Mix Together, Expect Better?
—the Role of School Socioeconomic Diversity in Shaping Students' Educational Expectations

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ABSTRACT
Striving to understand the consequences of ongoing class-based school segregation, this paper examines how attending socioeconomically diverse school shapes students' educational expectations. After controlling for other school-and individual-level characteristics, I find a positive association between school-level socioeconomic diversity and students' educational expectations. The results also indicate that, in schools with low mean SES, this positive association is especially pronounced among students with less educated parents. Consequently, it contributes to a narrower parental-education-based disparity in expectations in more diverse schools than in segregated ones. However, a different pattern is found in schools with medium or high mean SES, where students' relative socioeconomic disadvantage in school acts as a moderator that attenuates the association between diversity and expectation, making socioeconomically disadvantaged students unable to benefit from socioeconomic diversity as much as their more affluent peers do. The findings thus point to both potential benefit and drawback of school socioeconomic integration plans.

KEYWORDS
Socioeconomic diversity, educational expectation, school effect, school segregation

INTRODUCTION

School effects, especially the influences of school socioeconomic and racial context on students' educational outcomes, have long been the subject of debates among social scientists and policy makers. Simply put, does school context matter? If so, how would changes in school racial and socioeconomic diversity affect students' educational outcomes? The crucial legal victory in Brown. Vs. Board in 1954, along with continued empirical research on the role of school racial composition (Palardy, Rumberger and Bulter 2015, Condron 2009, Frost 2007), has made racial desegregation the center of attention among school effects scholars for a long time. Nonetheless, the past three decades have witnessed the retreat from court-ordered racial desegregation, as well as rising class-based segregation caused by economic inequality. Consequently, socioeconomic school integration is becoming an intriguing policy alternative to race-based school desegregation. Such policies usually aim at achieving a more balanced socioeconomic composition in each school by reducing the concentration of economically disadvantaged students and promoting socioeconomic diversity. Yet, unlike school racial context, the effect of school socioeconomic context, especially socioeconomic diversity, still remains an understudied area. In this context, the examination of the role of school socioeconomic diversity in shaping educational outcomes becomes both theoretically important and empirically relevant. Focusing on educational expectations as the outcome variable, this study strives to understand the mechanisms through which current economic segregation in American schools might transform or reproduce existing educational disparities.

Even though school socioeconomic context has not been discussed as frequently racial context, a few scholars have called attention to its importance. As early as the publication of the Coleman Report in 1966, for example, Coleman and colleagues found that the proportion of white students was positively associated with students' educational achievement. Nonetheless, they argued that this effect was attributable to the student body's "educational background" rather than to "school racial composition per se" (Coleman et al. 1966). They further concluded that, controlling for children's own family SES, the contextual effect of school socioeconomic composition seemed to be more directly related to students' attainment than that of any other school-level characteristics. Built on the findings of the Coleman Report, Alexandra (2016) further pointed to residential segregation as the primary mechanism that channels students of different socioeconomic backgrounds into different schools and, parallelly, the importance of school socioeconomic composition in shaping the association between family SES and students' educational attainment.

Despite both the policy relevance and theoretical significance of school socioeconomic composition, extant studies on this topic contain several limitations. First, past research primarily focused on school mean SES as the sole indicator of school socioeconomic context, usually measured as the proportion of students eligible for free lunch, proportion of students with college-educated parents, or the average educational level of students' parents in each school. These measures can represent the average level of SES within each school, but fail to capture how socioeconomically segregated or integrated each school is, which can be important in its own right. In other words, two schools could have the same average level of parental education, but still differ in the specific socioeconomic composition of the student body. Additionally,

school socioeconomic diversity mirrors the extent to which students are segregated along economic lines, but school mean SES alone contains no such information. For instance, in a hypothetical case where schools in one district are extremely segregated by class so that students attend schools only with peers from the same family SES background, thus the socioeconomic diversity of every school in this district will be zero. In this scenario, a middle-class school in this district can have exactly the same mean SES as a middle-class school in another more integrated district, but the level of diversity of these two schools will likely differ drastically. Because, in addition to middle-class students being the majority, the more balanced school is more likely to also have a small fraction of both poor and upper-middle class students, resulting in a higher level of diversity.

Second, relatedly, when socioeconomic diversity is not measured directly and accounted for as a dimension that is related to but different from mean SES, it is almost impossible to distinguish between the influence of mean SES and that of socioeconomic diversity per se. For example, imagine a scenario where the educational outcomes of poor students attending a predominantly low SES school and their counterparts attending a more integrated school are compared. Both the norm transmission theory and relative deprivation theory can be applied to hypothesize about how the socioeconomic composition of these two schools would affect the educational outcomes of poor students. The former theory suggests that, the presence of middle-class peers in the more integrated school might exerts positive peer influence and fosters the transmission of attitudes that are conducive to learning (Meyer 1970). While the latter argues that having to face more competition and deal with feelings of relative deprivation compared to their peers might make poor students feel even more disadvantaged (Davis 1966, Meyer 1970). Mainly relying on school mean SES as the measure for school socioeconomic context, a few past studies on this topic found mixed evidence for both theories (Nelson 1972, Caldas and Bankston 1997, Khattab 2005, Crosnoe 2009). However, the causal mechanisms involved here can be complicated due to the fact that, compared to the predominantly low-SES school, the more integrated one not only has higher mean SES but also higher socioeconomic diversity. Since existing studies never accounted for both aspects simultaneously, it remains unclear how much of the school effect found in previous literature is actually attributable to school diversity per se (surrounding poor students with peers from different SES background), instead of the difference in school mean SES between the two schools (for instance, higher mean SES might suggest better school-level resources).

Therefore, this study pursues a more comprehensive perspective on school effects by conceptualizing school mean SES and socioeconomic diversity as two related, yet independent, dimensions of school socioeconomic contexts. This study specifically focuses on the role of attending socioeconomically diverse school in shaping students' educational expectations, after controlling for the influence of mean SES. The general conceptual framework of this study hypothesizes that, depending on the socioeconomic diversity of each school, students might perceive their positions on the socioeconomic spectrum relative to their peers at school in different ways. Thereby, school-level diversity may affect how optimistic/realistic students are in estimating their future chance of success in society and developing their educational expectations. Given the opposite hypotheses based on the two theories mentioned, I specifically investigate, understand which circumstances, would the benefit of attending socioeconomically diverse schools (as implied by the norm transmission theory) outweigh its potential drawback (as

suggested by the relative deprivation theory). In addition, although both theories primarily focus on the effect of school context for disadvantaged students, this research expands the framework by also considering whether the effect of socioeconomic diversity is restricted to the socioeconomically disadvantaged students and how school diversity affects their more advantaged peers. Therefore, the goal of my analyses is not only to examine whether socioeconomic diversity has an effect on students' educational expectations, but also to explore whether its effect may differ depending on different combinations of school mean SES and students' individual-level socioeconomic characteristics. Based on the differential effects of school socioeconomic diversity, this paper discusses the implications of the results. Specifically, how socioeconomic school integration plans would alter existing disparities in educational expectations.

BACKGROUND: SCHOOL SEGREGATIONS IN THE POST BROWN VS. BOARD UNITED STATES

The late 1950s witnessed a crucial legal victory against racial segregation in schools in the landmark case of Brown vs. the Board of Education. Subsequent court decisions and policy reforms on bussing and school desegregation in the following decades contributed to moderate improvement in school racial diversity, with the level of school desegregation at its peak in the 1970s (Logan, Zhang and Oakley 2017, Logan, Oakley and Stowell 2008). Despite all progress achieved, the efforts at school racial integration encountered challenges partly due to changes in the political climates in the 1980s and 1990s, resulting in the slowdown or even reversal of the trend toward desegregation (Stroub and Richard 2013). Scholars also pointed out that school segregation between school districts began to surpass within-school district segregation starting in the 1980s (Reardon, Yun and Eitle 2000, Bischoff 2008). The 2000s, on the other hand, has been seen as a period of "reintegration", characterized with either decline or stabilization of school racial segregation (Stroub and Richard 2013). Nonetheless, the burgeoning of high-poverty schools with large concentrations of economically disadvantaged students since the early 2000s (Saporito and Sohoni 2007) has complicated the landscape of secondary education and posed new challenges to the efforts to curb school segregation. Additionally, the interplay of racial and income-based school segregation has resulted in an increasing proportion of racial minority students attending concentrated-poverty schools (Logan et al. 2012). Most of these changes occurred in tandem with the noticeable increase in economic inequality and the persistence of residential segregation. Owens' research (2016), for example, found that along with growing income inequality, residential segregation by income has increased, especially among household with children. Owens (2016) also pointed out that, the level of economic segregation is higher in areas where school districts are more fragmented, implying that school segregation is indeed intertwined with economic inequality. As several scholars have suggested, along with the widening income and wealth gap and the persistent neighborhood residential segregation, the rise of class-based school segregation marked the arrival of a new era of school segregation (Owens, Reardon and Jencks 2016, Quillian 2012).

How would the emerging school segregation along economic lines affect students' educational outcomes? Would the de facto school segregation in Post-Brown era transform or reproduce existing educational disparities? Answers to these questions can provide vital insights into whether current segregation patterns would reinforce the status quo of educational stratification

in the long run. Although the trends and patterns of school segregation have been relatively well-documented, the consequence of such segregation have yet to be sufficiently discussed (Reardon and Owens 2014). On a more macro level, Quillian (2014) utilized metropolitan-level data and found that residential segregation by race and by income lowers the academic attainment of racial minority and poor students, but has no effect on their white and non-poor peers. Among a few studies that focused attention on school segregation at the school district level, Clark and Maas (2012) examined the effect of school racial segregation on school district-level test scores, but found no significant relationship between racial segregation and academic achievement after district-level mean SES is adjusted for. Mayer (2002), on the other hand, explored the influence of between-district economic segregation and found that increasing economic inequality between census tracts and between school districts both negatively impact low-income students' educational attainment.

