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## The Racial/Ethnic Composition of Elementary Schools and Young Children's Academic and Socioemotional Functioning

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### Abstract

This study attempted to untangle how two dimensions of school racial/ethnic composition—racial/ethnic diversity of the student body and racial/ethnic matching between children and their peers—were related to socioemotional and academic development after the transition into elementary school. Analysis of the Early Childhood Longitudinal Study-Kindergarten Cohort revealed that school racial/ethnic composition was more strongly associated with children's academic, as opposed to socioemotional, outcomes. Students had higher achievement test scores in more diverse schools, especially when they also had more same-racial/ethnic peers in these diverse schools. These patterns were particularly strong for White students. Having more school peers of the same race/ethnicity, regardless of the overall level of diversity in the school, was associated with positive socioemotional development.

### Keywords

achievement; student behavior/attitude; social context; race/ethnicity; child development

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In 1954, the Supreme Court, in its *Brown vs. the Board of Education* decision, rejected the idea that separate could be equal in the educational arena. The justices deemed that students in the U.S., regardless of race/ethnicity, deserved equal access to educational opportunities, something that was virtually impossible under the existing system. Since this ruling, ongoing legal debate has periodically emphasized and de-emphasized racial diversity in the educational system (Rothstein, 2004). Despite this ebb and flow in legal and policy activity, understanding whether and how the racial/ethnic composition of schools is linked to student outcomes has consistently been a fundamental and enduring theoretical question of educational research.

Studies on the topic are widespread, and, as such, we know a great deal about school composition and its relevance to school desegregation and reorganization efforts. This study contributes to this large literature by delving into important theoretical questions: Do key dimensions of school composition bring *both* resources for *and* risks to the future prospects of American youth? Might these tradeoffs between risks and resources lead to different conclusions about school composition depending on the domain of student functioning and the segments of the student population being considered? To do so, we compare and contrast

different conceptual arguments about school composition—diversity benefits and belongingness—while moving into three areas of inquiry that are theoretically motivated but empirically understudied. First, we shift the focus to earlier in the life course than is the norm by exploring children’s transitions into formal schooling, a developmental and educational period in which school composition may be especially salient (Entwisle & Alexander, 1993; Pianta, Cox, & Snow, 2007). Second, recognizing the importance of both academic and socioemotional skills to long-term educational trajectories (Entwisle, Alexander, & Olson, 2005), we expand the standard test score focus to also consider key aspects of socioemotional development. Third, moving beyond the traditional White-Black dichotomy of school composition research, we also consider the experiences of Latino/a and Asian American children, who typically have more recent immigrant histories, varying statuses in U.S. society, and additional academic and social barriers due to their language minority status (Leong et al., 2007; Reardon & Galindo, 2009).

### **School Racial/Ethnic Composition and the Transition to School**

Classic developmental paradigms, such as Piaget’s perspective on cognitive development, have been used to raise and address questions about school composition effects. This activity often highlights transitional periods as a time when exposure to new and different interpersonal ecologies have particularly large effects on development (Gurin, Dey, Hurtado, & Gurin, 2002). The transition into elementary school clearly fits this scenario. Early childhood is a segregated period of the life course, as young children spend most of their time within the confines of their families and communities, which are often racially/ethnically homogenous. As such, school entry introduces children to a new and often more diverse social system (Lee & Burkham, 2002). The school transition model suggests that socioemotional dimensions of development matter more to children’s educational trajectories at the start of formal schooling than later in their school careers (Alexander & Entwisle, 1988; Entwisle et al., 2005). Thus, viewing the racial/ethnic composition of the student body as a dimension of the social and cultural ecology to which youth are exposed by schools points toward an early education focus.

The transition into elementary school also is a time when returns on interventions are likely maximized (Alexander & Entwisle, 1988; Heckman, 2006; Pianta et al., 2007) and thus is a critical period in terms of policy action. Considerations of early intervention should encompass issues of school composition and its role in educational disparities. Indeed, prior research suggests that school integration efforts were most effective for young children (i.e., kindergarten and first-grade students; Ferguson & Mehta, 2004; Schofield, 1995), and early exposure to integrated contexts has been linked to more positive interracial attitudes (Allport, 1954; Pettigrew, 1998; Pettigrew & Tropp, 2006; Wells, Duran, & White, 2008).

### **Developmentally-Oriented Perspectives on School Racial/Ethnic Composition**

We focus on two dimensions of school composition conceptualized as key ingredients of long-term educational trajectories: diversity and belongingness. The two have typically been studied independently, with a focus on secondary school and higher education. Yet,

examining them together during early education offers insights into how different conceptualizations of school racial/ethnic composition have very different implications for children depending on the outcome of interest and children's locations in the larger U.S. racial/ethnic stratification system.

First, the diversity perspective highlights the advantages of school desegregation and promotes racial/ethnic heterogeneity in the student body as a means of supporting schools' educational missions. Drawing on Piaget's (1983) concept of disequilibrium, this perspective emphasizes how encountering and then working through contradictions and discrepancies in everyday life helps young people to expand their intellectual capacities; in other words, exposure to diverse worldviews and life perspectives provides opportunities for valuable cognitive exercise (Gurin, Dey, Gurin, & Hurtado, 2003). For the most part, empirical investigations of this perspective have centered on young adults in postsecondary institutions. Generally, such studies have found that university students in more racially/ethnically diverse institutions tend to have greater engagement and motivation and better academic performance, in part because they are more frequently forced to critically analyze their own assumptions about the world and to integrate a variety of worldviews (Antonio et al., 2004; Gurin et al., 2003; Tam & Bassett, 2004).

An argument of this literature is that the history of school segregation in the K-12 system makes the start of college a time of great disequilibrium on racial/ethnic matters, especially for Whites (Gurin et al., 2002). This logic applies to the transition into elementary school. Schools often house more cross-race/ethnicity contact than other social contexts, like neighborhoods. Moreover, early childhood is a period of intense curiosity about race/ethnicity in which parents are often reluctant to engage (Vittrup, 2007). Thus, exposure to children from different groups in teacher-controlled classrooms at the start of elementary school may be an opportunity for the kind of cognitive exercise highlighted by the diversity perspective (Cohen & Lotan, 1995).

