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Does Isolation from Immigrant Students Benefit or Harm Third-Plus Generation Students?

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Abstract: Enforcing and expanding immigration restrictions have been at the forefront of the Trump administration's agenda since his inauguration in January 2017. Underlying these policies is an assumption that immigrants harm U.S. citizens. More specifically, both authorized and undocumented immigrants are framed as consuming a disproportionate share of social benefits. We used data from the 2012 Programme for International Student Assessment (PISA) to assess this claim in U.S. high school contexts, focusing on the mathematics achievement of third-plus generation students who did not attend schools with immigrant students. On average, the third-plus-generation students who did not attend schools that enrolled first or second generation immigrant students had lower

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achievement than their same generation peers attending schools that served immigrant students. We conclude by highlighting the research and policy implications of our findings.

Keywords: immigrants; achievement; school context; immigration policy

¿El aislamiento de estudiantes inmigrantes beneficia o perjudica a los estudiantes de tercera generación?

Resumen: Reforzar y expandir las restricciones a la inmigración ha estado en la línea de frente de la agenda del gobierno Trump desde su posesión en enero de 2017. Subyacente a esas políticas está la suposición de que los inmigrantes perjudican a los ciudadanos de Estados Unidos. Más específicamente, tanto inmigrantes autorizados como indocumentados son encuadrados como consumiendo una parte desproporcionada de beneficios sociales. Utilizamos datos del Programa de Evaluación Internacional de Estudiantes (PISA) de 2012 para evaluar esta afirmación en los contextos de la enseñanza media de los Estados Unidos, concentrándose en el aprovechamiento de matemáticas de alumnos con más de una generación que no asistieron a escuelas con alumnos inmigrantes. En promedio, los alumnos de tercera generación, que no asistieron a escuelas que matricularon a estudiantes inmigrantes de primera o segunda generación, tuvieron un desempeño inferior al de sus colegas de la misma generación que frecuentaban escuelas que atendían a estudiantes inmigrantes. Concluimos destacando la investigación y las implicaciones políticas de nuestros descubrimientos.

Palabras-clave: inmigrantes; logro; contexto escolar; política de inmigración

O isolamento de estudantes imigrantes beneficia ou prejudica estudantes de terceira geração?

Resumo: Reforçar e expandir as restrições à imigração tem estado na linha de frente da agenda do governo Trump desde sua posse em janeiro de 2017. Subjacente a essas políticas está a suposição de que os imigrantes prejudicam os cidadãos dos EUA. Mais especificamente, tanto imigrantes autorizados quanto indocumentados são enquadrados como consumindo uma parcela desproporcional de benefícios sociais. Usamos dados do Programa de Avaliação Internacional de Estudantes (PISA) de 2012 para avaliar essa afirmação nos contextos do ensino médio dos EUA, concentrando-se no aproveitamento de matemática de alunos com mais de uma geração que não frequentaram escolas com alunos imigrantes. Em média, os alunos da terceira geração, que não frequentaram escolas que matricularam estudantes imigrantes de primeira ou segunda geração, tiveram desempenho inferior ao de seus colegas da mesma geração que frequentavam escolas que atendiam estudantes imigrantes. Concluímos destacando a pesquisa e as implicações políticas de nossas descobertas.

Palavras-chave: imigrantes; realização; contexto escolar; política de imigração

Introduction

Enforcing and expanding immigration restrictions has been a central policy goal of the Trump administration since his inauguration in January 2017. Within the first week of taking office, Trump issued an executive order directing federal departments and agencies to accelerate the enforcement of immigration laws, ordered the hiring of 10,000 additional immigration agents, and empowered state and local law enforcement officials to act as immigration agents (Executive Order 13,768, 2017). Although Trump did not specifically address immigrant youth during the campaign,

in speeches on immigration he argued that “working people have [concerns] over the record pace of immigration and its impact on their jobs, wages, housing, schools, tax bills, and living conditions” (e.g., Trump, 2016, para. 16). In September 2017, the Trump administration terminated the Consideration of Deferred Action for Childhood Arrivals (DACA) program, which allowed young adults without legal documentation who had been brought to the United States by their parents as children to receive temporary permission to stay and two-year work permits.²

In addition, in its initial set of priorities submitted to Congress, the Trump administration proposed a “merit-based immigration system” claiming that it will “protect U.S. workers and taxpayers” (White House, 2017, para. 21). This proposal would restrict the ability of family members other than spouses and minor children of immigrants to acquire permanent resident status or “green cards” and establish a “points system” for awarding green cards to new applicants. As the 2018 midterm election approached, Trump proposed ending birthright citizenship.

These policy proposals and claims are driven by the assumption that immigrants harm United States (U.S.) citizens. More specifically, the Trump administration has framed both authorized and undocumented immigrants as consuming a disproportionate share of social benefits, taking jobs away from U.S. workers and increasing crime (e.g., Sessions, 2017; White House, 2018). These arguments reflect what Portes and Rumbault (2001, 2014) describe as the ideology of “intransigent nativism” (see also Abrajano & Hajnal, 2015, and Chavez, 2013, on the immigrant threat narrative). While this ideology has a long history in the US (Higham, 2002), in its more contemporary manifestations, Latinx³ immigrants have been specifically targeted and blamed for job losses among American workers, an increase in crime rates, and a weakened national identity (see, for example, Huntington, 2004). The Trump administration’s policies and proposals also draw upon and intensify the recent efforts by states to enact anti-immigrant social policies in the US—exemplified by Arizona’s SB 1070, the “Support Our Law Enforcement and Safe Neighborhoods Act.”⁴ Between 2005 and 2011, states enacted more than 1,000 laws targeting immigrants (Good, 2013). Arizona’s SB 1070 was one of eight omnibus laws passed in 2010 and 2011 targeting multiple areas (e.g., employment, public benefits, and identification and licenses) to induce undocumented immigrants to leave the state.

We assess the Trump administration’s implied claims about how immigrants harm U.S. citizens by analyzing the mathematics achievement of third-and-higher generation students (hereafter third-plus generation) in high school as measured by the 2012 Programme for International Student Assessment (PISA). We focus on an educational outcome as a test of these claims because public education is one of the only broad-based social benefits in the US and most of the students in the US. PISA sample attended public schools (Kantor & Lowe, 2006). One ostensible manifestation of this harm could be the lowered academic achievement of U.S. students who attend schools with immigrant students or its converse, higher achievement among third-plus generation students who attend schools that do not serve immigrant students. We distinguish

² Decisions in federal courts have since halted the administration’s efforts to end the program. If DACA does not survive the administration’s attempt to dismantle the program, it could jeopardize the legal status of the approximately 900,000 immigrant youth that have been granted deferred action and work permits (U.S. Citizenship and Immigration Service, 2018).