Comparatively, much less studies regarding the consequences of economic segregation have been done at the school-level. Nevertheless, as the primary site where students spend most of their daily lives and the social interactions with their peers take place, school context can theoretically exert more direct impact on students than the larger neighborhood contexts or school district areas do. Although school choices available to children and the schools they eventually attend are generally structured by existing patterns of residential segregation, as well as how segregated or fragmented adjacent school districts are, segregations at different levels do not necessarily align with each other. Sohoni and Saporito's study (2009), for instance, revealed that, from elementary, middle to high schools, there is a constant disparity between the levels of segregation at the school and the school district level. They pointed out that, for most school districts they examined, racial segregation in schools is higher than that in their "catchment areas", partly attributed to the presence of nonpublic school options (Sohoni and Saporito, 2009). These observed gaps in segregation at different levels inevitably set limits on the degree to which we can directly apply conclusions drawn from studies on economic segregation at a higher to understanding its consequence at the school level. For this reason, by highlight the previously overlooked role of school socioeconomic diversity, this study hopes to contribute to the literature on consequences of economic segregation from a more micro perspective.

SCHOOL CONTEXTS AND EDUCATIONAL EXPECTATION

The outcome variable of this study is student's educational expectation, which is defined in this paper as how likely each student thinks that they will graduate from a four-year college.
This study focuses on students' educational expectations as the outcome variable, instead of educational aspirations, for two reasons. First, educational aspiration mirrors students' ambition or intention of attaining a college degree, which may depend more on idiosyncratic preferences and not necessarily be restrained or affected by one's socioeconomic surroundings. Educational expectation, on the other hand, reflects students' own estimates of the likelihood that they would actually attend and finish college, which theoretically is conditioned by their own socioeconomic condition and influenced by how they perceive their position and chance for success in society. This paper thus hypothesizes that school socioeconomic diversity as a contextual characteristics shapes the way students form such perceptions. Second, educational expansion during the past decades has been accompanied by a trend toward universally high educational aspirations among students across different race and class groups. As a result, educational aspiration has become

less useful as a predictor of future academic attainment than educational expectation. Educational expectation, nonetheless, has been well documented in the literature to play a role in shaping disparities in students' eventual educational attainment (Sewell, Haller and Portes 1969, Cabrera and Nasa 2001). For this reason, by focusing on students' expectations as the outcome variable, this research aims to bring together scholarship on school effects and educational stratification and, more importantly, shed light on the long-term influence of class-based school segregation.

Building on the Wisconsin framework of status attainment (Sewell, Haller and Portes 1969, Sewell, Haller and Ohlendorf 1970), sociologists have theorized educational expectation not only as one of the major predictors of students' future educational attainment (Reynolds and Pemberton 2001, Domina, Conley and Farkas 2011, Sewell and Hauser 1980), but also as a key outcome variable which is itself emblematic of the educational stratification process (Buchman and Dalton 2002, Hossler and Stage 1992, Kao and Tienda 1998). On the one hand, it has been well established that there is a positive association between students' educational expectation and educational attainment (Bates and Anderson 2014). Educational expectation remains a strong predictor of future attainment even in an era of educational expansion when high educational aspirations are rapidly becoming the norm (Reynold and Johnson 2011, Andres et al 2007). On the other hand, disparity in educational expectation itself has drawn scholarly attention as well. For instance, Morgan (1996) examined the black-white differences in educational expectations by comparing the 1982 and 1992 high school cohorts. After adjusting for SES, cognitive skill and significant other's influence, Morgan concluded that although black students in both cohorts had slightly higher educational expectations than their white counterparts, educational expectations increased more for white students than for black students between 1980 to 1992 (Morgan 1996). Relatedly, the actual realization of one's expectation is also found to be conditioned by one's socioeconomic characteristics (Reynold and Johnson 2011, Fryer and Levitt 2004) and shaped by the cultural and social resources one's family can provide (Behtoui 2017). For example, white students and students with high family SES are shown to be more likely to actualize their initial educational aspiration than their racial minority or poor counterparts (Reynold and Johnson 2011). Educational expectation can thus be conceived of as a mediating factor between students' ascriptive characteristics, such as race and class, and their eventual educational outcomes. In this sense, exploring school-level factors that may shape students' educational expectations in the first place is a key preliminary step toward understanding the process through which existing educational inequalities are constructed or transformed.

The past several decades have experienced a noticeable growth in students' educational expectations and aspirations across all race and class groups, partly as a result of the expansion of educational opportunities. Goyette (2008) thus pointed out that the strength of the effect of parental socioeconomic characteristics on students' educational expectations has weakened over time. Nonetheless, other studies also showed that disparities in educational expectations still exist and may have contributed to the gaps in eventual educational attainment across students of different race and socioeconomic background (Morgan 1996, Goyette and Xie 1999, Kao and Tianda 1998). Reynolds and Burge (2007), for instance, argued that the widening gender gap in educational attainment is partially attributable the rapid growth in educational expectations among females. As for the reason why disparities in educational expectations exist, previous

research mainly focused on individual-level characteristics, such as family income, parental education, students' race, gender, academic tracking at school and school performance (Wells et. al 2011, Karlson 2015, Goyette and Xie 1999). Going beyond an individual-level explanation, a few studies pointed out the influence of peers and school environment on educational expectations and aspirations (Buchmann and Park 2009, Feliciano 2006). Feliciano's study (2006), for example, highlighted the effect of group-level educational status on the educational expectations of immigrants' children. With regard to the influence of school context, Frost (2007) found that school racial composition has an independent effect on educational expectations for all students regardless of their own race and ethnicity, even after other school-level characteristics (such as school mean SES and average achievement) and individual-level variables are adjusted for.

Going beyond the American context, Khattab (2005), using data on schools in Israel, found that both school academic and normative context, such as school-level average achievement and school-level averaged educational expectations, are both significant predictors for students' individual-level expectations. Cross-country comparative studies on educational stratification also point to the significant of schools in shaping students' educational expectations. Bachmann and Park (2009), for instance, based on data from Australia and other four European countries, pointed out that the type of schools (whether or not academically oriented) students attend plays a critical role in affecting how realistic students' educational and occupational expectations are. Although not directly focused on educational expectations, by comparing the association between family SES and children's educational outcomes across twenty countries, Pfeffer's research (2008) also highlighted the importance of considering institutional structures of educational system (the degree to which educational opportunities at the secondary level are stratified, for instance) when studying the patterns of educational inequality. In this sense, examining whether the de facto segregation affects the formation of youth's educational expectations is a theoretically essential step in advancing our understanding of educational stratification in the American school system. However, very few studies specifically investigated the formation of educational expectations in the context of economic segregation. Therefore, this study is one of the first to explore whether students' educational expectations would vary depending on how socioeconomically diverse their school is.

SCHOOL EFFECTS REVISITED: TOWARD A REFINED UNDERSTANDING

Investigating the effect of school-level socioeconomic diversity in the context of emerging class-based school segregation is not only empirically relevant, but also theoretically valuable for several reasons. First, advancing our knowledge of the effect of school socioeconomic heterogeneity can also make contributions to the scholarly debate regarding the relative importance of school racial and socioeconomic context. Since the Coleman Report, discussions of the influence of school racial composition have been intertwined with the examination of school socioeconomic composition. Coleman and colleagues (1966) attributed the observed better educational attainment in schools with high proportion of white students to the fact that students in these schools on average have higher family SES. In other words, the contextual effect of school racial composition may actually result from that of school socioeconomic composition, especially given the commonly observed overlapping between school racial and socioeconomic segregation. Saporito and Sohoni (2007), for example, pointed out that poor and

racial minority students have become increasingly likely to be concentrated in high-poverty schools because of the withdrawal of their white and affluent peers from public schools. However, no consensus has been reached regarding whether school racial or economic context exerts stronger influence in shaping students' educational outcomes. Frost (2007) found a positive association between the percentage of black and Hispanic students and students' educational expectation, even after the percentage of parents with college degrees in each school is adjusted for. Similarly, Condron (2009) examined the influence of school environments on students' school-year gain in math and reading, and found that when school poverty level and racial composition are both taken into account, attending predominantly black schools (compared to attending predominantly white schools) is negatively associated with children's achievement gains, but the effect of school poverty level is insignificant (Condron 2009). However, Clark and Maas (2012), using district-level data, concluded that racial segregation does not have an independent role after the school-district average income and proportion of students eligible for free lunch are controlled for. These mixed conclusions from previous studies may be partly attributed to the intrinsically intertwining relations of school segregations by race and class—high-poverty schools also tend to have high proportion of racial minority students. This association makes it essentially challenging to distinguish the relative influences of school racial and socioeconomic contexts. On top of that, mean SES of each school was commonly utilized as the only measure of school socioeconomic contexts in these studies, which, as explained earlier, contained very little information about how socioeconomically segregated each school is. Without directly measuring the level of socioeconomic diversity in each school, previous studies actually did not fully account for the influence of economic segregation while studying the effect of school racial segregation. For this reason, in order to better both better understand the relative significance of school socioeconomic and racial contexts, both school socioeconomic diversity and school mean SES, along with school racial composition will be taken into account in the analysis.