Indeed, although more limited in scope, research suggests similar benefits of school diversity for K-12 students. Reviews of desegregation research (Ferguson & Mehta, 2004; Schofield, 1995; Wells & Crain, 1994), for example, highlight the benefits of integrated schools for African American and Latino/a children's learning and orientations to education. Other studies outside the desegregation literature also suggest that diverse school contexts can lead to learning gains among children. For example, Borman and colleagues (2004) found that reading and math test scores were higher in more diverse elementary schools than in predominantly African American schools, above and beyond corresponding school differences in per-pupil expenditures, instructional quality, classroom size, mobility, school socioeconomic status, and other school-level factors. Similarly, Summers and Wolfe (1977) earlier reported that 6<sup>th</sup> graders performed best academically in schools with a mix of racial/ethnic groups.

A second developmental perspective, centered on belongingness, posits something entirely different. By emphasizing the potential benefits of familiarity and fitting in with the crowd, this perspective suggests possible risks associated with school diversity. Drawing heavily on basic concepts from attachment models, the belongingness perspective, at its core, posits

that meaningful social connections are a fundamental human need across the life span (Baumeister & Leary, 1995; Ryan & Deci, 2000). As a result, it conceptualizes the school as a setting of social relations in which student functioning is, in part, dependent on one's place within this system of relations (Johnson, Crosnoe, & Elder, 2001; Pianta & Walsh, 1998).

Extrapolating from findings about racial/ethnic homophily in friendship (Aboud, Mendelson, & Purdy, 2003; Graham & Cohen, 1997), ample evidence suggests that the racial/ethnic composition of social contexts, such as schools, is a basic dimension on which young people base their senses of belonging in that context. For example, across race/ethnic groups, youth feel stronger senses of connection to and belongingness in their middle and high schools as the proportion of their fellow students with the same race/ethnicity rises (Benner, Graham, & Mistry, 2008; Johnson et al., 2001; Postmes & Branscombe, 2002). Relatedly, minority students tend to look better on a range of indicators of socioemotional adjustment in school (e.g., positive attitudes about school, disciplinary problems) when attending more segregated minority schools (Eitle and Eitle, 2004; Goldsmith, 2004; Verna & Runion, 1985). Such patterns are important given consistent evidence that socioemotional adjustment in school in general and feelings of school belonging in particular tend to promote well-being across developmental domains, including learning and academic achievement, because they allow for a sense of security and safety that enables youth to meet challenges and test themselves (Blum, McNeely, & Nonnemaker, 2002; Deci, Vallerand, Pelletier, & Ryan, 1991; Juvonen, 2006).

Exploration of the belongingness perspective has paid less attention to children at the start of elementary school than at other stages of development, particularly adolescents in high school (Anderman, 2002; Goodenow, 1993). Yet, given the roots of this perspective in attachment theory and theoretical arguments that the transition into elementary school is a period of schooling in which the social psychological circumstances of children's lives might be particularly critical to children's educational experiences (Alexander & Entwisle, 1988; Pianta & Walsh, 1998), applying the belonging perspective to the start of formal schooling is important.

In considering the implications of these two developmental perspectives for the foci of the current study, the diversity perspective clearly suggests that racial/ethnic diversity in elementary schools will promote the academic progress of children, and the belonging perspective clearly suggests that children will be more socioemotionally adjusted in elementary schools in which they are surrounded by more students of the same race/ethnicity as themselves. These two expectations seem to be contradictory, which is why exploring them at the same time is necessary. Although seemingly at odds, these two perspectives can *together* provide a more unified understanding of school composition and the transition experience.

One possibility is that the two dimensions of school composition suppress each other's effects on children. In other words, potential academic benefits of school diversity may be depressed, although not reversed, by the fact that children are probabilistically less likely to have same-racial/ethnic schoolmates as school diversity (which gauges the presence of multiple groups) rises. Although opportunities for cognitive exercise grow, opportunities to

feel a sense of belonging, which supports academic progress, decline. At the same time, socioemotional benefits of having same-racial/ethnic schoolmates may be depressed, if not reversed, by the tendency for schools with greater chances of having such peers to have lower chances of exposure to multiple groups. Here, opportunities to feel belonging rise, but opportunities to engage in cognitive exercise, which could also support socioemotional adjustment, decline.

Another possibility is that diversity benefits depend on belonging benefits and vice versa. Just because school diversity and the proportion of the student body of the same race/ethnicity as a focal student are related to each other does not mean that students cannot experience a wide range of configurations of these two dimensions of school racial/ethnic composition. Take, for example, two Latino students attending two different elementary schools with identical levels of racial/ethnic diversity ( $Diversity = .66$ ; Simpson, 1949). Student A's school enrolls 50% Latino/a, 20% African American, 20% Asian American, and 10% White students, whereas student B's school enrolls 25% Latino/a, 37% Asian American, and 38% White students. Although the diversity of these students' schools is identical, the representation of same-racial/ethnic peers is quite different. Integrating the diversity and belonging perspectives suggests that the academic benefits of attending a diverse elementary school will be stronger for children who also have a large portion of same-racial/ethnic peers in the school and that the socioemotional benefits of having same-racial/ethnic peers will be greater in more diverse schools.

## Population Perspectives and Racial/Ethnic Stratification Systems

Although the processes at the heart of the diversity and belonging perspectives concern interpersonal relations, intimate psychosocial aspects of children's lives cannot be disconnected from larger structural forces such as social stratification systems. Population perspectives, which highlight stratification systems and their effects on members of the collective, provide critical insights for understanding how diversity and belongingness come together at the start of elementary school to shape children's early adjustment across major segments of the child population. In the U.S., Whites are the largest racial/ethnic group (66%; ACS, 2009), and their historical position on societal hierarchies have resulted in greater economic standing, prestige, and control of societal institutions and structures, including the educational system (McDermott & Samson, 2005). African Americans and Latino/as, in contrast, have faced high levels of discrimination and socioeconomic disadvantage and thus represent historically marginalized segments of the population. Asian Americans have benefitted from the proliferation of the "model minority" label (Lee, 1996), yet stereotypes around their perpetual foreigner status limit their access to the power and prestige levels of Whites (Kim, 1999). Consequently, although minority groups may have very different historical experiences in the U.S., they share the commonality of the power differential between themselves and the White majority. As such, we view a child's race/ethnicity not as an individual characteristic but instead as a marker of one's position in the stratification system.

Because Whites' majority group status is reflected in all aspects of daily life in the U.S., probabilistically constraining exposure to racial/ethnic diversity, they might derive the most

academic benefit from racial/ethnic diversity in their educational contexts (Gurin et al., 2002; McDermott & Samson, 2005). In contrast, because Whites' dominant status reduces generalized feelings of difference and exclusion in society at large (Crosnoe, 2009), they may reap fewer socioemotional benefits of having more same-racial/ethnic peers in these same contexts.

