.03) ***	.56 (.03) ***	.55 (.03) ***	.54 (.03) ***	.56 (.03) ***	.55 (.03) ***

Note.

*
$p < .05$

**
$p < .01$

***
$p < .001$.