³ We use the term Latinx to refer to people of Latin American descent unless we are referring to a specific ethnic group.

⁴ Passed in 2010, SB 1070 requires immigrants to carry documentation of their legal status and empowers law enforcement officials to detain anyone they suspect of being an undocumented immigrant.

between third-plus generation students who were born in the US to U.S.-born parents and immigrant students who are either second or first generation immigrants. Second generation students were born in the US to at least one parent who was born outside of the US. First generation immigrant students were born outside the US to foreign-born parents. The focus of this analysis is the academic achievement of third-plus generation students in schools that do not serve either first or second generation immigrants.

While the mechanisms underlying these assumptions about harm are largely unspecified in the broad policy claims associated with the Trump administration's efforts to restrict immigration, we identify two possibilities from the research on immigrant achievement. First, the academic achievement of third-plus generation students could be shaped by exposure to or isolation from immigrant peers. Second, the academic achievement of third-plus generation students could be associated with other school contextual factors that have an independent effect on achievement once immigrant concentration is taken into account.

This analysis draws upon the findings of our initial study of immigrant achievement using PISA (Powers & Pivovarov, 2017), which focused on the mathematics achievement of first generation immigrant students compared to U.S.-born students (i.e., second generation and third-plus generation students). We found that a substantial percentage of U.S.-born students (39%) attended schools that did not serve any first generation immigrant students, which we described as U.S.-born isolated schools. We also found some evidence that the mathematics achievement of U.S.-born students was lower in U.S.-born isolated schools. In this paper, we extend our analysis by distinguishing between second and third-plus generation students, which provides a stronger test of the latter group's isolation from immigrant students and their families within schools. As we detail below, it is important to distinguish between second and third-plus generation students because, with the exception of student achievement, the characteristics and schools of second generation students more closely resemble first generation immigrants than their third-plus generation peers. Our research questions are as follows: 1) what are the school contexts of third-plus generation, second, and first generation students; 2) to what extent are third-plus generation students isolated from their immigrant peers, and what are the characteristics of third-plus generation-isolated schools; and 3) what is the relationship between achievement and isolation for third-plus generation students?

Literature Review and Conceptual Framework

The 1965 Immigration and Nationality Act created a fundamental shift in patterns of immigration to the United States by expanding the number of immigrants and their countries of origin (Passell, 2011). Between 1965 and 2015, the immigrant population increased from approximately 5% to 15% of the U.S. population, respectively (Griego et al., 2012; Pew Research Center, 2015). While the majority of the immigrants of previous generations were European and Canadian, most of the new immigrants arriving after the 1965 Immigration and Nationality Act were Latinx or Asian. In 2000, 48% of recent arrivals were Latinx and 25% were Asian. By 2013, this pattern had reversed such that 33% of recent arrivals were Latinx and 35% were Asian. The PISA 2012 data used in this study includes third-plus generation children who were born in the late 1990s, when Latinx immigration to the US was peaking.

In the sections that follow, we review the literature comparing school achievement of third-plus generation students with first and second generation immigrant students, which provides an important backdrop for our analysis. Our conceptual framework draws on analyses of immigrant concentration and school contexts. First, we review studies that address the relationship between

immigrant concentration in schools and classrooms and the achievement of native students.⁵ In the final section we highlight the subset of studies addressing aspects of the school contexts of third-plus generation students compared to immigrant students.

The Academic Achievement of Third-Plus Generation Students

The research findings on the educational achievement of third-plus generation students relative to first and second generation immigrant students have been mixed. Third-plus generation students are more likely to live in neighborhoods with lower concentrations of poverty and attend better-resourced schools than their immigrant peers—conditions associated with higher educational achievement (Crosnoe, 2005; Crosnoe & Lopez Turley, 2011; Pong & Hao, 2007; Potochnick & Mooney, 2015). Yet a substantial body of research indicates that third-plus generation students had lower educational achievement than their second generation peers (Crosnoe & Lopez Turley, 2011; Duong et al., 2016; Kao, 1999; Kao & Tienda, 1995; Palacios, Guttmanova, & Chase-Lansdale, 2008; Potochnick & Mooney, 2015; Schwartz & Stiefel, 2006).⁶ The outcomes were more variable across these studies for first generation students.

When disaggregated by race/ethnicity, socioeconomic status, and country of origin, educational outcomes vary considerably across immigrant groups and possibly across cohorts, although there is limited evidence for the latter (Demie, 2001; Duong et al., 2016; Glick & Hohmann-Marriott, 2007; Glick & White, 2003; Feliciano, 2005; Greenman, 2013; Kao, 1999; Kao & Tienda, 1995; Pong & Hao, 2007; Portes & MacLeod, 1996; Potochnick & Mooney, 2015; Schnepf, 2007; Sullivan, Hourii & Sadeh, 2016; White & Glick, 2009). Potochnick and Mooney (2015) compared the achievement of successive cohorts of sophomore students and found that once demographic variables were controlled, third generation students had lower achievement in mathematics than their first generation peers in 1990 but higher achievement in 2002. Potochnick and Mooney (2015) attributed this apparent decline in first generation achievement to a shift in the demographic profile of the 2002 cohort. Compared to the 1990 cohort, the 2002 cohort had a larger proportion of Latinx students, who tend to have lower academic achievement than other racial/ethnic groups. In addition, compared to first generation immigrant students in 1990, first generation immigrant students in 2002 had fewer family resources and attended schools with higher concentrations of minority students and higher teacher–student ratios. These factors also contributed to the achievement decline they documented.

Many of the studies that suggested there was an immigrant advantage were based on analyses of the National Educational Longitudinal Survey of 1988 (NELS), which was initiated in the late 1980s (Crosnoe & Lopez Turley, 2011; Kao, 1999; Kao & Tienda, 1995; Schwartz & Stiefel, 2006). More recent studies using the NELS—the Educational Longitudinal Study (ELS) of 2002 and the Early Childhood Longitudinal Study (ECLS-K)—have addressed the heterogeneity of the immigrant population and educational and occupational outcomes over time (e.g., Glick & Hohmann-Marriott, 2007; Hao & Pong, 2008; Harris, Jamison & Trujillo, 2008; Hsin & Xie, 2014; Potochnick &

⁵ In the discussion that follows, we use the term “native” to refer to students that were born in the focal country unless the analysis distinguishes between first and second generation immigrants. In our analysis we distinguish between second and third-plus generation students within the category of native students.