Population perspectives also recognize diversity benefits for students of color, particularly when the alternatives are segregated minority schools (Clark, Chein, & Cook, 2004; Hanushek, Kain, & Rivkin, 2009; Mickelson, 2001; Muller, Riegle-Crumb, Schiller, Wilkinson, & Frank, 2010; Rumberger & Willms, 1992). In contrast, belongingness may be of increased socioemotional importance for individuals not in the dominant position (i.e., not White), both because of their numerical minority status and their historically marginalized position in society. Thus, feeling connected to others and to institutions may be more beneficial when minority students' marginalized status is less salient (i.e., when they have more same-racial/ethnic peers).

## A Conceptual Model of School Racial/Ethnic Composition Effects

In the current study, we test an integrative conceptual model, connecting diversity and belongingness perspectives to a population approach in order to explore the role of school racial/ethnic composition in the early experiences of young children. Whereas racial/ethnic diversity of the student body of elementary schools is conceptualized as the degree of representation of multiple groups within the school, the racial/ethnic match between the student and the student body of their schools (e.g., belonging) is conceptualized as the proportion of fellow students of the same race/ethnicity as the focal child. In general, school diversity is hypothesized to be associated with higher levels of academic performance, and school racial/ethnic match is hypothesized to be associated with higher levels of socioemotional well-being. Testing these hypotheses side by side, however, is not in and of itself an integration of the diversity and belonging perspectives. Consequently, we probe deeper into the interplay.

First, the general academic benefits of school diversity are expected to be suppressed by the mathematical tendency for higher levels of school diversity to constrain the number of same-racial/ethnic peers any one child in the school can have *but* magnified in the limited number of situations in which school diversity and racial/ethnic matching do co-occur, *especially* among White children. This expectation will be supported if observed links between school diversity and student test scores increase when proportion of same-racial/ethnic schoolmates is taken into account, when interactions between school diversity and same-racial/ethnic schoolmates reveal that these observed diversity benefits are strongest among children who attend schools with a relatively higher proportion of same-racial/ethnic peers, and when these suppression and moderation patterns are more pronounced among a subsample of White children compared to subsamples of children from other racial/ethnic groups.

Second, the general socioemotional benefits of school racial/ethnic match (i.e., belonging) are expected to be suppressed by the tendency for such matches to be less likely to occur as school diversity increases *but* magnified in the specific situations in which such racial/ethnic

matching does occur despite higher levels of overall school diversity constraining such matching, especially among non-White children. This expectation will be supported when observed links between proportion of same-racial/ethnic schoolmates and student socioemotional well-being increase when school diversity is taken into account, when interactions between school diversity and same-racial/ethnic schoolmates reveal that these observed benefits of proportion same-racial/ethnic peers are strongest among children who attend relatively diverse schools, and when these suppression and moderation patterns are more pronounced among African-America, Latino/a, and Asian-American children compared to White children.

## Method

### Sample

ECLS-K is a nationally representative sample of Americans enrolled in kindergarten during the 1998–99 school year (Denton & West, 2002). The study, conducted by the National Center for Education Statistics (NCES), used a dual-frame multistage sampling design. Initially, 100 primary sampling units (typically counties) were selected across the U.S., after which 1,000 schools with kindergartens within these units were selected. Approximately 23 students from each school were then randomly selected (22,782 total), with an oversample of Asian American students. ECLS-K includes longitudinal data from interviews with parents and school personnel and the administration of diagnostic tests to children. Data were collected in the fall and spring of kindergarten and 1<sup>st</sup> grade and in the spring of 3<sup>rd</sup>, 5<sup>th</sup>, and 8<sup>th</sup> grades. Approximately 75% of the sample maintained their participation throughout each data collection wave. Given the current study's focus on the transition to school, our sample was drawn from the first two waves of data collection—fall and spring of kindergarten ( $n = 21,260$ ). As explained shortly, missing data estimation techniques were employed to retain all cases in this study sample.

### Measures

The current study relies on data from interviews with teachers and administrators as well as child assessments. Table 1 provides descriptive statistics for all study measures.

**School racial/ethnic composition**—We included two primary measures of schools' racial/ethnic composition—proportion of students' same-racial/ethnic peers and racial/ethnic diversity of the student body. Both were based on school administrators' estimates of the percentage of students in the school who were American Indian/Alaskan native, Asian American, Black or African American, Native Hawaiian/Pacific Islander, White, or Latino/a. Proportion same-racial/ethnic peers was determined by identifying the proportion of students in school that shared the focal student's identified race/ethnicity. The racial/ethnic diversity of the student body was computed using Simpson's (1949) index of diversity:

$$D_c = 1 - \sum_{i=1}^g p_i^2$$

In this formula, racial/ethnic diversity ( $D_c$ ) depends on the proportion ( $p$ ) of students in the school from each race/ethnicity ( $i$ ). The proportions are squared and summed across the total number of racial/ethnic groups in the school ( $g$ ). Possible scores range from zero to approximately one. Unlike proportion same-racial/ethnic peers, which captures the representation of a single racial/ethnic group (e.g., Latino/as), the diversity index accounts for the relative proportion of all racial/ethnic groups and the number of groups represented. Higher scores reflect greater racial/ethnic diversity.

**Academic achievement**—We drew two measures from child assessments conducted in the spring of kindergarten. At each data collection wave, children completed untimed, individually administered, two-stage standardized assessments in mathematics (e.g., numbers, shapes, arithmetic) and reading (e.g., letter recognition, sight words, literal inference). Children's performance on the uniform first stage determined whether they took the low-, medium-, or high-difficulty version of the second stage. Item Response Theory was used to develop single proficiency scores across stages; these scores are directly comparable across years, as they represent specific points along the same ability continuum (Reardon, 2005).

**Socioemotional adjustment**—In the spring of kindergarten, teachers completed the Social Rating Scale (SRS), adapted from Gresham and Elliott (1990) and normed for children as young as three. This study includes the externalizing behavior and interpersonal skills subscales from this battery. Selection of the externalizing behaviors scale was based on previous developmental research that suggests externalizing symptoms (e.g., aggression, opposition) are highest in early childhood and decline across middle/late childhood and adolescence (Bongers, Koot, van der Ende, & Verhulst, 2004); early externalizing symptoms are also associated with lower levels of later academic competence and higher subsequent internalizing symptoms (Masten et al., 2005). We selected the interpersonal skills scale, in contrast, because it reflects children's ability to forge personal connections to those around them, a critical aspect of belongingness.