Second, while extant studies have shown that school socioeconomic context does play a role in affecting students' educational outcomes, no consensus has been achieved regarding either the direction of its effect or the mechanisms through which such effect occurs. For example, multiple studies have shown that attending schools with higher mean SES is associated with higher educational attainment (Morgan and Sorensen 1999, Perry and McConney 2010). For this reason, high-SES schools tend to be schools with high average level of attainment. However, high-attainment schools have been found to have negative effects on the educational and psychological well-being of lower-resourced students (Marsh and Hau 2003, Khattab 2005). Corresponding to these contradictory effects, frequently discussed theories on the role of school socioeconomic effect generally fall into two lines of thinking: cultural transmission and relative deprivation. Derived from the socialization theory, the favorable effect of attending high-SES school is hypothesized to result from the concentration of middle-class peers, who play a positive role in transmitting values and norms that are conducive to achieving academic success (Meyer 1970). In a different vein, influenced by the argument of relative deprivation, the "frog pond effect" theory argues that, attending schools with high proportion of high-achieving peers—which also tend to be high-SES schools because of the association between school mean SES and students' achievement—may lower students' aspiration because of more intense competition (Davis 1966, Meyer 1970, Alexander and Eckland 1975, Marsh 1987, Marsh and Hau 2003, Wells 2010). Although the frog pond effect theory originally centers on the influence of high-

achievement schools, it could be applied to conceptualizing the potential negative effect of attending high-SES schools for lower-resourced students —having to deal with the shortage of social and cultural capital when compared to their more affluent peers might engender low self-esteem and other negative psychological outcomes among economically disadvantaged students (Crosnoe 2009, Bernburg et al. 2009).

Given these contrasting theories, it is crucial to consider in which setting one mechanism would be more pronounced than the other, and under which circumstances the advantages of attending schools with more affluent peers would outweigh the potential disadvantages these schools might bring. Crosnoe's research (2009) as one of the very few studies on school socioeconomic desegregation, for example, examined the potential risks of school socioeconomic desegregation for low-income students using the proportion of middle- or high-income students in each school as the indicators for school socioeconomic composition. Crosnoe found that low-income students who attend schools with more affluent peers actually fared worse both academically and psychologically than their counterpart in predominantly low-SES schools, and concluded that disadvantages of desegregation may offset its advantages (Crosnoe 2009). Nevertheless, it remains unclear what is the tipping point for socioeconomic desegregation to trigger such negative outcomes associated with relative deprivation. Put it differently, extant literature has not yet explored the question of how much socioeconomic diversity (by increasing the proportion of affluent peers, for example) is too much for disadvantaged students. This study, therefore, pays especial attentions to whether effects of attending schools with socioeconomic diversity work in the same way across schools with different levels of mean SES (specifically, by comparing the effect of diversity among schools with low, medium, and high mean SES).

Hypothetically, if the norm transmission theory is more relevant, we would expect school socioeconomic diversity to have a positive effect on students' educational expectation, especially for low-SES students. Because socioeconomically diverse schools are likely to have a fraction of the student body from both socioeconomically disadvantaged and affluent backgrounds. Thus low-income students attending these schools are likely to be exposed to more than one version of social mobility patterns, which may help them look beyond their current situation and form more positive ideas regarding their chances of moving up the social ladder. On the other hand, thinking solely from a relative deprivation or the frog fond perspective, we would expect to see little or even a negative effect of school socioeconomic diversity among lower-resourced students. This might be especially true if poor students only compose a small percentage, such as in integrated schools with medium to high level of mean SES, because, compared to their more affluent peers, the lack of socioeconomic capital and resource among these disadvantaged students might become more salient in such setting than in predominantly low-SES schools. Consequently, lower-resourced group in such schools might be more likely to experience relative deprivation and form a less optimistic expectation of their chance for future educational success. In reality, nonetheless, it is likely that we might see a combination of both scenarios. Depending on different combinations of student's own SES and the mean SES of the school, I expect to see one mechanism to be more pronounced than the other, leading to differential effects of socioeconomic diversity in different types of schools and across different students. Although both theories place the focus on how changes in school contexts affect low-SES or disadvantaged students, the study aims to broaden the perspective by looking beyond this group and also examining the influence of socioeconomic diversity for more affluent students as well. By

comparing the potentially differential effects of socioeconomic diversity across students with different socioeconomic backgrounds, the analysis hopes to shed light on how changes in school socioeconomic diversity can shift or reinforce existing disparities in educational expectations.

Aimed at filling these missing links in extant literature and based on the hypothetical mechanisms mentioned earlier, this paper will focus on testing the following three hypotheses in all three kinds of schools—schools with low-, medium-, high- mean SES, respectively:

Hypothesis 1. Positive effect of school socioeconomic diversity on students' educational expectations: Adjusting for individual-level and other school-level characteristics, students who attend schools with higher socioeconomic diversity are more likely to expect to graduate from a four-year college than their counterparts in more socioeconomically homogeneous schools.

Hypothesis 2. Differential effects of school socioeconomic diversity across students from different SES background (derived from the norm transmission theory): If school socioeconomic diversity has an overall independent positive effect on students' educational expectations, the effect would be stronger for students with less-educated parents.

Hypothesis 3. Differential effects of school socioeconomic diversity depending on students' relative socioeconomic disadvantage compared to their peers at school (derived from the frog fond theory): If school socioeconomic diversity has an independent positive effect on students' educational expectations, the effect would be stronger for students whose relative socioeconomic standing fall behind their peers and thus experience more relative deprivation.

DATA AND METHOD

The study utilizes data from the Monitoring the Future Study (MTF), a nationally representative sample of approximately 16,000 high school seniors annually drawn from around 130 public and private schools since 1975. Since MTF's main focus has been on substance use, it has been under-utilized for educational studies. However, one unique advantage of MTF is that a relatively large proportion of students, if not all, are sampled from each school. More specifically, up to 350 students can be selected from each school, with almost all students sampled for schools with less than 350 students. The sampling design of MTF makes it possible to construct a reliable measure of socioeconomic heterogeneity for each school utilizing the individual-level data of all or a large proportion of students in that school. The specific formula for constructing such measure will be explained in next section. I include cross-sectional data from the following eight years—1978, 1980,1988,1990,1998,2000,2008,2010 (N=126,689). The data span four decades, during which income-based school segregation has been on the rise and competes in importance with racial segregation. Kahlenberg (2003), for example, argued that the effect of class-based school segregation has become a stronger determinant in shaping students' achievement than racial segregation during these decades. The sample will allow the

examination of such trend during this period of time and provide timely insights on whether school socioeconomic integration is the effective policy alternative to school racial desegregation. For the purpose of constructing a measure of school-level variables (such as school socioeconomic and racial contexts) that utilizes individual-level data from as many students in each school as possible, missing values in individual-level independent variables are imputed. After omitting observations with missing values in the outcome variable, 116,034 students out of 126,689 students who were originally in the data from 1,051 schools are included in my analysis.

OUTCOMES VARIABLES

The MTF questionnaire has the following question on student's educational expectation, "how likely is it that you will graduate from a four-year college". Four answer choices are provided: "definitely won't, probably won't, probably will and definitely will". In accordance with the well-documented trend toward rapidly increasing educational expectation during the past decades, almost half (49 percent) of all students in the sample fall into the last category "definitely will". Given the universally high educational expectations and the limited number of students in each of the first three categories, the comparison between "definitely will" and the other three groups combined is more meaningful than that among all four categories. Thus, I transformed this item into a binary variable, with "definitely will" coded as 1 and otherwise coded as 0.

EXPLANATORY VARIABLES: SCHOOL-LEVEL VARIABLES

As mentioned earlier, three key contextual variables are included in the study to characterize the socioeconomic and racial contexts of each school. MTF measures the education of a student's father and mother in six ordinal categories— "completed grade school or less, some high school, completed high school, some college, completed college, and graduate or professional school". I choose the highest level of education among each student's parents as a proxy for their family SES, and then convert the highest level of parental education into years of schooling. The six ordinal categories of parental education listed above are converted to 8, 10, 12, 14, 16, and 18 years of schooling, respectively, with a 2-year interval between each level. In the following analyses, the term "parents' education" and "student's SES" are used interchangeably and both refer to this variable. Two school-level socioeconomic variables—school mean SES and socioeconomic diversity—are constructed based on individual-level parental years of schooling of every student in each school. School mean SES for each school is calculated as the average years of schooling of students' parents. School socioeconomic diversity is quantified for each school using the Theil Index T_T. This measure is chosen over other similar measures for diversity, such as standard deviation and coefficient of variation, because the Theil Index takes into account not only how far is the SES of different students away from the school mean SES, but also how many different SES groups are there in each school and what proportion of the student body each SES group accounts for. In this context, higher value of the Theil Index indicates more dispersion of the distribution of students' SES, therefore, is indicative of higher socioeconomic diversity in a school. The formula for calculating the Theil Index for school j is presented below in Equation (1), where f_{k_j} is the fraction of students in school j with k years of parental schooling, μ_j is the average years of parental schooling (mean SES) for school j, and k ranges from 8 to 18 years. After standardizing the original values of the Theil Index, the socioeconomic diversity measure for schools in the whole sample ranges from -2.8 to 5. As for

school racial composition, one of the most commonly used measures for school racial context, the proportion of black students in each school, is calculated and controlled for in the analysis.

$$T_{Tj} = \sum_{k=8}^{18} f_{k_j} \frac{k}{\mu_j} \ln(\frac{k_j}{\mu_j})) \quad (1)$$

INDIVIDUAL-LEVEL VARIABLES

In addition to parental years of education as the main predictor of educational expectation, three types of individual-level variables are include into the analysis: demographic, socioeconomic, and academic performance-related factors. The following demographic and socioeconomic factors are taken into account: students' race (five categories: white, black, Hispanic, Wells 2010, and other), gender (female coded as 1), and whether or not being raised in a single-parent household. I also adjusted for the following variables that may indicate or affect students' previous academic performance: whether the student's high school program is college-preparatory, previous GPA, and absenteeism. Since data in the sample are from eight different years, I use a survey year variable to account for potential cohort differences. The 1978 senior cohort is coded as 0, 1988 as 10, 1998 as 20, and 2008 as 30.

