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The Impact of Social Mixing at School: Evidence From a French Desegregation Program*

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Abstract

This paper investigates the impact of school-level social mixing on social cohesion, socio-emotional development, and educational outcomes. We exploit variation induced by a French Ministry of Education desegregation program, comparing middle schools that increased socioeconomic mixing with observationally similar schools that did not. Focusing on the schools and students with the greatest baseline potential for increased mixing, we find that exposure to a more socioeconomically diverse peer group yields socio-emotional benefits for both high- and low-SES students and strengthens social cohesion, without negatively affecting the academic outcomes of either group. These findings offer actionable insights for policies aimed at fostering social cohesion in an era of rising polarization.

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Keywords: *School Segregation*; *Social Mixing*; *Desegregation*; *Socio-Emotional Outcomes*; *Educational Outcomes*.

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Introduction

Can educational policy reinforce social cohesion, and if so, through which mechanisms? This question has become increasingly salient in societies confronting rising social and political polarization (Boxell et al., 2024; Guriev and Papaioannou, 2022). In France, it gained particular prominence in the wake of the January 2015 Charlie Hebdo terrorist attack, which intensified public debate about the role of social and educational segregation in fueling societal fragmentation. That the perpetrators had been born and educated in highly segregated school districts deepened concerns about the capacity of the education system to promote social cohesion in segregated contexts. In response, the French Ministry of Education introduced a school desegregation program aimed at increasing social mixing in public middle schools. The policy pursued two explicit objectives: fostering social cohesion by encouraging interactions across socioeconomic groups, and reducing inequality of opportunity by curbing social and economic segregation within the education system.

While existing research has largely focused on the economic (Algan et al., 2017; Colantone and Stanig, 2018; Autor et al., 2020; Piketty, 2022) and cultural (Inglehart and Norris, 2017; Enke, 2020; Bonomi et al., 2021) roots of polarization, comparatively little attention has been devoted to policy interventions capable of directly shaping social attitudes—such as trust, tolerance, and cooperation—at scale. Education policy may constitute a particularly powerful lever in this regard, given its universal reach and its formative role during the critical years of social development. Against this backdrop, the French desegregation program launched in the aftermath of the Charlie Hebdo attacks offers a unique empirical setting to examine whether increased social mixing in schools can shift social attitudes toward greater cooperation, tolerance, and inclusion.

The program rolled out in the 2016–17 and 2017–18 school years across 22 treatment sites in France. Each site comprised between two and six public middle schools that adopted a range of measures aimed at reducing disparities in socioeconomic composition. Our analysis focuses on the effects of social mixing on student outcomes, using the program as a source of identifying variation rather than evaluating the specific measures implemented at each site.[1] Accordingly, we restrict attention to the 10 sites, comprising 31 middle schools, with the greatest potential for a substantial increase in social mixing. Across these sites, the desegregation measures sought to rebalance the socioeconomic composition of schools by modifying how students were allocated across them, drawing on a variety of instruments, including catchment area

[1]The desegregation measures implemented at specific sites have been examined in prior work (in French), including a quantitative evaluation for Paris (Grenet and Souidi, 2021), qualitative studies for Noisy-le-Grand (Gimel and Oberti, 2020) and Toulouse (Bertolino, 2024), and broader syntheses of local desegregation initiatives discussed in national practitioner-research forums (Ville de Paris, 2019; Butzbach, 2022).

redraws, school openings and closures, catchment area mergers, and measures to enhance school attractiveness.