All SRS items were rated on a 4-point scale ranging from 1 (*never*) to 4 (*always*). For externalizing behaviors, teachers evaluated children on five different acting out behaviors, such as fighting, impulsivity, and anger. Higher mean scores reflect more externalizing behaviors ( $\alpha = .90$ ). Teachers also provided ratings of children's interpersonal skills, which included five items related to skills in interacting with others. Higher mean scores indicate more positive interpersonal skills ( $\alpha = .78$ ). Past research has indicated that teachers' ratings are sensitive to racial/ethnic match with students (Alexander, Entwisle, & Thompson, 1987; Chang & Sue, 2003; Downey & Pribesh, 2005), a pattern that is certainly important for this study and that is addressed, in part, through controls for teachers' race/ethnicity. Given our focus on children's transitions into school, however, understanding how children's behaviors are *perceived* (even in a biased way) within the classroom context is a relevant area of inquiry, especially if such perceptions disrupt the link between instruction and learning.

**Child/family controls**—To account for potential spurious associations between school racial/ethnic composition and student outcomes due to children's social locations, analyses



controlled for child age, gender, race/ethnicity (dummy variables for African American, Asian American, Latino/a, other; White as reference group), family structure (dichotomous variable differentiating two biological parent families from other family structures), and parent education (highest level of education rated on a 5-point scale, from *less than high school graduate* to *graduate degree-masters or higher*, across parents). Although parent education has been found to be a particularly strong SES-related predictor of child outcomes and, is therefore, accounted for in our analyses (Bradley & Corwyn, 2002), at the same time, how the constellation of measures associated with families' social status influences development is also controlled for in the current study with an SES composite. This measure, created and made public by NCES, is the average of standardized measures of mother/father educational attainment, mother/father occupational prestige, and family income. It ranges from  $-5$  (*low*) to  $3$  (*high*). Given the study's focus on children's achievement after the transition to school, we also controlled for whether the child was a first-time kindergartener. To control for any spuriousness due to place of residence and to account for the role of residence in the ECLS-K sampling frame, region (dummy variables for south, northeast, west, south) and urbanicity (dummy variables for central city, city fringe of large town, small town) were also measured for use as controls in multivariate models.

**School controls**—Taking into account other school characteristics that might co-occur with diversity and belongingness and predict student adjustment is necessary to better isolate the importance of school composition. Consequently, the set of control variables included proportion minority (i.e., non-White) students, racial/ethnic diversity of the teaching staff, school sector (dichotomous variable capturing whether the school was public or private), Title I status (dichotomous variable capturing whether the school received Title I funds), and school size (1 = 0 – 149, 2 = 150 – 299, 3 = 300 – 499, 4 = 500 – 749, 5 = 750 or more). Additionally, because of the study's focus on students' transition experiences, controlling for the availability of transition programming activities at a given school—by taking the sum of seven such activities, including whether schools conducted home visits and had preschoolers visit kindergarten classroom prior to school entry—was also necessary. We divided the sum by the total number of non-missing responses; the resulting proportion more accurately captures the extent of transition activities offered at each school based on only activities endorsed as present/absent.

**Teacher controls**—As with school characteristics, teacher characteristics might also co-occur with schools' racial/ethnic composition in ways that influence students' adjustment and functioning at school. As such, we included a set of teacher-reported control variables, including teachers' education (dichotomous variable capturing whether the teacher had a master's degree or higher), total years at current school, and race/ethnicity (African American, Asian American, White, Latino/a, Other; White as reference group).

## Analysis Plan

To explore whether dimensions of schools' racial/ethnic composition were related to children's transitions into elementary school, we conducted four stepwise linear regression analyses with the full sample to examine associations between school composition and the

four student outcomes. Initial analyses included quadratic terms for both school composition measures to allow for the possibility of nonlinear associations. Because few instances of non-linearity emerged, the final analyses excluded these terms. To determine whether observed associations between school composition and student outcomes varied as a function of students' own racial/ethnic backgrounds, we then ran multiple group analyses.

Analyses take into account, on the student and school level, many of the socioeconomic factors that co-occur with racial/ethnic factors while also assessing the sensitivity of results to the kinds of unobserved confounds that have long posed a problem to using non-experimental findings on school composition to inform policy (Frank, 2000; Schofield, 1995). Racial/ethnic stratification is closely aligned with socioeconomic inequalities (McKinnon, 2003; Ramirez & de la Cruz, 2003), something for which many existing studies fail to take into account.

All analyses were conducted in *Mplus* v5.2 (Muthén & Muthén, 1998–2008), which was selected for its ability to simultaneously address missing data, incorporate sampling weights, and allow subpopulation estimates. Although the current dataset included some missing data, the full-information maximum likelihood (FIML) method in *Mplus* allowed data for all cases to be estimated in modeling. FIML is a preferred method for generalizing results to the population and using all available data (Arbuckle, 1996). All models employed ECLS-K longitudinal sampling weights, which accounted for threats to representativeness through differential attrition and oversamples. Models were estimated with a procedure (CLUSTER) designed to address violations to independence assumptions related to the multilevel nature of the data (e.g., the clustering of student data within schools), thereby achieving robust standard errors. Additionally, multiple group analyses examining racial/ethnic differences used the GROUP command in *Mplus*, which computes parameter estimates based on individual groups but on all cases to compute standard errors (Cochran, 1977).

## Results

### Diversity, Belonging, and Young Children's Transition to Elementary School

To begin, we examined the interplay of school racial/ethnic diversity and proportion of same-racial/ethnic peers (also referred to as racial/ethnic matching). Specifically, we first conducted separate models examining the independent effects of each, controlling for a standard set of covariates. The next model included both diversity and proportion same-racial/ethnic peers in a single model to examine possible suppression effects (see Table 2). The final model in the stepwise analyses included an interaction term to determine the extent to which the effects of diversity and were dependent upon children's racial/ethnic matching (or vice versa; see Table 3).

In models in which school diversity and racial/ethnic matching were entered independently, neither significantly predicted reading achievement ( $\beta = .03$  and  $.01$  for diversity and matching, respectively). When these school composition measures were examined together in a single model, however, both were significantly associated with reaching test scores (see Table 2), suggesting the possibility of suppression effects. Inclusion of the interaction term revealed a significant diversity  $\times$  matching coefficient (see Table 3). As seen in Figure 1a,

the proportion of same-racial/ethnic peers in the school made little difference in children's reading achievement for those in schools with low levels of racial/ethnic diversity, but having a larger proportion of same-racial/ethnic peers was associated with better reading achievement test scores for children in higher diversity schools.