Additionally, I construct an individual-level relative disadvantage variable to measure the relative socioeconomic standing of each student compared to their peers in the same school, as the proxy for the level of relative deprivation they are likely to experience at school. This variable is utilized as the main individual-level predictor only in models aiming to particularly test whether students who experience more relative deprivation are less likely to benefit from attending socioeconomically diverse schools (as implied by the frog pond theory). For each student, I first calculate the percentile rank of their parents' education in their school, and subtract the value from 1 to calculate their relative disadvantage (ranging from 0 to 1). For example, if a student's parents' education is only higher than 25% of all students in the school they attend, this student's relative disadvantage will be quantified as 0.75. The higher the value, the further the students' SES falls behind their peers, thereby the more likely the student will experience relative deprivation at school. Importantly, although this variable and student's parents' education can be highly correlated (students with highly educated parents are less likely to experience relative deprivation), they are conceptually different. Parents' education indicates a student's absolute socioeconomic advantage regardless of what kind of school they attend, but the relative disadvantage variable is a measure contingent on not only the absolute advantage of a student but also the socioeconomic distribution of the student body in their school. Even for all the students with college-educated students, depending on the specific kind of school they attend (for example, attending a medium-SES school vs. a high-SES school), the value of their relative disadvantage may vary. That being said, given the high correlation (-.87) between these two variables, they will not be included in the analysis simultaneously. While parental education will be the primary individual-level predictor in models based on the norm transmission theory, the relative disadvantage variable will instead be utilized in the models aiming to test the relative deprivation theory—whether relative deprivation moderates the effect of socioeconomic diversity.

ANALYTICAL STRATEGY

Instead of conducting the analysis on the whole sample, I examine the effect of school socioeconomic diversity for different types of schools (schools with low, medium, and high mean SES) separately for two reasons. First, socioeconomic school integration can have very different meanings depending on the mean SES of each school. For instance, for predominantly low-SES schools, the increase in socioeconomic diversity can result from including some middle-class students. However, for medium-schools, such increase means enrolling more economically disadvantaged students. Even if these two schools have achieved exactly the same level of diversity (as measured by the Theil Index), due to the difference in their school mean SES, the specific socioeconomic compositions of these two schools might still be intrinsically different. Particularly, low-SES students are likely to constitute the majority in the first school, while middle and upper middle class students are likely to make up the largest proportion in the second school. Consequently, the socioeconomic disadvantage associated with low-SES students may become more visible in the second school than in the first one, which may result in them experiencing a higher level of relative deprivation than their counterpart in the predominantly low-SES school. For this reason, without categorizing different types of schools, the analysis will not be able to fully capture different implications of diversity in different settings.

Second, given the existing uneven distribution of educational resources, students are randomly assigned to the school they are attending as in an experiment setting. Relatedly, the concern of self-selection bias (Nash 2003) has often been pointed out as a criticism against the literature on school effects. For instance, students who get to attend high-SES schools in the first place may also have better educational resources or more cultural capital and thus differ inherently in unobserved socioeconomic characteristics than those who are selected into low-SES schools. Thus, one might argue that school effect is merely a manifestation of students with certain traits concentrating in certain type of schools. Put it differently, school effect "occurs" only when individual-level characteristics are insufficiently controlled (Nash 2003). In this sense, by examining the role of diversity separately for students attending different types of school, the analysis aims to at least to an extent decrease the influences of self-selection bias.

Therefore, I split the analysis sample into three subsets of similar size based on the mean SES of each school. The bottom one third are defined as low-SES schools, the middle one third constitute medium-SES schools, and the top one third are categorized as high-SES schools. After doing so, the average mean SES of each type of schools are 12.9, 14.1, and 15.5 years of students' parental schooling, approximately corresponding to average parents' education levels of high school diploma, some college, and college degree, respectively. All models will be run separately on each subset.

As the first step of my analysis, I use descriptive statistics to explore the association between school mean SES and socioeconomic diversity, and whether the relationship has evolved over the past four decades, as well as how schools in each subset differ in the average values of school- and individual-level characteristics. Second, for each subset, I apply fixed-effect two-level hierarchical models to examine whether there is an overall effect of school socioeconomic heterogeneity on educational expectations. As shown in Equation (2), (3) and (4), I start with only school-level variables, and then explore whether the influence of school socioeconomic

diversity persists after adjusting for individual-level predictors. The probability of student i in school j expecting to graduate from college can be modeled as following:

$$\Pr(EduExpect = 1) = logit^{-1}(\beta_{0j} + r_{ij}) \quad (2)$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}\boldsymbol{SocDiversity_j} + \gamma_{02}Mean\ SES_j + \gamma_{03}Racial\ Context_j + U_{0j}$$

$$\Pr(EduExpect = 1) = logit^{-1}(\beta_{0j} + \beta_1\boldsymbol{ParentEdu_i} + \beta_2 Controls_i + r_{ij}) \quad (3)$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}\boldsymbol{SocDiversity_j} + \gamma_{02}Mean\ SES_j + \gamma_{03}Racial\ Context_j + U_{0j}$$

$$\Pr(EduExpect = 1) = logit^{-1}(\beta_{0j} + \beta_3\boldsymbol{RelativeDeprivation_i} + \beta_2 Controls_i + r_{ij}) \quad (4)$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}\boldsymbol{SocDiversity_j} + \gamma_{02}Mean\ SES_j + \gamma_{03}Racial\ Context_j + U_{0j}$$

Finally, I use random-effect models with cross-level interaction terms to assess whether there is differential effect of school socioeconomic diversity across students with different socioeconomic characteristics in each subsample. Specifically, two mechanisms are considered, as shown in Equation (5) and (6). If the cultural transmission theory is true, the cross-level interaction term in Equation (5) between students' parent education and school socioeconomic diversity should be expected to have a negative coefficient, meaning that socioeconomic diversity will have a stronger effect among low-SES students. If, on the other hand, the frog pond theory is supported, the coefficient for the interaction term in Model (6) should be expected to be negative, meaning that those who experience more relative deprivation benefit less from attending socioeconomically diverse schools.

$$\Pr(EduExpect = 1) = logit^{-1}(\beta_{0j} + \beta_{1j}\boldsymbol{ParentEdu_i} + \beta_2 Controls_i + r_{ij}) \quad (5)$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}\boldsymbol{SocDiversity_j} + \gamma_{02}Mean\ SES_j + \gamma_{03}Racial\ Context_j + U_{0j}$$
$$\beta_{1j} = \gamma_{10} + \gamma_{11}\boldsymbol{SocDiversity_j} + U_{1j}$$

$$\Pr(EduExpect = 1) = logit^{-1}(\beta_{0j} + \beta_{3j}\boldsymbol{RelativeDeprivation_i} + \beta_2 Controls_i + r_{ij}) \quad (6)$$
$$\beta_{0j} = \gamma_{00} + \gamma_{01}\boldsymbol{SocDiversity_j} + \gamma_{02}Mean\ SES_j + \gamma_{03}Racial\ Context_j + U_{0j}$$
$$\beta_{3j} = \gamma_{30} + \gamma_{31}\boldsymbol{SocDiversity_j} + U_{3j}$$

Notably, the cross-level interaction terms in the random-effect models can also be interpreted in a different way. For example, if the interaction term between parent education and school socioeconomic diversity is significantly negative, it suggests that the slope of parental education is smaller in more socioeconomically diverse schools than in schools that lack diversity. In this scenario, the results imply that school socioeconomic diversity can moderate the association between parental education and students' educational expectation. Consequently, the gap in educational expectations between low-SES and high-SES students will be expected to be narrower in socioeconomically integrated schools than in segregated ones. In this sense, the full models can also provide useful insights into understanding how changes in school

socioeconomic diversity can shape existing disparities in educational expectations among students.

RESULTS

First, I examine whether there were changes in the relationship between school mean SES and school socioeconomic diversity over time. As shown in Figure 1, the association between the two variables evolved into a more linear relationship over time, with high-SES schools being the kind of schools with least socioeconomic diversity. Figure 2 presents the changes in socioeconomic diversity for schools with extremely low and high mean SES and those falling in the middle. Noticeably, both the extremely high- and low-SES schools became more segregated during the 2000s. This pattern is consistent with the observed trend that school segregation along economic lines increased over the last two decades. (Reardon and Owens 2014, Owens et. al 2016). It is worth point out that, although the scatter plot indicates that socioeconomic diversity is strongly negatively correlated with school mean SES in the whole sample ($r = -.71$), the correlation coefficient is actually much smaller in each subset with the exception of the high-SES schools subset (r is about -.3 for both low- and medium-SES schools, and -.69 for high-SES schools). The high correlation observed in the third subset can partly be explained by the fact that, in order for a school to maintain a high mean SES, inevitably there is less room allowed for diversity. That being said, even for the high-SES schools subset, the VIFs of all predictors are lower than 2, suggesting that collinearity is not necessarily a concerning issue in this case.

Figure 1 and 2

Next, I compare whether the three types of schools differ in socioeconomic diversity and other school- and individual-level characteristics, as presented in Table 1. On average, students who go to schools with lower mean SES have substantially lower educational expectations than those attending high-SES schools. More than 65 percent of students attending high-SES schools expect to graduate from college, but only approximately 36 percent of students in low-SES schools expect to do so. In terms of school socioeconomic diversity, high-SES schools are substantially more segregated than the other two types. The proportion of black students is higher in low-SES schools than in medium- and high-SES schools, indicating that predominantly black schools also tend to be schools with concentrated poverty. Students of the three types of schools also vary significantly in individual-level characteristics. Besides the apparent differences in students' parents' education level, students attending low-SES schools are more likely to live in single-parent households and less likely to be on the college-prep track than those attending schools with higher mean SES.