⁶ Duong et al. (2016) found that the immigrant advantage tended to be higher in studies using regional or local samples compared to national samples.

Mooney, 2015; see also Chiswick & DebBurman, 2004).⁷ Feliciano (2005) suggests that some of the within-group differences in immigrants' educational outcomes may be partially attributable to educational selectivity, i.e., the difference between immigrants' educational attainment and the educational attainment of their peers who remained in their home countries

Immigrant Concentration and Student Achievement

Many of the studies examining the relationship between immigrant concentration and the achievement of native students in U.S. schools are focused on the association between attending racially segregated schools and Black and Latino student outcomes. Few studies focus on immigrant concentration (Wells, 2009), rather they address generational status in the context of analyses of segregation. Another group of studies from the US. document the association between broader demographic patterns of immigration and other educational outcomes such as high school completion. A final set of international studies addresses immigrant concentration more directly and are concerned with the possible effects of immigrant concentration on a range of academic outcomes for native students. These include cross-national studies in which the US is one among a large sample of countries, and studies conducted outside the US.

Racial segregation and immigration patterns in the US. In an analysis comparing the differential effects of attending schools with high concentrations of Latino students compared to Black students, Goldsmith (2003) found that all else held equal, as the proportion of Latino students increased, high school students' test scores increased. More relevant for this analysis, this result held for White students, which he suggested was partially attributable to the large proportion of Latino students with immigrant parents. Portes and Rumbault (2001) documented a sense of optimism that is shared among immigrant parents of all nationalities, who tend to have a positive view of their children's schools and the opportunities for them and their children in the US (see also Kao & Tienda, 1995). Likewise, immigrant parents have high expectations for their children's education achievement and provide guidance and encouragement for them to succeed in school.

The high ambitions among immigrant parents are also reflected in the educational attitudes of their children. Immigrant students tend to have more positive attitudes about school and higher educational expectations than their native-born peers (Ackert, 2018; Greenman, 2013; Pong & Zeiser, 2012, Wells, 2010). Goldsmith (2003) suggested that all students, and not just immigrant students could be benefiting from exposure to immigrant peers and their families. However, the evidence on this point has been inconclusive. For example, Lee and Krugman (2013) found that Latino concentration had a positive effect on the first-grade achievement of Latino children with immigrant parents, and no effect on Latino and white students with U.S.-born parents, although they do not address generational status. Similarly, in Miami and San Diego, two immigrant-receiving cities in the US, the achievement of second generation students in mathematics and reading was not substantially different for students who attended enclave schools, or schools with high concentrations of first generation immigrant students, and non-enclave schools (Cortes, 2006). Finally, a number of studies suggest that immigration has a positive effect on a broader range of educational outcomes for U.S.-born students (Hunt, 2017; McHenry, 2015; Neymotin, 2008). These

⁷ We did not address analyses generated by the Children of Immigrants Longitudinal Study (CILS) and Longitudinal Immigrant Adaptation Study (LISA) because the samples are comprised solely of immigrant students. Our goal in this paper is to compare the achievement and school contexts of immigrant and U.S.-born students.

include: an increase in applications to colleges and universities, improved high school and postsecondary attendance and completion, and the development of human capital skills that differentiate U.S.-born students from low-skill, immigrant workers.

Cross-national and international studies. An additional set of studies conducted outside the US focus on the relationship between the concentration of immigrant students within schools and the achievement of native students, where immigrant concentration serves as a proxy for peer or exposure effects (e.g., Gould, Lavy & Passerman, 2009; Hermansen & Birkelund, 2015). Other studies suggest that immigrant concentration could be associated with achievement because immigrants are either concentrated in low-resource schools (Park & Kyei, 2010), or because they require more resources to educate than their native peers (e.g., Hardoy, Mastekaasa, & Schone, 2018; Hermansen & Birkelund, 2015). Most suggested that the relationship between immigrant concentration in schools and the achievement of native students was weak; these findings were largely consistent across national contexts.

Schneepf (2007) used PISA to assess the effect of immigrant concentration on the mathematics achievement gap between immigrant and native students in 10 countries, including the US. She found that the effect of immigrant concentration varied considerably across national contexts. In the US, immigrant concentration was not associated with student achievement, and much of the achievement gap between native and immigrant students was attributable to language skills and socioeconomic status. In another cross-national study using PISA, Park and Kyei (2010) found that the immigrant–native achievement gap in mathematics was related to socioeconomic segregation rather than the concentration of immigrants.

Hermansen and Birkelund (2015) found a small but positive correlation between attending school with immigrant students and high school completion in Norway. They attributed the better rate of completion to exposure to immigrants from high-achieving countries of origin, yet they did not find evidence that exposure to immigrant students from low-achieving countries had a negative effect on high school completion. Another study conducted in Norway found that the concentration of immigrant students did not have any measurable effect on native students' grades or school completion (Hardoy, Mastekaasa, & Schone, 2018).

There were some exceptions to this broader pattern. An earlier study by Hardoy and Schone (2013) suggested that there was a negative effect on Norway's native dropout rate associated with the concentration of immigrant students whose parents have low levels of education and immigrant students who arrive after the age of eight. In a study conducted in Denmark using PISA, Jensen and Rasmussen (2011) found that both native and immigrant students who attended schools with larger shares of immigrant students had lower PISA scores than their peers who attended schools where immigrant students were less concentrated. This effect was more pronounced for native students. Tonello (2016) found that attending schools with larger shares of non-native students had a very weak but negative effect on native students' language performance in Italian schools. There was no effect on students' mathematics performance. As the review above suggests, none of the latter group of studies have focused specifically on the U.S. context and most do not distinguish between first and second generation immigrants. Our study focuses on third-plus generation students in the US and assesses the relationship between the presence or absence of immigrant students and mathematics achievement.