A similar pattern emerged for the math achievement models. When examined separately, proportion same-racial/ethnic peers was associated with math achievement ( $\beta = .04, p < .001$ ), but school diversity was not ( $\beta = .01, ns$ ). As shown in Table 2, school diversity and same-racial/ethnic peers predicted mathematics test scores when both school composition effects were included in a single model simultaneously. As with reading achievement, the diversity  $\times$  matching interaction was significant (see Table 3) and operated in an identical manner—racial/ethnic-matching was not strongly associated with the math achievement of children in low diversity schools, but higher levels of matching were associated with stronger math achievement for children in highly diverse elementary schools (see Figure 1b).

Turning to the socioemotional domain, school racial/ethnic composition appeared to be less important. In the models examining racial/ethnic diversity and racial/ethnic matching separately, neither was associated with children's externalizing symptoms or their interpersonal skills ( $\beta$  range:  $-.02$  to  $.02$ ). When racial/ethnic diversity and racial/ethnic matching were included in a single model, however, racial/ethnic match was significantly associated with children's externalizing symptoms and marginally associated with children's interpersonal skills (see Table 2), such that children with more same-racial/ethnic peers were rated as having fewer externalizing symptoms and stronger interpersonal skills. For both socioemotional domains, we observed no significant diversity  $\times$  matching interactions (see Table 3).

One concern with these models was that the set of school racial/ethnic composition measures did not add substantially to the explained variance of any model above and beyond the child, family, teacher, and school controls. Thus, a closer inspection of the meaningfulness of any statistically significant coefficients in these models was in order. To do so, we compared effect sizes (using the standardized coefficients) of diversity and belonging to those of parent education. The motivation for doing so was the ample evidence suggesting that parent education is a particularly robust predictor of children's academic and, to a lesser extent, socioemotional well-being (Bradley & Corwyn, 2002) as well as the fact that parent education effects are deemed robust enough to justify major federal funding for parents returning to school (e.g., Even Start; U.S. Department of Education, 2008).

In general, we observed that school racial/ethnic composition had about half the association with the outcomes that parent education did. Specifically, for reading and mathematics achievement, respectively, standardized coefficients were an absolute value of .05 and .04 for school diversity and .05 and .06 for proportion same-racial/ethnic peers, whereas the parent education coefficient ranged from .09 to .10. For both externalizing behaviors and interpersonal skills, standardized coefficients for same racial/ethnic peers (the only significant predictor) were .03, while the standardized coefficients for parent education ranged from .02 to .05. Thus, although generally not as predictive as parent education, these

comparisons illustrate the non-negligible links between schools' racial/ethnic composition and children's competencies.

Along these same lines, the degree of causal inference that can be drawn from these model results is also in question. Models controlled for a host of potential confounds that were theoretically relevant and could be measured in ECLS-K, but the potential threats to causal attribution posed by unknown or unobservable confounds have not yet been addressed. To look into this issue, we turned to the Impact Threshold for Confounding Variables (ITCV). Unlike estimating an instrumental variable model, calculating the ITCV does not control for the impact of any unobserved confounds on a focal coefficient. Instead, it quantifies how strongly such confounds would have to be associated with *both* predictor *and* outcome to wash out the coefficient for the predictor (for a complete description of the ITCV, see Frank, 2000).

The equation for the ITCV is:  $r_{xy} - r_{xy}^{\#}/1 - r_{xy}^{\#}$ , where  $r_{xy}^{\#} = t/\text{SQRT}[(n - q - 1) + t^2]$ , where  $t$  is the critical  $t$ -value (usually 1.96),  $n$  is the sample size, and  $q$  refers to the number of model parameters (excluding the intercept). When covariates are included in the model, the equation becomes:  $\text{ITCV}_{\text{no covariates}} \times [\text{SQRT}(1 - R_{xg}^2)(1 - R_{yg}^2)]$ , where  $g$  is the set of covariates,  $R_{xg}^2$  is the  $R^2$  value from a regression predicting the focal independent variable by the covariates, and  $R_{yg}^2$  is the  $R^2$  value from a regression predicting the outcome by the covariates. The ITCV gauges the minimum product of the correlation between the predictor and confound and the correlation between the outcome and the confound ( $r_{xc} \times r_{yc}$ ) needed to make the association between school racial/ethnic composition and child outcomes just statistically significant.

The ITCV was calculated for all significant diversity and belonging coefficients in Table 2. The largest ITCV (.11) was for proportion same-racial/ethnic peers in the mathematics achievement model. Controlling for an unobserved confound would reduce this school composition coefficient to non-significance only if the confound was associated with proportion same-racial/ethnic peers at a minimum  $r_{xc} = .34$  and with math achievement at a minimum  $r_{yc} = 0.31$ . Inspection of associations between these variables and numerous ECLS-K measures (including early measures of academic/cognitive and socioemotional functioning) revealed no correlations approaching this magnitude. School diversity as a predictor of math achievement had an ITCV value of .06 ( $r_{xc} = .24$ ,  $r_{yc} = .23$ ). This threshold also exceeded the correlations of all inspected ECLS-K variables with the focal predictor and outcome. ITCV values for reading achievement were moderate. They ranged from .05 for proportion same-racial/ethnic peers ( $r_{xc} = .25$ ,  $r_{yc} = .21$ ) to .01 for school diversity ( $r_{xc} = .11$ ,  $r_{yc} = .11$ ). Although the ITCV for proportion same-racial/ethnic peers exceeded thresholds for any inspected variables in ECLS-K, the school diversity coefficient in the reading achievement model was too small to offer any confidence that it would be robust if a full set of confounds could be controlled. Finally, we observed moderate ITCV values for the proportion same-racial/ethnic peers coefficients in the models for externalizing symptoms (ITCV = .03,  $r_{xc} = .21$ ,  $r_{yc} = .17$ ) and interpersonal skills (ITCV = .04,  $r_{xc} = .21$ ,  $r_{yc} = .17$ ). Still, no inspected ECLS-K measures were correlated with the focal predictor and outcome at the levels indicated by these ITCV values.