Table 1

Turning to inferential analysis, I run five hierarchical models for each subset, the model coefficients are shown in Table 2 and 3. Model 1-3 are fixed-effects models, while the last two with interaction terms allow for random effects. As explained earlier, the primary individual-level predictor is parents' education in Model 2, while relative disadvantage is used for Model 3. Built on Model 2 and 3, the interaction terms between diversity and the primary individual-level predictor are added into the next two models. Model 4 examines whether there is differential

effects of school socioeconomic diversity depending on individual-level parents' education, while Model 5 explores how individual-level relative disadvantages moderate the effect of diversity. Based on the coefficients from Model 4 and 5, I calculate the differential average marginal effects of school socioeconomic diversity for students with different parents' education, and for students with different levels of relative disadvantages, as presented in Table 4 and 5, respectively.

Table 2

Model 1 shows that, despite the negative correlation between school socioeconomic diversity and school mean SES, they are both positively associated with students' educational expectations across all three subsets. As can be seen in Model 2 and 3, the positive effect of socioeconomic diversity on students' educational expectation remains statistically significant even after individual-level characteristics are adjusted for. The effect of school racial context, on the other hand, is not as robust as that of socioeconomic diversity. After considering individual-level variables, the proportion of black students is positively associated with the outcome variable only in low-SES schools, which is partially congruent with the findings of several prior studies (Frost 2007, Goldsmith 2004). Nonetheless, unlike mean SES and socioeconomic diversity, it has no significant effect on expectation for students in both schools with medium and high mean SES. It suggests that school racial context is not as directly related to educational expectation as socioeconomic context. In general, the consistently significant coefficients of school socioeconomic diversity across all subsets lends support to my first hypothesis that students who attend more socioeconomically diverse schools develop higher educational expectations than their counterparts in more segregated schools.

As for predictors at the individual level, students with more educated parents, those who are not from a single-parent household, and those who are less likely to experience relative deprivation at school are more likely to expect a college degree. The results also show disparities in educational expectation across students of different race and gender. Females outpace males in educational expectation, which is in line with the well-documented gender gaps observed in a wide range of educational outcomes (Andres et al 2007). Holding all other characteristics constant, in both low- and medium-SES schools, Asian Americans are most likely to expect to graduate from college, followed by African Americans. But among students who attend high-SES schools, black students have the highest expectations. The results from all three types of school confirm the black-white gap in educational expectations pointed out by Morgan (1996). Academically speaking, students with higher previous GPA, being on college-prep track, or those who never skipped school are more likely to expect a college degree.

Given the positive average effect found in the first three models, I further investigate if this positive impact of socioeconomic diversity is conditional on students' absolute socioeconomic advantage (parents' education) or their relative socioeconomic disadvantage compared to their peers in the same school. The coefficients are presented in Table 3. Model 4 assesses if student-level parents' education interacts significantly with school socioeconomic diversity. The results show that the interaction term is only significant for low-SES schools. Its negative coefficient suggests that, for students who attend low-SES schools, the positive association between school

socioeconomic diversity and educational expectation is more pronounced among low-SES students than among their peers with more educated parents, which concurs with the norm transmission theory. Compared to predominantly low-SES schools, low-SES schools with high socioeconomic diversity are more likely to have some middle-class students, in addition to the majority of low-SES students. Based on the norm transmission theory, this kind of situation would promote the transmission of values and attitudes that are conducive to developing high educational expectations from middle-class students to their low-SES peers, making the latter the group on which school socioeconomic integration has the strongest positive effect. Table 4 presents specific differential average marginal effects of diversity in low-SES schools for students with different parental education. It can be seen that every unit increase in the standardized Theil Index is associated with a 4 percent increase in the probability of expecting to graduate from college among students with parents with high school diploma. Nevertheless, such mechanism seems to be absent in medium-SES and high-SES schools, where students with less-educated parents do not necessarily benefit from school socioeconomic diversity more than their peers with more educated parents do. It is worth noting that, in all three kinds of schools, despite the differences in effect size, the positive effect of socioeconomic diversity on educational expectations holds regardless of students' individual-level SES. It implies that the benefit of norm transmission in socioeconomically diverse schools does not have to come at the expense of their more affluent students.

Table 3 and 4

I then turn to investigating whether the benefit of attending socioeconomically diverse schools is contingent on students' relative economic disadvantage compared to their peers in the same school. The coefficient for the interaction term in Model 5 is negative and significant for both medium-SES and high-SES schools. The results thus suggest that, for students who attend these two types of schools, the positive association between socioeconomic diversity and educational expectation is attenuated among those whose socioeconomic background put them at a disadvantage compared to their peers. This finding aligns with the mechanism suggested by the frog pond and relative deprivation theory. Intuitively, in such schools, more socioeconomic diversity means that, in addition to the majority of middle or upper middle class students, lower-resourced students also make up a small proportion of the student body. According the relative deprivation and the frog pond theory, it will give rise to the feeling of relative deprivation among those students who are more disadvantaged than other students in the same school. As a result, negative consequences associated with relative deprivation may counteract the positive influence of the socioeconomic diversity, leading to weaker or no effect of diversity among the socioeconomically disadvantaged group. Table 5 shows the differential average marginal effects of diversity based on the level of relative deprivation in both medium-SES and high-SES schools. Specifically, I calculate the marginal effects of diversity for students whose relative socioeconomic disadvantage is at the 10^{th}, 50^{th} and 90^{th} percentile point in their schools, corresponding to low, medium, and high level of relative deprivation, respectively.

Table 5

Noticeably, among students attending medium-SES schools, the negative consequences of such mechanism are not strong enough to entirely outweigh the positive effect of socioeconomic

diversity. Therefore, even for students with high level of relative deprivation, attending diverse school is still positively associated with their educational expectations. However, for students of high-SES schools, the positive effect of socioeconomic diversity becomes insignificant for those who experience high level of relative deprivation (whose relative socioeconomic standing is lower than 90% of their peers at school). The results for high-SES schools concur with Crosnoe's (2009) conclusion that the potential risks of school socioeconomic integration can outweigh its benefits. Yet such mechanism is not found for low-SES schools, potentially due to the fact that the majority of students in such school are likely have low family SES, making the disadvantages associated with low SES the norm and thus less visible.

Based on the coefficients from Model 4 and 5, I also calculate the predicted probability of expecting to graduate from college for students in all three kinds of schools. For low-SES schools, the calculation is based on the norm transmission mechanism as specified in Model 4. As shown in Figure 3A, the influence of socioeconomic diversity is stronger for students with less educated parents. Accordingly, the disparity in educational expectations between students with lowest parental education and those with most educated parents becomes narrower as the socioeconomic diversity of the school they attend increases. This finding has important implications for students attending schools with high poverty concentration. According to the results, the inclusion of students from different socioeconomic background into such schools has the potential to not only improve the expectations of low-SES students and but also potentially reduces the gap between them and their more peers with higher SES.

Figure 3A 3B 3C

Figure 3B and 3C, on the other hand, are constructed based on Model 5, which points to the frog pond mechanism. The results call particular attention to the potential drawback of school socioeconomic desegregation plans, especially in middle-SES and high-SES schools where lower-resourced students only constitute the minority of the student body. Due to relative deprivation triggered in such settings, the positive influence of high diversity on educational expectation is smaller for those at the lower end of the socioeconomic spectrum in their school. Hence, the gap between disadvantaged students and their peers with higher relative socioeconomic standing actually widens as the socioeconomic composition of these schools becomes more diverse.

DISCUSSION AND CONCLUSION

More than six decades after the landmark decision of Brown vs. Board, the persistent racial residential segregation continues to thwart the progress toward school integration. In addition to the resurgence of de facto school segregation along racial lines, the increasing economic segregation between and within school districts has also been shown to have driven students of different socioeconomic background further apart (Saporito and Sohoni 2007, Quillian 2012). In the context of ongoing school segregation by both race and class, examining the influence of school socioeconomic integration has crucial implications for both social scientists and policy makers who strive to understand and ameliorate the enduring disparities in educational

outcomes. To that end, this study provides a more comprehensive picture of whether school socioeconomic context matters for the formation of students' educational expectations, by highlighting the previously neglected role of socioeconomic diversity per se. The analysis goes beyond whether attending socioeconomically diverse schools helps low-SES students, and instead investigates the differential role of diversity for different students across all three types of schools on the socioeconomic spectrum. The main findings of the study are summarized below.

First, school socioeconomic diversity is a significant school-level predictor for educational expectation. Students who attend schools with more socioeconomic diversity tend to develop higher educational expectations than their counterparts in more socioeconomically homogenous schools, after school mean-SES, school racial context, and students' individual-level characteristics are all adjusted for. It is especially worth noting that, although the descriptive results show that school mean SES and school socioeconomic diversity have a negative correlation, their effects on students' educational expectations work in the same direction and are both significantly positive. This finding offers timely insights into understanding one of the perils of class-based school segregation—for students attending high-poverty schools, the undesirable educational outcomes resulting from low school mean SES may even be further exacerbated due to the concentration of poor students and thereby lack of socioeconomic diversity in these schools.

Second, the results point to differential effects of socioeconomic diversity depending on both individual-level characteristics and school mean SES. On the one hand, in low-SES school, the positive association between socioeconomic diversity and educational expectation is especially stronger for low-SES students than for their peers with more educated parents. It implies that the norm transmission theory is only applicable to schools with low mean SES where the low-SES students are the majority. On the other hand, the results found evidence for the frog pond and relative deprivation theory in both medium- and high-SES schools. Relative deprivation acts as a moderate of the association between socioeconomic diversity and educational expectation in these schools. Consequently, part of the positive influence of attending socioeconomically diverse school would be countervailed if the student finds their socioeconomic standing falling behind their peers'. The results imply that the influence of this mechanism is especially strong in high-SES schools, where the positive association between socioeconomic diversity and educational expectation disappears among those who experience high level of relative deprivation. This finding points to the risk of school socioeconomic integration. When students with less educated parents are brought into schools with more socioeconomic diversity where the majority of students have higher socioeconomic standing than them, their socioeconomic disadvantages will likely become more visible, leading to more relative deprivation and making them unable to benefit from diversity as much as their more affluent peers.