School Contextual Factors Associated with Academic Achievement

To elucidate the achievement patterns of third-plus generation students and their immigrant peers, researchers have analyzed the school contexts of both groups to understand the relationship between school factors and student achievement. Crosnoe (2005) compared the school contexts of

first and second generation Mexican immigrant students with the school contexts of their U.S.-born peers using the Early Childhood Longitudinal Study (ECLS-K) across three broad categories: a) structural characteristics such as school size and teacher experience; b) compositional features such as the percentages of poor and minority students; and c) measures of school climate such as school safety and community disorganization, or problems in the neighborhood surrounding the school. On average, Mexican immigrant students had less experienced teachers, were overrepresented in high poverty schools that served larger shares of minority students, and attended schools in more disorganized communities than their U.S.-born peers across racial/ethnic groups, which he characterized as a double-disadvantage (Crosnoe, 2005; see also Pong & Hao, 2007). When family background factors were accounted for, school context variables were not significant predictors of students' first grade mathematics achievement. However, Mexican immigrant students attending high poverty schools had higher average achievement than their African American and other Latinx peers.

Areepattamannil and Kaur (2013) used data from the PISA to analyze the mathematics achievement of immigrant students in Canada, controlling for a wide range of individual and school-level factors. A shortage of qualified teachers was the only aspect of school context that was a significant predictor of immigrant students' science achievement. Immigrant students who attended schools in which principals reported that a teacher shortage was a problem tended to have lower science achievement than immigrant students attending schools without a teacher shortage. While the context of reception for immigrants in Canada is significantly different than in the US (Bloemraad, 2006), we include it as an example of a study using PISA data focused on a single country that included school contextual factors in the analysis.

Finally, Potochnick and Mooney (2015) found that, compared to their native peers, immigrant students were more likely to attend urban schools and schools with higher concentrations of poor, minority, and limited English proficient students. On average, immigrant students also attended schools with higher student-teacher ratios. The school factors that were statistically significant predictors of students' mathematics achievement were the percentage of poor students and the student-teacher ratio. Most other studies use a limited range of school characteristics that included: public or private school (Glick & Holman Marriot, 2007; Palacios, Guttmanova, & Chase-Landale, 2008), locale and demographics (Kalogrides, 2009; Palacios, Guttmanova, & Chase-Landale, 2008), and availability of full-day kindergarten (Glick & Holman Marriot, 2007).

Data and Methods

Data and Sample

Administered every three years by the Organisation for Economic Cooperation and Development (OECD), PISA is an international assessment intended to provide measures of the knowledge and skills young people will need to fully participate in the global economy and as citizens in modern societies when they are at the end of compulsory schooling (OECD, 2014a). According to the OECD, the PISA assesses how students apply their knowledge to novel situations in and out of school settings (OECD, 2014b). While students are assessed in mathematics, reading, and science in each testing year, the focal subject rotates with each cycle. The PISA is well-suited for addressing questions related to immigrant achievement for several reasons. First, students are surveyed about their family backgrounds, and the principals of the participating schools answer surveys that provide additional information about the students' schools that can be linked to the student data. Second, the U.S. sample has sufficiently large number of first and second generation immigrant students to permit comparisons between immigrant and third-plus generation students.

Third, the PISA provides more recent data on immigrant and third-plus generation youths' high school experiences and achievement than most extant studies, many of which relied on the NELS and the ELS collected in the late 1980s and early 2000s. Finally, the PISA is a high-profile international assessment and the results are reported widely. As a result, policymakers are more likely to be familiar with the PISA than other secondary datasets. We used the U.S. Public-Use files released by the National Center for Education Statistics (NCES) for the PISA 2012, which allows us to address our research questions for the cohort of students attending U.S. high schools a decade after the ELS. The PISA 2012 was aimed at assessing students' mathematics literacy and their experiences in mathematics classes.⁸

The U.S. PISA 2012 was collected using a two-stage stratified sampling design. A sample of public and private schools was selected and then students were sampled within schools (Kastberg et al., 2014). Participating schools were chosen such that all age-eligible students (15-year-old students enrolled in grade seven or higher) would be equally likely to be selected for the sample. The full U.S. PISA 2012 sample is comprised of 4,978 students attending 162 schools.⁹ We excluded cases with missing information on the variables in our analysis, resulting in a analytic sample of 3,676 students that included 759 second generation and 225 first generation immigrants. Using sampling weights to account for the stratified sampling design resulted in a weighted analytic sample of 2,596,887 students of whom 1,870,566 were third-plus generation. In the weighted sample, second and first generation immigrants totaled 557,608 and 168,713 students, respectively. To answer our first research question, we conducted a descriptive analysis comparing the demographic and school characteristics of third-plus generation, second, and first generation students. Our second research question draws upon and extends this descriptive analysis to address the extent to which third-plus generation students attended schools that were not attended by immigrant students and the characteristics of those isolated schools. Finally, in our third research question we assess if there were differences in the average performance of third-plus generation students who attended isolated schools compared to those who attended schools that enrolled immigrant students. We estimate the achievement gap between these two groups of third-plus generation students through a series of linear regression models in which we control for individual and school characteristics.

Dependent Variable

Our dependent variable is mathematics achievement because it was the focal subject of the PISA in 2012, and the student and school questionnaires were designed to collect information pertaining to mathematics instruction. In the PISA and other large-scale assessments, students do not take a standardized achievement test with an identical list of questions. Rather, they take tests composed of randomly assigned subsets of questions (Jerrim, Lopez-Agudo, Marcenaro-Gutierrez, & Shure, 2017; von Davier, Gonzales, & Mislevy, 2009). Because of this design feature, if individual students' scores were estimated, each score would have a considerable amount of measurement error. Instead, five scores, or plausible values indicating the range of each student's proficiency are generated using multiple imputations that researchers can use to estimate the achievement of groups of students. We conducted the

⁸ Mathematics literacy refers to a student's capacity "to identify and understand the role that mathematics plays in the world, and make well-founded judgments, and use and engage in mathematics in ways that meet one's needs as a constructive, concerned, and reflective citizen" (NCES, 2014, pp. PISA-2).

⁹ Seventy-three percent of the students in the full sample were in Grade 10. Smaller percentages of student were in grades nine (11%) or 11 (16%). Fewer than 15 students were in grades eight or 12.

student-level analyses of plausible values using AM statistical software for complex samples (American Institutes for Research, n.d.).