In sum, inspection of the academic and socioemotional developmental domains revealed different results. For reading and math achievement, slight evidence of suppression emerged, such that the associations between school composition indicators and the achievement outcomes were stronger when both diversity and racial/ethnic matching were included in a single model. Moreover, we identified significant interactions, with same-racial/ethnic schoolmates particularly associated with the achievement of children in high diversity schools. Thus, school diversity and racial/ethnic matching seem to not operate completely independently, at least when considering the achievement domain. As for children's socioemotional well-being, the proportion of same-racial/ethnic peers was linked to externalizing symptoms and, to a lesser extent, interpersonal skills, and these associations appeared to be independent of school diversity, which was unrelated to children's socioemotional wellbeing.

### **Stratification, School Racial/Ethnic Composition, and Children's Developmental Competencies**

A key element of our conceptual model was that the association between school composition and child outcomes might differ depending on the racial/ethnic group's position in American society's stratification hierarchy. As such, we further unpacked the general patterns in order to uncover differences in sensitivity to school racial/ethnic composition across major racial/ethnic groups in the U.S. as well as to determine the extent to which the general picture that has emerged so far simply reflected the educational and developmental patterns of children from the single largest racial/ethnic group in the U.S. and in ECLS-K (i.e., Whites).

To examine racial/ethnic differences in the associations between diversity, racial/ethnic matching, and children's developmental competencies, we followed the recommendations of Bollen (1989) and Kenny (2005) for stepwise multi-group comparisons, including constraints on model parameters (i.e., constraining a parameter to be the same across racial/ethnic groups) and observing whether doing so led to a significant decrease in the overall model fit. Omnibus tests (e.g., chi-square difference tests and comparisons of CFI and RMSEA values) gauged whether such constraints resulted in a significant decrease in the model fit. All analyses included the standard set of covariates, with one exception—proportion minority students was not included in the analyses due to its perfect overlap with proportion same-racial/ethnic peers for Whites.

Results indicated significant group differences in the associations of reading achievement with both school diversity ( $\chi^2(3) = 8.08, p < .05$ ) and proportion same-racial/ethnic peers ( $\chi^2(3) = 184.58, p < .001$ ). Similarly, for math achievement, we observed significant group differences for school diversity ( $\chi^2(3) = 15.61, p < .001$ ) and same-racial/ethnic peers ( $\chi^2(3) = 15.75, p < .001$ ). As for socioemotional development, we observed marginal evidence of group differences in the association between interpersonal skills and proportion same-racial/ethnic peers ( $\chi^2(3) = 6.64, p = .08$ ) and no differences across race/ethnic groups in the significance of school composition measures for externalizing symptoms.

For both reading and math, White students, but not those from minority populations, tended to score higher when attending schools with greater racial/ethnic diversity and more same-racial/ethnic peers. Group differences in the diversity  $\times$  matching interaction for math

achievement ( $\chi^2(3) = 7.56, p = .06$ ) provided further insights into this association. Specifically, the interaction was statistically significant only for White children ( $\beta = .10, p < .01$ ), suggesting that these students derive particular benefit from attending diverse schools that also include a critical mass of same-racial/ethnic peers.

## Discussion and Conclusion

In the current study, we sought to both document and disentangle the associations between dimensions of schools' racial/ethnic composition and young children's development during a critical early life transition: entry into formal K-12 schooling. We broadened the scope of student outcomes to include both academic and socioemotional aspects of child development. The resulting conceptual model posited particular influences of school diversity and belonging (i.e., proportion same-racial/ethnic peers) depending on the aspect of child development being considered and the segments of the population in which children were located. In the academic domain, we observed some evidence of suppression effects, such that diversity and racial/ethnic matching were not strongly associated with student outcomes when considered individually but were positively associated with children's reading and mathematics achievement when modeled simultaneously. In the socioemotional domain, however, only the indicator of belonging was associated with fewer externalizing symptoms and stronger interpersonal skills, regardless of whether it was modeled independently or conjointly with diversity.

Prior research has documented the particular benefits of diversity for the academic achievement of adolescents and young adults (Gurin et al., 2003); although informative, adapting such research to a much younger segment of the population is not without its challenges. Diversity is in many ways a cognitive exercise (Gurin et al., 2002), and its benefits would therefore be expected to be most pronounced at developmental stages characterized by less rigidity and more complexity of thought. The children in the current sample recently entered the K-12 educational setting, and this is a time in the early life course characterized by preoperational thinking. Accommodation of new concepts (i.e., learning), however, necessitates assimilation of new information, often through the process of cognitive conflict (Piaget, 1983). As such, in more diverse settings, children will be exposed to a greater diversity of ideas, even if rudimentary in nature, and the resulting disequilibrium may in part drive children's cognitive development as they seek to reconcile the conflicting ideas with their own existing notions.

Our findings related to the socioemotional domain illustrate the value of broadening the focus of school composition influences beyond academics. A host of studies have documented the short- and long-term effects of children's socioemotional well-being on later educational success (Konold & Pianta, 2005; Rouse, Brooks-Gunn, & McLanahan, 2005). Children's social and emotional health is also important in its own right. As seen here, having more same-racial/ethnic peers in school was associated with fewer externalizing behaviors and more positive interpersonal skills among children. Social adaptations are a critical mechanism by which young children successfully navigate the transition to school, and they play an important role in children's continued success across their educational careers (Entwisle & Hayduk, 1988). Children who have more same-racial/

ethnic peers may find it easier to forge relationships with other children, which in turn may facilitate better adaptation to the new social context of formal schooling. Teachers may cue into children's ease with social adaptations and subsequently rate children's social efficacy and socioemotional adjustment more favorably. The influence of having more same-racial/ethnic peers on achievement may also tie to children's social adaptations, as these adaptations have been linked to children's early and continued achievement in the academic domain (Entwisle & Hayduk, 1988).

In addition to examining aggregate aspects of schools' racial/ethnic composition, we also examined the extent to which these relationships varied as a function of children's position in the stratification system. We expected diversity (as a main or interactive effect) to matter more for White children's academic achievement, whereas we expected belonging (again, as a main or interactive effect) to matter more for minority students. We observed that White students generally performed better academically when in more racially/ethnically diverse schools, particularly when they also had more same-racial/ethnic peers, a finding in line with our original hypotheses. These findings suggest a tipping point of representation of minority racial/ethnic groups. Schools with balanced representation across multiple groups clearly yield benefits. Yet, when that representation becomes more skewed toward minority groups, the educational and resource inequalities that are more prevalent in minority-segregated schools may begin to emerge and pose risks (Kozol, 1991; Rothstein, 2004).