Relatedly, the results have important implications on existing disparities in educational outcomes. Despite the averagely higher educational expectations of students attending socioeconomically diverse schools than those attending more segregated school, the positive effect of socioeconomic diversity does not necessarily contribute to closing the gap in expectations. The only exception is schools with low mean SES, where parents' education becomes a less strong predictor of students' educational expectation when there is more socioeconomic diversity. Nevertheless, for both medium- and high-SES schools, when these

schools become more socioeconomically diverse, the gap in expectations between those whose relative socioeconomic standing is at the bottom and their more advantaged peers will actually be exacerbated, potentially making the socioeconomically disadvantaged students falling further behind.

Third, despite the differential effects summarized above, my analysis shows that attending socioeconomically diverse schools in general is associated with higher educational expectations among all students. With the exception for students who experience high level of relative deprivation in high-SES schools, the positive association between diversity and expectation is not restricted to a certain part of the student body. Since the framework of both the norm transmission and relative deprivation theory mainly focus on socioeconomically disadvantaged students, additional theoretical interpretation is needed for the overall positive effect found here. One potential interpretation is, socioeconomically diverse school creates an atmosphere that in general promotes positive peer effects. As several previous studies have pointed out, the presence of peer effects is contingent upon specific school contexts (Burke and Sass 2013, Entorf and Lauk 2008, Minello and Barban 2012). From this perspective, socioeconomic diversity, by exposing students to peers from different socioeconomic backgrounds and more than one version of ideas regarding social mobility, could be one of the contexts that foster the formation of more optimistic expectations about students' chances for future educational success. Especially, unlike test scores or other educational outcomes, educational expectation, as students' own estimation of their future success, is directly related to the way they perceive their position in the educational system compared to their peers, and thus may be more susceptible to peer effects. However, since this study does not directly test this interpretation, more future studies are needed to better understand the relationship between school socioeconomic diversity and peer effects.

Other limitations of this study that should be addressed in future research include the following: First, the measure of school socioeconomic diversity is based on students' parental education instead of family income, due to the lack of data availability. Although parental education level is a reliable and important indicator of family SES, it might not be able to capture all the variance in family resources as income could, given that the income of people with similar educational background could still vary depending on occupations and other factors. Additionally, since MTF does not contain information on students' scores on standardized tests, GPA is used in the analysis to control for students' previous academic performance. Students' GPA are likely to be affected by several school-specific factors, like various grading standard and course difficulty in different schools, thus might not be the most desirable measure. Lastly, although the analysis has paid particular attention to reducing the influence of potential self-selection bias by conducting the analysis for students enrolled in different kinds of schools separately, there are still related factors that the study is unable to account for. For instance, since there is no information regarding the socioeconomic composition of students' neighborhood or school district in the data, this study does not take into account the macro- or meso- level mechanisms that could have selected students into schools with different level of diversity in the first place. For this reason, the results found here should be interpreted with caution.

Taken together, methodologically, this study points to the significance of considering socioeconomic diversity as a dimension of school context that can be important in its own right.

The positive association between socioeconomic diversity and educational expectation found in all three kinds of schools provides evidence that school still acts as an important site for shaping the way students estimate their chance for future educational success. In this sense, as suggested by school socioeconomic integration proponents, giving low-SES students, especially those attend schools with high concentration of poverty, more access to attend socioeconomically integrated schools with peers from other socioeconomic background has the potential to improve their educational expectations and to some extent reduce the SES-based gap in expectations. Nonetheless, the results also imply the dilemma and potential drawback of school socioeconomic desegregation plans. Especially in the scenario where low-SES students are assigned to schools with medium or high mean SES, where attending integrated school is actually associated with a wider gap in expectations between students with more socioeconomic advantages and their more disadvantaged peers. In this situation, although the effort to increase socioeconomic diversity will make all students have higher educational expectations, it might as well induce the negative consequences associated with relative deprivation. As a result, such effort may in fact reproduce existing disparity in expectations, or even exacerbate the disadvantages of those who already fare worse than their more advantaged peers.

REFERENCES

Alexander, Karl, and Bruce K. Eckland. "Contextual effects in the high school attainment process." *American Sociological Review* (1975): 402-416.
Alexander, Karl. "Is It Family or School? Getting the Question Right." *RSF* (2016).

Andres, Lesley, et al. "Educational expectations, parental social class, gender, and postsecondary attainment: A 10-year perspective." *Youth & society* 39.2 (2007): 135-163.

Bates, Littisha A., and Paul D. Anderson. "Do expectations make the difference? A look at the effect of educational expectations and academic performance on enrollment in post-secondary education." *Race and Social Problems* 6.3 (2014): 249-261.

Behtoui, Alireza. "Social capital and the educational expectations of young people." *European Educational Research Journal* 16.4 (2017): 487-503.

Bernburg, Jón Gunnar, Thorolfur Thorlindsson, and Inga Dora Sigfusdottir. "Relative deprivation and adolescent outcomes in Iceland: A multilevel test." *Social Forces* 87.3 (2009): 1223-1250.

Bischoff, Kendra. "School district fragmentation and racial residential segregation: How do boundaries matter?." *Urban Affairs Review* 44.2 (2008): 182-217.

Buchmann, Claudia, and Ben Dalton. "Interpersonal influences and educational aspirations in 12 countries: The importance of institutional context." *Sociology of education* (2002): 99-122.

Buchmann, Claudia, and Hyunjoon Park. "Stratification and the formation of expectations in highly differentiated educational systems." *Research in Social Stratification and Mobility* 27.4 (2009): 245-267.

Burgette, Lane F., and Erik V. Nordheim. *A full Gibbs sampler for a multinomial probit model with endogeneity*. Working paper. Available from: http://www. stat. duke. edu/~ lb131/switchBurgetteNordheim. pdf [Accessed 25 March 2013], 2009.

Burke, Mary A., and Tim R. Sass. "Classroom peer effects and student achievement." *Journal of Labor Economics* 31.1 (2013): 51-82.

Cabrera, Alberto F., and Steven M. La Nasa. "On the path to college: Three critical tasks facing America's disadvantaged." *Research in Higher Education*42.2 (2001): 119-149.

Caldas, Stephen J., and Carl Bankston. "Effect of school population socioeconomic status on individual academic achievement." *The Journal of Educational Research* 90.5 (1997): 269-277.

Clark, William AV, and Regan Maas. "Schools, neighborhoods and selection: Outcomes across metropolitan Los Angeles." *Population Research and Policy Review* 31.3 (2012): 339-360.

Condron, Dennis J. "Social class, school and non-school environments, and black/white inequalities in children's learning." *American Sociological Review*74.5 (2009): 685-708.

Domina, Thurston, AnneMarie Conley, and George Farkas. "The link between educational expectations and effort in the college-for-all era." *Sociology of Education* 84.2 (2011): 93-112.

Entorf, Horst, and Martina Lauk. "Peer effects, social multipliers and migrants at school: An international comparison." *Journal of Ethnic and Migration Studies* 34.4 (2008): 633-654.

Feliciano, Cynthia. "Beyond the family: The influence of premigration group status on the educational expectations of immigrants' children." *Sociology of Education* 79.4 (2006): 281-303.

Frost, Bellessa Frost. "Texas students' college expectations: Does high school racial composition matter?." *Sociology of Education* 80.1 (2007): 43-65.

Fryer Jr, Roland G., and Steven D. Levitt. "Understanding the black-white test score gap in the first two years of school." *The Review of Economics and Statistics* 86.2 (2004): 447-464.

Gamoran, Adam, and Robert D. Mare. "Secondary school tracking and educational inequality: Compensation, reinforcement, or neutrality?." *American journal of Sociology* 94.5 (1989): 1146-1183.

Goldsmith, Pat António. "Schools' racial mix, students' optimism, and the Black-White and Latino-White achievement gaps." *Sociology of Education*77.2 (2004): 121-147.

Goyette, Kimberly, and Yu Xie. "Educational expectations of Asian American youths: Determinants and ethnic differences." *Sociology of Education* (1999): 22-36.

Hossler, Don, and Frances K. Stage. "Family and high school experience influences on the postsecondary educational plans of ninth-grade students." *American Educational Research Journal* 29.2 (1992): 425-451.

Kahlenberg, Richard D. “Economic school integration.” Pp. 149–75 in *The End of Desegregation?* edited by S. J. Caldas and C. L. Bankston III. New York: Nova Science Publishers, Inc.(2003)

Kao, Grace, and Marta Tienda. "Educational aspirations of minority youth." *American journal of education* 106.3 (1998): 349-384.

Karlson, Kristian Bernt. "Expectations on Track? High School Tracking and Adolescent Educational Expectations." *Social Forces* 94.1 (2015): 115-141.

Khattab, Nabil. "The effects of high school context and interpersonal factors on students' educational expectations: A multi-level model." *Social Psychology of Education* 8.1 (2005): 19-40.

Logan, John R., Deirdre Oakley, and Jacob Stowell. "School segregation in metropolitan regions, 1970–2000: The impacts of policy choices on public education." *American Journal of Sociology* 113.6 (2008): 1611-1644.

Logan, John R., Elisabeta Minca, and Sinem Adar. "The geography of inequality: Why separate means unequal in American public schools." *Sociology of education* 85.3 (2012): 287-301.