Independent Variables

Our main variable of interest is an indicator for students who attended schools without immigrants in each representative in-school sample, third-plus generation isolated school. This variable provides a measure of isolation, which we define as a lack of contact between third-plus generation and first and second generation immigrant students within schools. This is an extreme case of isolation from immigrants. Students attending third-plus generation isolated schools are not exposed to first generation students within schools or immigrant families through the parents of the second generation students who attend their schools. This variable allows us to compare the achievement of third-plus generation students who attended schools that did not serve immigrants with the achievement of third-plus generation students who had some degree of exposure to immigrants, or immigrant to third-plus generation peer effects (Endorf & Lauk, 2008). Student characteristics included gender, race/ethnicity, parent education, and an index of wealth. Parent education is measured using a set of indicator variables: did not complete high school, graduated high school and may have attended some college, or earned a college degree or higher. Wealth is an OECD-calculated index based on students' responses to survey questions about their families' possessions, which we used as an indicator of socio-economic status (SES) because the PISA does not contain a direct measure of family income. The variable is standardized such that the OECD average equals zero and the standard deviation is one. Race/ethnicity is measured by a series of six dummy variables: White, Black or African American, Latinx, Asian, multiracial, and other racial/ethnic group. The school characteristics we selected from the PISA data included: public or private school, urban or rural school, share of poor students,¹⁰ school and class size, student–mathematics teacher ratio, no math teacher shortage, share of mathematics teachers with a bachelor's or master's degree in mathematics, share of dropouts greater than 10%, and student climate, and variables for the percentage of students in each representative in-school sample who were White, Black, Latinx, Asian American, multiracial, and other racial/ethnic group (see Table A1 for a detailed description of variables).¹¹

Findings

Table 1 presents the descriptive statistics for the sample by the generational status of students. Third-plus generation students' mathematics achievement was largely the same as second generation students' and 25 points higher than first generation students.' White students comprised the majority of third-plus generation students (71%). The demographic characteristics of immigrant students reflected the demographics of immigrant youth between the ages of 12 and 17 nationally

¹⁰ The share of poor students is defined as the percentage of students in in each representative in-school sample who were in the bottom 20% of the distribution of the wealth index.

¹¹ Our initial analyses also included the following variables: the number of computers for education per student, teacher-related aspects of school climate, and indicators for schools facing competition, grouping students by ability in math classes, and schools offering additional mathematics lessons. None of these variables were significant in any of the model specifications and were removed from subsequent analyses.

Table 1
Descriptive Statistics by Generational Status

	Third		Second		First	
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
<i>Student-level</i>						
PISA math test score	491.12	87.02	491.73	91.33	466.22	98.34
Female	0.50	0.50	0.49	0.49	0.51	0.50
White	0.71	0.45	0.16	0.36	0.09	0.29
Black	0.14	0.34	0.08	0.27	0.12	0.32
Latinx	0.08	0.27	0.56	0.50	0.60	0.49
Asian	0.004	0.06	0.15	0.36	0.16	0.37
Multiracial	0.05	0.22	0.05	0.22	0.00	0.00
Other race	0.02	0.15	0.01	0.10	0.03	0.16
Parent education: less than high school	0.025	0.15	0.20	0.40	0.26	0.44
Parent education: graduated from high school or completed some college	0.47	0.50	0.46	0.50	0.41	0.49
Parent education: college degree	0.51	0.50	0.35	0.48	0.33	0.47
Wealth	0.66	1.03	0.40	0.98	0.03	0.96
<i>School-level variables</i>						
Third-plus generation-isolated	0.10	0.30				
Share of Immigrant students (first and second generation)	0.18	0.18	0.51	0.27	0.53	0.25
Public school	0.94	0.24	0.95	0.22	1.00	0.06
Urban school	0.68	0.46	0.93	0.25	0.90	0.30
Poor students	0.13	0.33	0.33	0.47	0.36	
School size	1258	744	1833	1000	1782	
Class size	26	4.87	28	5.5	28	
Student–mathematics teacher ratio	125	42.1	125	33.9	116	

Table 1 (Cont'd.)
Descriptive Statistics by Generational Status

	Third		Second		First	
	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
No mathematics teacher shortage	0.75	0.43	0.67	0.47	0.59	0.49
Share of mathematics teachers with a BA or MA in mathematics	0.67	0.37	0.68	0.36	0.61	0.38
Share of dropouts greater than 10%	0.24	0.43	0.26	0.43	0.29	0.45
Student-related aspects of school climate	23.85	3.48	23.71	4.0	23.04	4.1
White	0.55	0.28	0.33	0.28	0.31	0.27
Black	0.14	0.19	0.13	0.15	0.18	0.14
Latinx	0.20	0.21	0.41	0.31	0.40	0.27
Asian	0.05	0.07	0.07	0.09	0.07	0.09
Multiracial and other race	0.06	0.05	0.06	0.05	0.04	0.05
Share in total student population	0.71	0.45	0.21	0.40	0.06	0.24
<i>N</i> (weighted <i>N</i>)	2692 (1870566)		759 (557608)		225 (168713)	

(Passell, 2011).¹² Latinx and Asian American students comprised 56% and 15% of second generation immigrant students, respectively. There were slightly higher shares of Latinx (60%) and Asian students (16%) among our first generation students, which is consistent with the demographic characteristics of immigrants who arrived in the United States in the late 1990s and early 2000s, when many of the immigrants in the U.S. PISA 2012 sample would have entered the United States as young children. On average, third-plus generation students were substantially above the average wealth of students in the 34 OECD member countries, the majority of which have advanced economies. First generation students were just above the OECD average, but there was also considerable variation within the sample. Twenty-six percent of all U.S. students were below the OECD average (not shown).

¹² Passell (2011) estimated that in 2009, 5.9% of youth between the ages of 12 and 17 were first generation immigrants, and 15.6% were second generation immigrants.

The School Contexts of Third-plus Generation, Second, and First Generation Students

Comparisons across the three generational groups in the second panel of Table 1 highlight how, on average, the characteristics of the schools attended by third-plus generation students differed from those of the schools attended by second and first generation immigrant students. Thirty-two percent of third-plus generation students attended non-urban schools while a substantial majority of first and second generation students attended public schools in urban areas. The schools attended by third-plus generation students served an average of 18% immigrant students while one out of 10, or 10%, of third-plus generation students attended third-plus generation isolated schools. Immigrant students attended schools where on average 51 to 53% of their peers were also immigrants. These findings reflect the settlement patterns of many immigrant families who tend to cluster in urban settings because of the availability of employment and immigrant social networks. In general, third-plus generation students attended schools that were smaller, enrolled fewer poor students, and had smaller class sizes than the schools attended by second and first generation immigrant students. Seventy-five percent of third-plus generation students attended a school in which the principal reported that a shortage of mathematics teachers was not a problem compared to 67% of second generation students and 59% of first generation students. Schools attended by third-plus generation students also had higher shares of teachers with a bachelor's or master's degree in mathematics compared to both groups of immigrant students. However, both third-plus generation and second generation students' schools had higher student–mathematics teacher ratios than first generation immigrant students. In sum, the average third-plus generation student attended a school that was better resourced than her immigrant peers.