Why children from minority racial/ethnic groups did not also benefit academically from diversity of the student body, even if in a more limited way, is a lingering question. Extant school composition research targeting late elementary school to postsecondary institutions has highlighted the benefits of student body diversity for all racial/ethnic groups (Borman et al., 2004; Gurin et al., 2002,2003), which suggests that the benefits of diversity may be related to dosage/exposure. In the present study, students had less than a year of exposure to their educational contexts. The benefits of student body diversity for minority children, who are socialized in a White majority culture, may take longer to materialize. Future studies should examine when in the early life course school diversity begins to matter for minority children's academic achievement and whether these benefits are associated with either more prolonged exposure to student body diversity or a particular threshold of diversity.

Findings from the current study also suggest a focus on a "critical mass" of same-racial/ethnic peers that is needed to promote both academic achievement and socioemotional well-being among young children. The concept of critical mass has played a role in decisions around higher education affirmative action policies and race-conscious policies in K-12 school assignments. The National Research Council (2007) suggests a minimum racial/ethnic representation threshold of 15% to protect against feelings of isolation and possible out-group hostilities. Future studies should examine whether racial/ethnic representation that meets or exceeds this threshold while maintaining racial/ethnic diversity of the school yields similar benefits for children's socioemotional well-being as more segregated contexts.

We focused on the youngest students in the K-12 educational system. Although this is a good starting point, future research should link different stages of students' school careers together to examine whether and when diversity and belonging might exert their most potent

influences on children and adolescents' academic and socioemotional development. For example, according to the argument underlying our conceptual model, the role of school diversity and racial/ethnic matching might change as children grow up, navigate increasingly diverse out-of-school contexts, and transition into stages of school characterized by larger and often more heterogeneous student bodies.

Taken as a whole, findings from the current study suggest that, as a field, we need to adopt a more nuanced view of school racial/ethnic composition and its relation to children's developmental competencies. If school diversity is a compelling state interest, we must not only embrace the benefits of diversity but also acknowledge the advantages of having more same-racial/ethnic peers so that we can better ensure that diverse school contexts support both the academic and socioemotional needs of all U.S. children.

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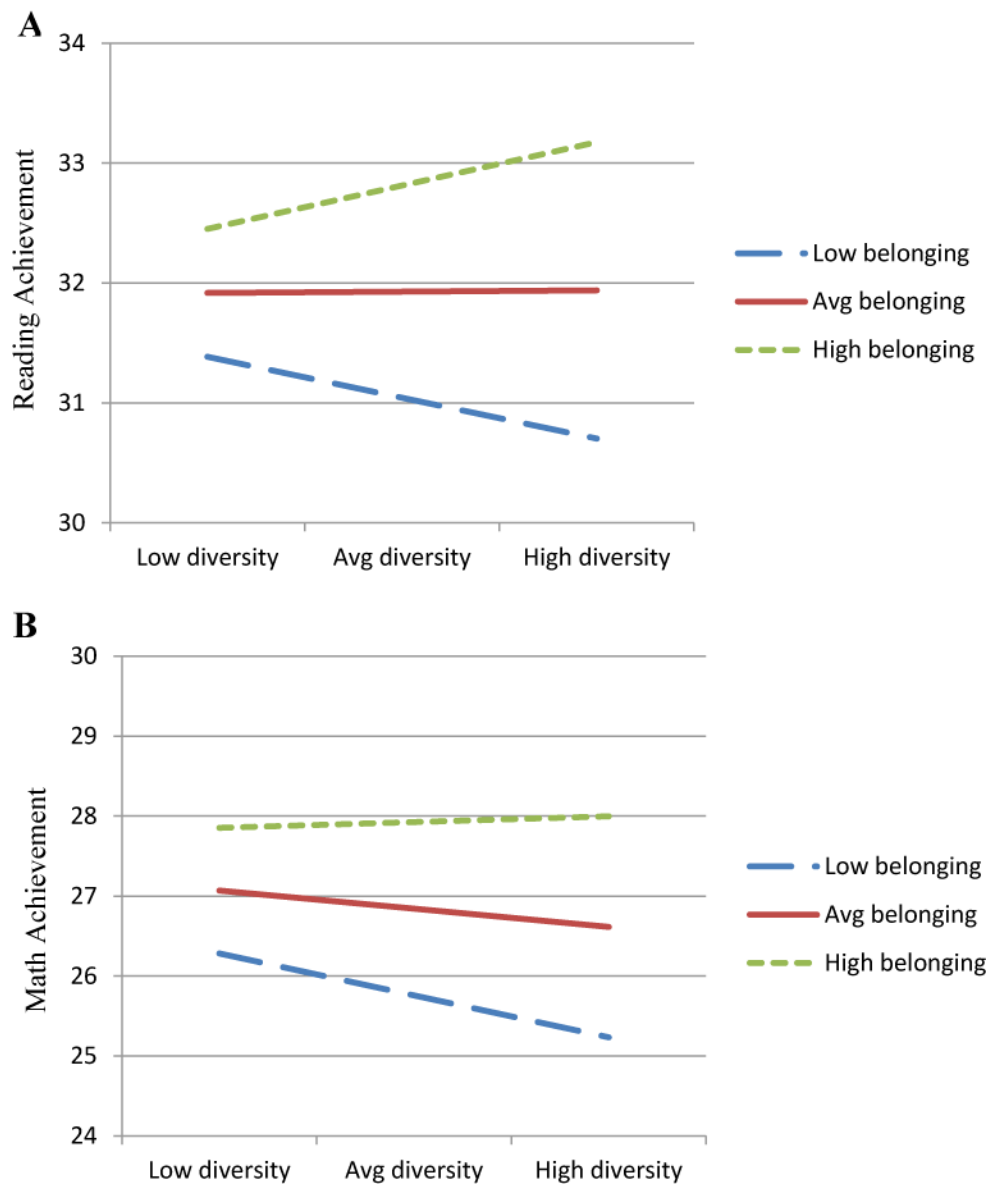
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**Figure 1.** (A) Relationship between school diversity and children's reading achievement test scores by proportion same-racial/ethnic peers (i.e., belonging); (B) Relationship between school diversity and children's math achievement test scores by proportion same-racial/ethnic peers (i.e., belonging)