Logan, John R., Weiwei Zhang, and Deirdre Oakley. "Court Orders, White Flight, and School District Segregation, 1970–2010." *Social Forces* 95.3 (2017): 1049-1075.

Marsh, Herbert W. "The big-fish-little-pond effect on academic self-concept." *Journal of educational psychology* 79.3 (1987): 280.

Marsh, Herbert W., and Kit-Tai Hau. "Big-Fish--Little-Pond effect on academic self-concept: A cross-cultural (26-country) test of the negative effects of academically selective schools." *American psychologist* 58.5 (2003): 364.

Mayer, Susan E. "How economic segregation affects children's educational attainment." *Social forces* 81.1 (2002): 153-176.

Meyer, John W. "High school effects on college intentions." *American Journal of Sociology* 76.1 (1970): 59-70.

Minello, Alessandra, and Nicola Barban. "The educational expectations of children of immigrants in Italy." *The ANNALS of the American Academy of Political and Social Science* 643.1 (2012): 78-103.

Moody, James. "Race, school integration, and friendship segregation in America." *American journal of Sociology* 107, no. 3 (2001): 679-716.

Morgan, Stephen L. "Trends in Black-White differences in educational expectations: 1980-92." *Sociology of Education* (1996): 308-319.

Morgan, Stephen L., and Aage B. Sørensen. "Parental networks, social closure, and mathematics learning: A test of Coleman's social capital explanation of school effects." *American Sociological Review* (1999): 661-681.

Nash, Roy. "Is the school composition effect real?: A discussion with evidence from the UK PISA data." *School effectiveness and school improvement* 14.4 (2003): 441-457.

Nelson, Joel I. "High school context and college plans: The impact of social structure on aspirations." *American Sociological Review* (1972): 143-148.

Orfield, Gary. "Schools more separate: Consequences of a decade of resegregation." (2001).

Owens, Ann, Sean F. Reardon, and Christopher Jencks. "Income segregation between schools and school districts." *American Educational Research Journal* 53.4 (2016): 1159-1197.

Owens, Ann. "Inequality in children's contexts: Income segregation of households with and without children." *American Sociological Review* 81.3 (2016): 549-574.

Palardy, Gregory J., Russell W. Rumberger, and Truman Butler. "The Effect of High School Socioeconomic, Racial, and Linguistic Segregation on Academic Performance and School Behaviors." *Teachers College Record*117.12 (2015): n12.

Perry, Laura B., and Andrew McConney. "Does the SES of the school matter? An examination of socioeconomic status and student achievement using PISA 2003." *Teachers College Record* 112.4 (2010): 1137-1162.

Pfeffer, Fabian T. "Persistent inequality in educational attainment and its institutional context." *European Sociological Review* 24, no. 5 (2008): 543-565.

Quillian, Lincoln. "Does segregation create winners and losers? Residential segregation and inequality in educational attainment." *Social Problems* 61.3 (2014): 402-426.

Quillian, Lincoln. "Segregation and poverty concentration: The role of three segregations." *American Sociological Review* 77.3 (2012): 354-379.

Reardon, Sean F., and Ann Owens. "60 Years after Brown: Trends and consequences of school segregation." *Annual Review of Sociology* 40 (2014): 199-218.

Reardon, Sean F., John T. Yun, and Tamela McNulty Eitle. "The changing structure of school segregation: Measurement and evidence of multiracial metropolitan-area school segregation, 1989–1995." *Demography* 37.3 (2000): 351-364.

Reynolds, John R., and Jennifer Pemberton. "Rising College Expectations Among Youth in the United States: A Comparison of the 1979 and 1997 NLSY." *Journal of Human Resources* 36.4 (2001).

Reynolds, John R., and Monica Kirkpatrick Johnson. "Change in the stratification of educational expectations and their realization." *Social Forces*90.1 (2011): 85-109.

Reynolds, John R., and Stephanie Woodham Burge. "Educational expectations and the rise in women's post-secondary attainments." *Social science research* 37.2 (2008): 485-499.

Saporito, Salvatore, and Deenesh Sohoni. "Mapping educational inequality: Concentrations of poverty among poor and minority students in public schools." *Social Forces* 85.3 (2007): 1227-1253.

Saporito, Salvatore, and Deenesh Sohoni. "Mapping educational inequality: Concentrations of poverty among poor and minority students in public schools." *Social Forces* 85, no. 3 (2007): 1227-1253.

Sewell, William H., Archibald O. Haller, and Alejandro Portes. "The educational and early occupational attainment process." *American sociological review* (1969): 82-92.

Sewell, William H., Archibald O. Haller, and George W. Ohlendorf. "The educational and early occupational status attainment process: Replication and revision." *American Sociological Review* (1970): 1014-1027.

Sewell, William H., Robert M. Hauser, and Wendy C. Wolf. "Sex, schooling, and occupational status." *American journal of Sociology* 86.3 (1980): 551-583.

Stroub, Kori J., and Meredith P. Richards. "From resegregation to reintegration: Trends in the racial/ethnic segregation of metropolitan public schools, 1993–2009." *American Educational Research Journal* 50.3 (2013): 497-531.

Wells, Ryan S., et al. "Why do more women than men want to earn a four-year degree? Exploring the effects of gender, social origin, and social capital on educational expectations." *The Journal of Higher Education* 82.1 (2011): 1-32.

Wells, Ryan. "Children of immigrants and educational expectations: The roles of school composition." *Teachers College Record* 112.6 (2010): 1679-1704.

Xie, Yu. "Endogenous switching regression models." *Into adulthood: A study of the effects of head start* (2000): 169-178.

Table 1: Descriptive statistics for dependent and independent variables

	Low-SES schools	Medium-SES schools	High-SES schools
Dependent variable			
Expecting to graduate from college	.36	.47	.66
(Yes coded as 1)	(.48)	(.50)	(.47)
School-level characteristics			
School socioeconomic diversity	.70	.04	-.79
(standardized, ranging from -2.8 to 5.0)	(1.01)	(.62)	(.66)
School mean SES	12.95	14.14	15.51
	(.59)	(.27)	(.64)
Proportion of black students	.20	.12	.05
	(.25)	(.19)	(.08)
Individual-level characteristics			
Parental education	13.08	14.24	15.61
	(2.54)	(2.41)	(2.24)
Relative deprivation (ranging from 0 to 1)	.36	.37	.34
	(.26)	(.27)	(.31)
Single-parent household (Yes coded as 1)	.31	.29	.22
	(.46)	(.45)	(.41)
Gender (Female coded as 1)	.54	.53	.48
	(.50)	(.50)	(.50)
Race: Black	.20	.12	.05
	(.40)	(.32)	(.21)
Race: Hispanic	.14	.06	.05
	(.35)	(.24)	(.22)
Race: Asian	.02	.02	.05
	(.14)	(.15)	(.21)
Race: Other	.05	.05	.05
	(.21)	(.22)	(.22)
College-prep track (Yes coded as 1)	.40	.50	.68
	(.49)	(.50)	(.47)
GPA (ranging from 1 to 9)	5.77	5.99	6.31
	(1.96)	(1.97)	(1.92)
Skipping schools (Yes coded as 1)	.30	.32	.31
	(.46)	(.47)	(.46)

Note: N=36,910 students, 369 schools for the low-SES schools subset. N=38,945 students, 361 schools for the medium-SES schools subset. N=40,179 students, 321 schools for the high-SES schools subset.

Table 2. Coefficients from fixed-effect models predicting students' educational expectations

	Low-SES schools			Medium-SES schools			High-SES schools		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
School-level									
School socioeconomic	.219***	.212***	.242***	.197***	.159***	.187***	.274***	.174***	.189***
diversity	(.026)	(.028)	(.028)	(.036)	(.042)	(.042)	(.054)	(.051)	(.051)
School mean SES	.369***	.174***	.325***	.543***	.290**	.460***	.868***	.464***	.572***
	(.044)	(.047)	(.047)	(.084)	(.095)	(.095)	(.056)	(.053)	(.053)
Proportion of black students	.627***	.499***	.515***	.277*	.225	.238	.277	.248	.259
	(.096)	(.110)	(.110)	(.115)	(.138)	(.138)	(.318)	(.303)	(.303)
Individual-level									
Parental education		.129***			.153***			.134***	
		(.005)			(.005)			(.005)	
Relative deprivation			-1.177***			-1.30***			-.926***
			(.052)			(.052)			(.040)
Raised in single-parent		-.102***	-.099***		-.124***	-.124***		-.150***	-.153***
household		(.029)	(.029)		(.028)	(.028)		(.030)	(.030)
Gender (Female)		.139***	.138***		.149***	.149***		.209***	.208***
		(.026)	(.026)		(.025)	(.025)		(.025)	(.025)
Race: Black		.434***	.432***		.363***	.358***		.310***	.301***
		(.045)	(.045)		(.048)	(.048)		(.062)	(.062)
Race: Hispanic		.225***	.216***		.056	.046		.036	.003
		(.050)	(.050)		(.056)	(.056)		(.058)	(.058)
Race: Asian		.615***	.624***		.523***	.519***		.256***	.237***
		(.100)	(.100)		(.088)	(.088)		(.067)	(.066)
Race: Other		.129*	.139*		.111	.112*		-.027	-.037
		(.064)	(.064)		(.057)	(.057)		(.056)	(.056)
College-prep track		1.414***	1.422***		1.362***	1.364***		1.039***	1.045***
		(.028)	(.028)		(.026)	(.026)		(.028)	(.028)
GPA		.263***	.263***		.307***	.307***		.345***	.344***
		(.008)	(.008)		(.007)	(.007)		(.007)	(.007)
Skipping schools		-.158***	-.155***		-.162***	-.160***		-.104***	-.105***
		(.029)	(.029)		(.027)	(.027)		(.027)	(.027)
Year	.033***	.032***	.032***	.027***	.028***	.029***	.025***	.020***	.020***
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.003)	(.002)	(.002)
Intercept	-1.113	-3.46	-3.48	-.609	-3.29	-3.30	-.226	-2.525	-2.527
Log likelihood	-22,885	-19,124	-19,170	-26,077	-21,165	-21,192	-24,432	-20,690	-20,703

Note: N=36,910 students, 369 schools for the low-SES schools subset. N=38,945 students, 361 schools for the medium-SES schools subset. N=40,179 students, 321 schools for the high-SES schools subset. The significance levels are indicated by asterisks: 95% (*), 99 %(**), and 99.9 %(***).