The differences in the demographic backgrounds of third-plus generation students and immigrant students were mirrored in their schools. Schools attended by third-plus generation students had lower shares of Latinx and Asian students, higher shares of White students, and lower shares of poor students than the schools of their second and first generation immigrant peers. Second generation students and the schools they attended more closely resembled those of their first generation rather than their third-plus generation peers; all of the differences between second and third-plus generation students were statistically significant.¹³

The Characteristics of Third-plus Generation Isolated schools

Our descriptive findings indicate that the schools attended by third-plus generation and immigrant students differed in important and systematic ways. More specifically, 6.6% or 8 out of our sample of 121 schools enrolled 10% of third-plus generation students and did not enroll any immigrant students.¹⁴ To address our second research question, we compare the characteristics of third-plus-generation-isolated schools and immigrant-enrolling schools (i.e., schools attended by first and second generation immigrants). In Table 2, we provide the results of the comparison.

Consistent with the student-level results presented in Table 1, we find that third-plus generation-isolated schools enrolled students whose parents were more likely to graduate from high school or have attended some college than the parents of students attending immigrant-enrolling schools. On average, isolated schools were smaller, had smaller classes, and were more likely to be located in rural areas than immigrant-enrolling schools. In terms of demographics, the third-generation-and-higher-isolated schools had significantly higher shares of White students and lower

¹³ Results available from authors upon request.

¹⁴ These eight schools represent 3,937 schools in the weighted sample of 18,012 schools.

Table 2
Descriptive Statistics: Characteristics of Third-plus-generation-isolated Schools and Immigrant-enrolling Schools, PISA 2012

	Third-plus generation-isolated	Immigrant- enrolling schools	<i>P</i> - value
Achievement	462	486	0.07
Public	0.77	0.87	0.61
Urban school	0.12	0.61	0.00
Share of poor students	0.20	0.26	0.08
Share of parents with less than high school diploma	0.03	0.08	0.00
Share of parents who graduated from high school or completed some college	0.61	0.46	0.01
Share of parents with college degree	0.36	0.46	0.14
School size	614	1422	0.00
Class size	20	24	0.00
Student–mathematics teacher ratio	181	105	0.08
No mathematics teacher shortage	0.93	0.76	0.04
Share of mathematics teachers with a BA or MA in mathematics	0.56	0.68	0.17
Share of dropouts greater than 10%	0.04	0.24	0.01
Student-related aspects of school climate	27.21	24.08	0.02
Share of White students	0.80	0.61	0.00
Share of Black students	0.01	0.11	0.00
Share of Latinx students	0.03	0.19	0.00
Share of Asian students	0.00	0.04	0.00
Share of multiracial and other race students	0.15	0.05	0.07
<i>N</i> (weighted <i>N</i>)	8 (3937)	113 (14075)	

shares of Black, Latinx, and Asian students. Third-plus-generation-isolated schools also enrolled fewer poor students (20%) than immigrant-enrolling schools (26%). Only 4% of third-plus generation-isolated schools had dropout rates higher than 10% compared to 24% of the schools attended by immigrant students. Ninety-three percent of the principals of third-plus-generation-isolated schools reported that they did not experience a shortage of mathematics teachers compared to 76% of principals in the immigrant-enrolling schools. Finally, although third-plus-generation-isolated schools are advantaged on characteristics associated with higher achievement, these schools had lower average PISA mathematics achievement than schools that enrolled immigrant students.

The Relationship between Achievement and Isolation

Our third research question, and the critical one for this study, is whether the academic performance of third-plus generation students differed depending on the type of school they attended. For this analysis, we restricted the sample to third-plus generation students. This sample consists of 2,692 students who attended 121 schools. In Table 3, we present the results of the student-level analysis where we estimated the achievement gap among third-plus generation students who attended third-plus generation isolated schools and those that attended immigrant-enrolling schools. The outcome variable is the PISA mathematics test score, and the main independent variable of interest is an indicator that a student attended a third-plus generation isolated school. Our model takes the following form:

$$A_{is} = \alpha + \beta_1 \text{Isolated} (= 1) + W_{is}\gamma + Z_s\delta + \varepsilon_{is}$$

where A_{is} is the PISA mathematics score of student i in school s . We also included two sets of control variables that represent student demographics and school characteristics, W_{is} and Z_s , respectively.

We started with a baseline model that contained only our indicator for third-plus-generation-isolated schools and subsequently added three sets of control variables. Although the PISA data has a nested structure (i.e., students are clustered in schools), we used multivariate regression rather than a multilevel model because we are comparing the achievement of students between the two types of schools, not within schools. In other words, we are interested in the variation in the performance of third-plus generation students who attended third-plus generation isolated schools compared to their peers who attended immigrant-enrolling schools. In the last specification of our model (column 4 of Table 3), we added school fixed effects; this strategy controls for any unobserved differences between schools not captured by the variables in Model 3.

Column 1 of Table 3 presents the simple correlation between academic achievement measured by the PISA mathematics test score and our indicator of isolation. The negative and statistically significant coefficient indicates that third-plus generation students in isolated schools on average scored 34 points lower on the PISA mathematics test than their peers in schools attended by immigrant students. However, this model does not account for the factors that prior research indicates are closely related to academic achievement: socioeconomic status (measured here by wealth), race, gender, and parental education. Column 2 of Table 3 indicates that the relationship between isolation and achievement remained negative and significant and increased slightly when we added these student-level characteristics to the model. As expected, students whose parents were high school or college graduates had higher mathematics achievement compared to students whose parents were high school dropouts. On average, girls had lower mathematics achievement than boys, and Black, Latinx, and students from other races—with the exception of Asian students—had lower achievement than White students. Higher socioeconomic status as measured by the PISA index of wealth was also associated with higher test scores.