**Table 1**

## Descriptive Statistics for Study Variables

Variable	<i>N</i>	%	<i>M</i>	<i>SD</i>
School <sup>a</sup>				
Proportion same-racial/ethnic peers	15,809		0.69	0.33
School diversity	16,693		0.28	0.22
Child outcomes				
Reading achievement	18,937		32.26	10.43
Mathematics achievement	19,649		27.58	8.86
Externalizing behaviors	18,907		1.67	0.65
Interpersonal skills	18,767		3.11	0.64
Child control variables				
White	13,291	66.4		
African American	3,035	15.2		
Latino/a	1,782	8.9		
Asian American	1,442	7.2		
Other	480	2.4		
Gender (female)	10,381	48.9		
Age (in months)	19,114		68.46	4.49
Repeated kindergarten	850	4.0		
Family control variables				
Socioeconomic status	18,849		0.11	0.70
Highest parent education	20,141		2.91	1.17
Two parent biological family	12,127	67.0		
Residence in Northeast	3,915	18.4		
Residence in South	7,094	33.4		
Residence in Midwest	5,263	24.8		
Residence in West	4,988	23.5		
Residence in small town/rural area	4,285	20.2		
Residence in large city	8,782	41.3		
Residence in city fringe/large town	8,193	38.5		
Teacher control variables <sup>a</sup>				
Education (Master's or higher)	18,978		9.17	7.89
Tenure at current school	16,394	87.4		
White	1,272	6.8		
African American	614	3.3		
Latino/a	486	2.6		
Asian American				
School control variables <sup>a</sup>				
Teaching staff diversity	16,466		0.14	0.18
Proportion minority students	16,693		0.34	0.34
School sector (public)	16,665	78.4		

<b>Variable</b>	<i>N</i>	%	<i>M</i>	<i>SD</i>
School size			3.28	1.17
Title I status	10,917	60.3		
Proportion of transition programs offered	19,133		0.48	0.19

Total possible  $n = 21,260$ .

<sup>a</sup>Descriptive statistics for school and teacher control variables reported at the individual (child) level.

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**Table 2**  
Results of Models Predicting Academic Achievement and Socioemotional Outcomes

Measure	Reading Achievement		Math Achievement		Externalizing Behavior		Interpersonal Skills	
	$\beta$	SE	$\beta$	SE	$\beta$	SE	$\beta$	SE
Predictors								
School diversity	0.05*	0.02	0.04*	0.02	-0.02	0.02	0.01	0.02
Prop. same-racial/ethnic peers	0.05**	0.02	0.06***	0.01	-0.03*	0.02	0.03 <sup>†</sup>	0.02
Child Control Variables								
Gender	0.10***	0.01	0.01	0.01	-0.21***	0.01	0.18***	0.01
Age	0.15***	0.01	0.22***	0.01	-0.04***	0.01	0.07***	0.01
African American	-0.04**	0.01	-0.08***	0.01	0.09***	0.01	-0.08***	0.01
Latino/a	-0.05***	0.01	-0.07***	0.01	-0.02*	0.01	-0.01	0.01
Asian American	0.05***	0.01	0.05***	0.01	-0.04***	0.01	0.01	0.01
Other race/ethnicity	-0.02 <sup>†</sup>	0.01	-0.01	0.01	0.02	0.01	-0.01	0.01
Kindergarten retention	-0.04***	0.01	-0.06***	0.01	0.03***	0.01	-0.04***	0.01
Family Control Variables								
SES	0.22***	0.02	0.23***	0.02	-0.04*	0.02	0.07***	0.02
Highest parent education	0.09***	0.02	0.10***	0.02	-0.02	0.02	0.05**	0.02
Intact biological family	0.07***	0.01	0.06***	0.01	-0.14***	0.01	0.11***	0.01
Region of residence—midwest	0.00	0.02	0.03*	0.02	0.02	0.02	-0.00	0.02
Region of residence—west	0.04*	0.02	0.04*	0.02	0.03 <sup>†</sup>	0.02	0.01	0.02
Region of residence—south	0.06**	0.02	0.05**	0.02	0.07***	0.02	0.02	0.02
Urbanicity—city fringe	0.02	0.02	0.01	0.01	0.00	0.01	-0.01	0.02
Urbanicity—small town	-0.02	0.02	-0.02	0.01	-0.00	0.02	-0.02	0.02
Teacher Control Variables								
Master's degree or higher	-0.04*	0.02	-0.02 <sup>†</sup>	0.01	0.00	0.01	-0.01	0.02
Tenure at current school	-0.03*	0.01	-0.02 <sup>†</sup>	0.01	-0.02	0.01	-0.00	0.01
African American	0.01	0.01	0.01	0.01	-0.03**	0.01	0.02	0.02

Measure	Reading Achievement		Math Achievement		Externalizing Behavior		Interpersonal Skills	
	$\beta$	SE	$\beta$	SE	$\beta$	SE	$\beta$	SE
Latino/a	-0.00	0.01	-0.02 <sup>†</sup>	0.01	-0.00	0.01	-0.01	0.01
Asian American	0.00	0.02	-0.01	0.01	0.01	0.02	-0.02	0.02
School Control Variables								
Teaching staff diversity	0.05 <sup>†</sup>	0.03	0.05*	0.02	-0.00	0.02	0.03	0.03
Proportion minority students	-0.06*	0.03	-0.11***	0.02	0.00	0.03	-0.03	0.03
Sector (private)	0.07***	0.02	0.06***	0.01	0.03*	0.01	-0.03*	0.02
Title I status	-0.03*	0.02	-0.03*	0.01	0.01	0.01	-0.01	0.02
Size	0.01	0.02	0.02	0.01	-0.03 <sup>†</sup>	0.01	-0.00	0.02
Transition programming	-0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01

$n = 21,260$

<sup>†</sup>  $p < .10$

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$ .

Note. Results for model that includes both school diversity and proportion same-racial/ethnic peers.



**Table 3**  
 Results of Interaction Models Predicting Academic Achievement and Socioemotional Outcomes

Measure	Reading Achievement		Math Achievement		Externalizing Behavior		Interpersonal Skills	
	$\beta$	SE	$\beta$	SE	$\beta$	SE	$\beta$	SE
Predictors								
School diversity	-0.02	0.03	-0.02	0.03	-0.04	0.03	0.06 <sup>†</sup>	0.03
Prop. same-racial/ethnic peers	0.01	0.02	0.03	0.02	-0.04*	0.02	0.05**	0.02
Diversity × same racial/ethnic peers	0.06*	0.03	0.06**	0.02	0.01	0.02	-0.04 <sup>†</sup>	0.03

*n* = 21,260

<sup>†</sup> *p* < .10

\* *p* < .05

\*\* *p* < .01

\*\*\* *p* < .001.

Note. All coefficients are net the influence of child, family, teacher, and school controls.