Table 3. Coefficients from random-effect models predicting students' educational expectations

	Low-SES schools		Medium-SES schools		High-SES schools	
	Model 4	**Model 5**	**Model 4**	**Model 5**	**Model 4**	**Model 5**
School-level						
School socioeconomic diversity (SSD)	.216***	.246***	.159***	.184***	.175***	.190***
	(.028)	(.028)	(.042)	(.042)	(.051)	(.051)
School mean SES	.177***	.327***	.289**	.461**	.462**	.576**
	(.047)	(.047)	(.095)	(.095)	(.053)	(.053)
Proportion of black students	.499***	.501***	.221	.231	.231	.260
	(.110)	(.111)	(.138)	(.138)	(.302)	(.304)
Individual-level						
Parental education	.134***		.153***		.136***	
	(.006)		(.006)		(.007)	
Relative deprivation		-1.207***		-1.298***		-.933***
		(.063)		(.052)		(.048)
Raised in single-parent household	-.099***	-.098***	-.124***	-.124***	-.105***	-.150***
	(.029)	(.029)	(.028)	(.028)	(.027)	(.030)
Gender (Female)	.140***	.138***	.149***	.149***	.210***	.211***
	(.026)	(.026)	(.025)	(.025)	(.026)	(.026)
Race: Black	.445***	.445***	.266***	.367***	.324***	.319***
	(.046)	(.046)	(.048)	(.048)	(.062)	(.062)
Race: Hispanic	.213***	.217***	.050	.049	.025	.007
	(.051)	(.051)	(.057)	(.057)	(.059)	(.059)
Race: Asian	.608***	.619***	.522***	.520***	.253***	.239***
	(.101)	(.101)	(.088)	(.088)	(.067)	(.067)
Race: Other	.136*	.148*	.112*	.114*	-.025	-.032
	(.064)	(.064)	(.057)	(.057)	(.057)	(.057)
College-prep track	1.413***	1.422***	1.361***	1.363***	1.037***	1.042***
	(.028)	(.028)	(.026)	(.026)	(.028)	(.028)
GPA	.263***	.264***	.307***	.308***	.345***	.344***
	(.008)	(.008)	(.007)	(.007)	(.007)	(.007)
Skipping schools	-.157***	-.154***	-.162***	-.162***	-.105***	-.106***
	(.029)	(.029)	(.027)	(.027)	(.027)	(.027)
Year	.032***	.032***	.029***	.029***	.020***	.020***
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
Cross-level interaction						
Parental education × SSD	-.015**		-.001		-.010	
	(.006)		(.009)		(.010)	
Relative deprivation × SSD		.055		-.166*		-.167*
		(.060)		(.081)		(.072)
Intercept	-3.473	-3.490	-3.299	-3.307	-2.53	-2.52
Log likelihood	-19,112	-19,158	-21,161	-21,184	-20,679	-20,691

Note: N=36,910 students, 369 schools for the low-SES schools subset. N=38,945 students, 361 schools for the medium-SES schools subset. N=40,179 students, 321 schools for the high-SES schools subset. The significance levels are indicated by asterisks: 95% (*), 99 %(**), and 99.9 %(***).

Table 4. Average marginal effects (AMEs) of school socioeconomic diversity depending on students' parents' education

Parents' education	AMEs in Low-SES Schools
8 years of schooling	.042***
(Grade school or less)	(.006)
10 years of schooling	.041***
(Some high school)	(.005)
12 years of schooling	.039***
(Completed high school)	(.005)
14 years of schooling	.036***
(Some college)	(.005)
16 years of schooling	.031***
(Completed college)	(.006)
18 years of schooling	.026***
(Graduate or professional school)	(.007)

Note: N=36,910 students, 369 schools for the low-SES schools subset. The AMEs are calculated based on Model 4, the significance levels are indicated by asterisks: 95% (*), 99 %(**), and 99.9 %(***).

Table 5 Average marginal effects (AMEs) of school socioeconomic diversity depending on the level of relative deprivation

Level of relative deprivation	AMEs in Middle-SES Schools	AMEs in High-SES Schools
Low	.046***	.040**
	(.009)	(.009)
Medium	.034***	.035***
	(.008)	(.009)
High	.023**	.021
	(.009)	(.011)

Note: N=38,945 students, 361 schools for the medium-SES schools subset. N=40,179 students, 321 schools for the high-SES schools subset. The AMEs are calculated based on coefficients from Model 5. Low, medium, and high level of relative deprivation correspond to the 10^{th}, 50^{th}, and 90^{th} percentile points of relative socioeconomic disadvantage variable, respectively. The significance levels are indicated by asterisks: 95% (*), 99 %(**), and 99.9 %(***).

Figure 1 (Association between school mean SES and school socioeconomic diversity across four decades 1978-2008)

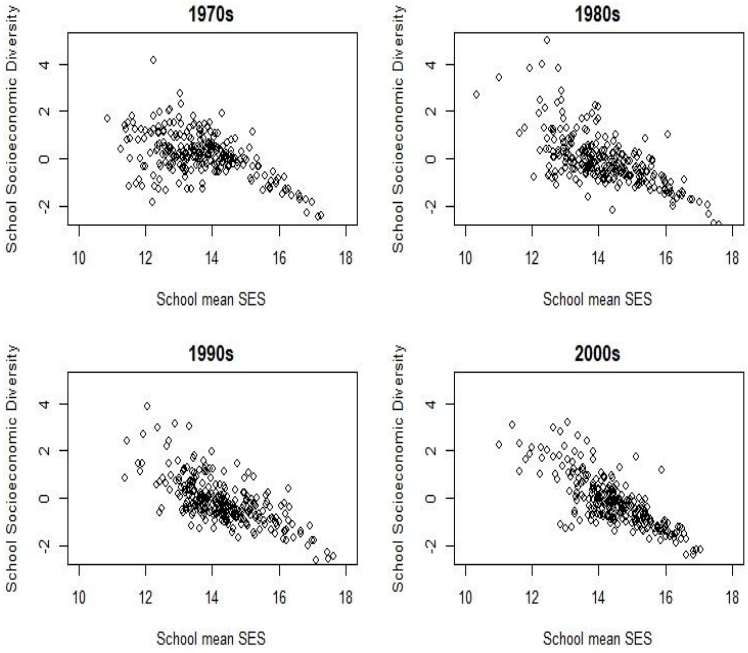

Figure 2 (Four-decade Comparison of school socioeconomic diversity across schools with mean SES that falls into the bottom 10 percent, middle 80 percent, and top 10 percent)

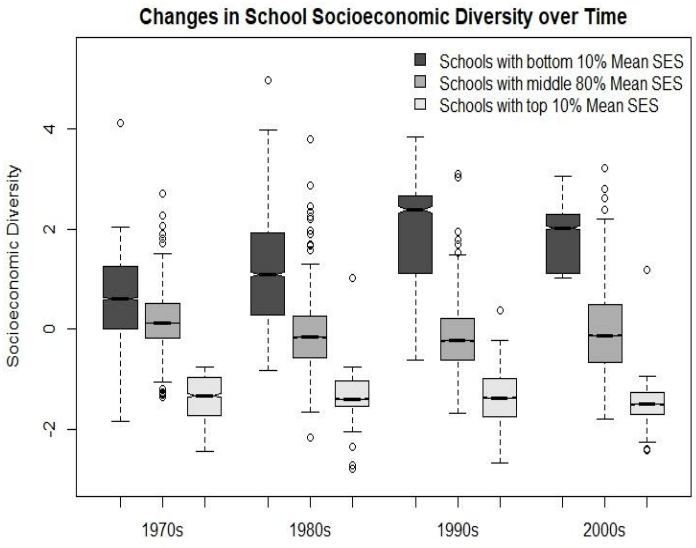

Figure 3 (Predicted probabilities of expecting to graduate from college in low-SES schools across students with different levels of parental education (3A), and in medium-SES schools (3B) and high-SES schools (3C) depending on students' relative socioeconomic disadvantage (the level of relative deprivation)

Figure 3A

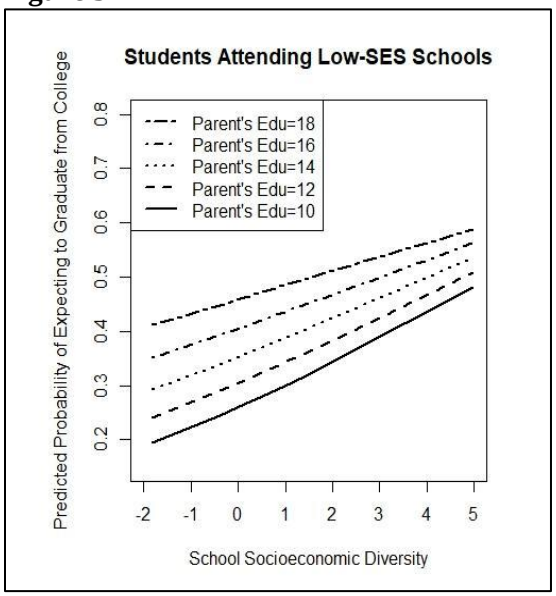

Figure 3B (Left) and 3C (Right)