Table 3

Relationship between PISA Mathematics test Score and Type of School Attended by Third-plus Generation Students

	Model 1	Model 2	Model 3	Model 4
Third-plus-generation- isolated (indicator = 1)	-33.57*** (12.1)	-39.81*** (10.5)	-15.06* (9.01)	-26.12** (10.18)
Female (=1)		-9.06** (3.52)	-9.25*** (3.49)	-10.70*** (2.78)
Parental education: some college		30.32*** (11.2)	25.22** (10.41)	33.82*** (9.34)
Parental education: college degree		65.77*** (11.3)	54.63*** (10.40)	59.95*** (9.48)
Wealth		4.13** (1.86)	2.16 (1.84)	3.35** (1.50)
Black		-78.9*** (7.46)	-71.00*** (7.30)	-71.04*** (4.93)
Latinx		-19.57*** (8.85)	-21.47*** (7.95)	-29.11*** (5.81)
Asian		-12.24 (23.43)	-8.16 (24.86)	12.56 (21.05)
Multiracial		-16.96** (6.87)	-17.87*** (6.80)	-14.70** (6.76)
Other		-50.05*** (11.11)	-20.10** (10.22)	-33.84*** (12.04)
Public school			32.77*** (10.42)	
Urban school			15.48*** (5.24)	
Share of poor students			-20.57*** (7.34)	
Student-mathematics teachers ratio			-0.13** (0.06)	
School size			0.009* (0.005)	
Share of mathematics teachers with a BA or MA in mathematics			11.08* (6.00)	
Class size			0.39 (0.49)	
Student-related aspects of school climate			4.15*** (0.68)	

Table 3 (Cont'd.)
Relationship between PISA Mathematics Test Score and Type of School Attended by Third-plus Generation Students

	Model 1	Model 2	Model 3	Model 4
Share of dropouts greater than 10%			-8.32 (5.44)	
No mathematics teacher shortage			4.12 (4.45)	
Constant	495*** (4.18)	462*** (11.31)	338*** (88.39)	464*** (9.68)
R-square	0.014	0.18	0.39	0.20
R-square (within)				0.10
R-square (between)				0.43
N	2692	2692	2692	2692
(weighted N)	(1870566)	(1870566)	(1870566)	(1870566)

Note: * $p < .10$; ** $p < .05$; *** $p < .001$

Dependent variable: PISA mathematics test score. Column 1 includes only indicator that a third-plus generation student attends a school that does not enroll any first or second generation students; Column 2 includes student characteristics; Column 3 includes student and school characteristics; Column 4 presents fixed effects model that accounts for unobserved school characteristics.

In Model 3, we added school contextual factors¹⁵. The coefficient of interest—the indicator of an isolated school—retained its sign while it dropped in magnitude. This indicates that school contextual factors explain some of the variation in the achievement gap between third-plus generation students in the two types of schools. The addition of school contextual factors improved the overall fit of our model ($R^2=0.39$). All else held equal, third-plus generation students had higher mathematics achievement if they attended public, urban schools with lower shares of poor students. Not surprisingly, students attending schools with lower student–mathematics teacher ratios and higher shares of teachers with a bachelor’s or master’s degree in mathematics had lower mathematics achievement on average. Likewise, students had higher achievement in schools that reported better school climates.

Our final set of estimates in column 4 of Table 3 demonstrates that independent of how and what school and student factors are controlled, the achievement gap between third-plus generation students attending isolated schools and their peers attending immigrant-enrolling schools remained statistically significant and sizable in magnitude. Across all specifications, from our simple model to models that included student and school controls and accounted for unobserved differences between schools, the average gap in PISA mathematics achievement for these two groups of third-plus generation students ranged from 15 and 40 points, which is equivalent to between 17% and 44% of the standard deviation of the PISA score for the full sample. This is striking given that the schools attended by third-plus generation students were more advantaged than schools attended by immigrant students. That is, third-plus generation students who attended isolated schools were less

¹⁵ We excluded shares of students by race that we presented in Tables 1 and 2 because they were collinear with other variables included in the model.

likely to experience a shortage of math teachers, had smaller class sizes, and their schools had lower shares of high school dropouts and poor students than their third-plus generation peers who attended schools with immigrant students. Despite these advantages, the students who attended isolated schools had lower mathematics achievement than their same generation peers, and the difference is meaningful.

Discussion and Conclusion

There are two key insights from our analyses. First, on average, third-plus generation students attended schools with smaller shares of immigrant students than their immigrant student peers. Immigrant students are not evenly distributed across U.S. schools. Ten percent of third-plus generation students attended schools that did not enroll any immigrant students. This share is substantial if we consider that first and second generation students accounted for 27% of the potential classmates of all 15-year-olds. To the extent that the demographics of high schools reflect the communities of third-plus generation students, these students and their families could have little exposure to first and second generation immigrant students and families. This parallels the well-documented race and class isolation of communities. Coupled with ideological segregation (Massey, Rothwell & Domina, 2009), this isolation may help explain why intransigent nativism continues to resonate in political debates about immigration.

A second key insight from our findings related to our second and third research questions raises questions about the Trump administration's arguments for immigration restrictions. The demographic profiles and school contexts of third-plus generation isolated schools differed from those attended by students from all three generations. Students who attend isolated schools had more educated parents and had fewer peers that were dropouts. Isolated schools enrolled fewer students and had smaller classes, and a substantial proportion were located in rural areas. These schools were less likely to experience shortage of mathematics teachers, had more positive school climates, and enrolled majorities of White students. That said, the demographics of the students who attended isolated schools and the features of the school contexts alone cannot explain why on average, students in those schools had lower mathematics achievement compared to students in schools that enrolled immigrant students.

In our student-level analysis, we found a negative and statistically significant achievement gap between third-plus generation students attending third-plus generation isolated schools and their same generation peers who attended schools with immigrant students. This negative gap remained statistically significant even after we accounted for students' race, wealth, parental education, gender, and school contextual factors that are associated with higher achievement. The higher average mathematics achievement of third-plus generation students who attended schools with immigrants is consistent with studies that assess the association between immigrant concentration and school outcomes in other national contexts. These achievement effects may be partially attributable to peer effects, in this case, the presence of first and second generation students. While the evidence for immigrant peer effects is mixed (Goldsmith, 2003; Jensen, 2015; Lee & Krugman, 2013), some studies have identified positive spillovers in U.S. schools associated with immigration patterns (Hunt, 2017; McHenry, 2015; Neymoytin, 2008). Unlike the majority of studies that evaluate immigrant concentration as measured by the percentage of immigrant students attending a school, we investigate the differences in outcomes for students who attended schools serving no immigrants compared to students who attended schools with any number of immigrant students. Our peer effects argument is strengthened by our findings that third-plus generation isolated schools were better resourced compared to schools that enrolled all three generations of students. Yet third-plus

generation students who were isolated from their first and second generation students had lower mathematics achievement compared to their third-plus generation peers who attended less advantaged immigrant-serving schools. This analysis adds another piece of evidence to the growing body of work across sectors¹⁶ that suggests that the assumptions driving the Trump administration's efforts to restrict immigration—i.e., that immigration harms natives, in this case, students—have little empirical support, and that efforts to restrict immigration are misguided.

These findings also raise important questions for future research about the extent to which a lack of exposure to immigrants among third-plus generation high school students shapes their attitudes about immigration. There are few studies of the attitudes of U.S. youth about immigration, even though they are on the cusp of voting age and young adulthood. Gimpel and Lay (2008) surveyed high school students in nine rural communities in Iowa and Maryland about their attitudes related to immigration-related diversity. The communities varied in immigrant presence from less than 1% to 9% of the population. Low-income rural youth who came into contact with immigrants in their schools and neighborhoods tended to have more positive attitudes about immigration-related diversity than their more advantaged peers. However, white native-born students whose families had longer tenure in communities with a comparatively higher immigrant presence tended to have more negative attitudes about immigrant-related diversity. Gimpel and Lay (2008) suggest that these findings may reflect this latter group's greater social contact with family members who may have negative attitudes about immigration as well as lower levels of contact with immigrants in their schools and neighborhoods compared to their low-income peers. While our study focuses on an indicator of academic achievement, another important area of research is youths' attitudes about immigration and how these might be shaped by exposure to or isolation from immigrants in their schools and communities as well as contemporary political debates about immigration.

Research on adults' attitudes about immigration suggests that more sustained social contact with immigrants is associated with more positive attitudes about immigration and immigrants (Tropp, Okamoto, Marrow, & Jones-Correa, 2018). For example, one third of U.S.-born adults who reported that there were no immigrants living in their communities felt that immigrants made the US better, compared to 45% of U.S.-born adults who lived in locales with immigrant communities (Pew Research Center, 2015). However, the effects of contact may be moderated by political orientation and education (Ceballos & Yakushko, 2014; O'Neill & Tienda, 2010). Rocha and Espino (2009) found that the attitudes of Whites about immigration are not only related to the size of the immigrant population but also the level of segregation between Whites and Latinx in a metropolitan area. That is, Whites living in areas with higher levels of segregation are more likely to have strong, negative attitudes about immigration regardless of the size of the Latinx population. There is also some evidence to suggest that in settings that are more homogeneously White, a small, non-threatening demographic change can trigger negative attitudes about immigration, although repeated contact can also reduce exclusionary attitudes (Enos, 2014). More recently, a majority of Whites living outside of urban and suburban areas reported that a growing immigrant workforce was harmful to U.S. workers (Morin, 2016), which suggests that the Trump administration's efforts to link job loss and immigration would resonate in these areas. As the political debates about immigration intensify, it is important to better understand how a broader array of outcomes for youth are shaped by exposure to immigrants within and outside of schools.

¹⁶ See, for example, Mayda and Peri (2017).

Appendix

Table A1
Dependent and Independent Variables

Variable	Description
<i>Dependent variable</i>	
Mathematics achievement	A normalized (mean 500, standard deviation 100) measure of student performance on the PISA mathematics test.
<i>Independent variables</i>	
<i>Student-level</i>	
Third-plus generation	An indicator variable coded 1 for students who reported that they were born in the U.S. and whose parents were also born in the United States.
Second generation	An indicator variable where 1 denotes a student who was born in the U.S. and at least one parent was born outside the US.
First generation	An indicator variable where 1 denotes a student who was born outside the U.S. and whose parents were also born outside the US.
Female	A binary indicator variable where 1 denotes female.
Race/ethnicity	A set of six indicator variables indicating one of the race/ethnicity categories: White, Black or African American, Latinx, Asian, multiracial, and other racial/ethnic group.
Parent education	A set of three indicator variables indicating the educational level of the student's parents: did not graduate from high school; high school graduate or some college; and college degree.
Wealth	Wealth is an OECD-calculated index based on students' responses to survey questions about their families' possessions: their own rooms, a link to the internet, a DVD player, cellular phones, televisions, cars, and the numbers of rooms with a bath or shower (OECD, 2014c). The variable is standardized so that the OECD mean equals zero and the standard deviation is one.
<i>School-level variables</i>	
Third-plus- generation- isolated	An indicator variable where 1 denotes that the school does not serve second or first generation immigrant students.
Public	A binary indicator variable where 1 denotes a public school
Urban	An indicator variable where 1 denotes schools located either in an urban area or inside a principal city (Kastberg et al., 2014).
Share of poor students	A measure of school poverty computed as the percentage of students in the representative in-school sample in the bottom 20% of the wealth distribution.
School size	Total school enrollment.

Table A1(Cont'd.)

Dependent and Independent Variables

Variable	Description
Class size	An OECD-created variable derived from principals' responses to a nine-category question; the midpoint of each category was used to create the variable (OECD, 2014c).
Student-mathematics teacher ratio	An OECD-created variable calculated by dividing school size by the number of mathematics teachers.
No mathematics teacher shortage	An indicator variable where 1 denotes that the principal reported "not at all" to a survey item asking if a lack of qualified mathematics teachers hindered the school's capacity to provide instruction.
Share of mathematics teachers with a BA or MA in mathematics	An OECD-created variable where the total number of full and part-time mathematics teachers with mathematics degrees was divided by the total number of mathematics teachers (OECD, 2013).
Dropouts greater than 10%	An indicator variable that denotes that the principal reported a dropout rate greater than 10%
Student climate	An index variable created by summing school principals' responses on eight variables that assessed the extent to which the following student behaviors and attitudes hindered student learning: truancy, skipping classes, tardiness for school, absenteeism at required school events and activities, lack of respect for teachers, disruption of classes, use of alcohol or drugs, and bullying. Principals' responses ranged from 1 "Not at all" to 4 "A lot." We reverse-coded the variables before creating the index so that a higher value indicated a more positive school climate.
Racial/ethnic composition	A set of variables that report the share of students in each representative in-school sample in each of the six racial/ethnic groups

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