To identify the impact of social mixing on student outcomes, we leverage the fact that participation in the program was decided by national education districts in collaboration with school principals, without involvement from teachers or parents. Local stakeholders in treatment schools were therefore not systematically supportive of the program and frequently voiced opposition to it (Collectif, 2016; Gimel and Oberti, 2020). This institutional feature allows us to construct a credible comparison group of schools that did not participate in the program but share similar pre-treatment characteristics with treatment schools. The control group is constructed using administrative data from the pre-treatment period (2010–2015). Each of the 10 treatment sites is matched to a statistically comparable site that did not implement social mixing measures, with matching criteria ensuring similarity in the number of middle schools, the geographic proximity of schools within each site, baseline student performance on national exams, and pre-treatment cross-group exposure rates between advantaged and disadvantaged students. This procedure yields a final sample of 20 sites encompassing 62 middle schools: 10 treatment sites with 31 schools and 10 control sites with 31 schools.

Within each site, our empirical analysis focuses on students with a high baseline potential for increased social mixing. Throughout the paper, we partition students into two groups: high-SES students, defined as those whose reference parent holds a college-degree-requiring occupation, and low-SES students, defined as all others. Consistent with our goal of identifying the effects of social mixing rather than evaluating the policy *per se*, we restrict attention to students for whom the implemented measures were most likely to alter cross-group exposure, based on their elementary school of origin. Specifically, for each elementary school we compute a pre-treatment "exposure gap", defined as the average change in cross-group exposure that its students would have experienced in the pre-treatment period had they been randomly assigned across the site's public middle schools. Our main analyses focus on the 50% of low- and high-SES students within each treatment-control site pair with the largest predicted exposure gaps—whom we refer to as "high-gap" students—yielding a sample of 6,466 students, among whom 4,050 are low-SES and 2,416 are high-SES. We present a series of internal validity tests confirming that this empirical strategy delivers an as-good-as-random research design.

To quantify changes in social mixing at both the grade and classroom levels, and to assess the resulting effects on social attitudes, socio-emotional well-being, and educational outcomes, we combine rich administrative data with large-scale student surveys conducted across the 10 treatment and 10 control sites. Administrative records from middle schools and the Ministry of Education provide detailed information on students' socioeconomic background, grades, national test scores at the beginning and end of middle school, and disciplinary outcomes

(absences, lateness, and sanctions).[2] A key strength of the administrative data is that they allow us to measure social mixing not only at the grade level but also within individual classrooms—an uncommon feature in the literature. This distinction is critical: if students are sorted across classes within the same school, segregation may be recreated at a finer level, potentially offsetting desegregation efforts at the school level. Beyond administrative data, we conducted large-scale student surveys to measure the impact of increased social mixing on socio-emotional outcomes in Grades 6 and 8—another extremely rare feature in the literature. The surveys were designed to capture a rich battery of social attitude measures, encompassing cooperation, prosocial behavior, and attitudes towards ethnic discrimination and redistribution, as well as two broad dimensions of student well-being: a personal dimension—covering general well-being, academic self-concept, and growth mindset—and a social dimension—covering school climate, trust in the school community, and sense of safety.

We first verify that our empirical strategy identifies a sizable change in social mixing for high-gap students—our sample of interest. We measure social mixing through cross-group exposure rates, i.e., the share of high-SES peers among same-grade schoolmates of low-SES students and *vice versa*. Over the three years following program implementation, exposure rates remained stable in control schools, whereas students in treatment sites experienced a pronounced increase in cross-group exposure. On average, low-SES students in treatment sites were exposed to around 35% high-SES peers after implementation, while their high-SES counterparts were exposed to approximately 50% low-SES peers, compared with 23% and 40%, respectively, in the control group. These are large treatment effects: they close approximately two-thirds of the gap between baseline socioeconomic compositions and the site-level perfect-mixing benchmarks. Importantly, we observe similar gains in cross-group exposure at the classroom level, confirming that social mixing extended into students' everyday social and learning environments. This shift in peer composition was accompanied by changes in peers' average academic achievement and relative rank, reflecting the fact that low-SES students are, on average, lower-achieving than high-SES students. However, we find that the desegregation measures had little impact on other dimensions of students' educational environment, including school and teacher characteristics.

Second, we show that increased social mixing significantly affected students' social interactions, attitudes, and socio-emotional outcomes. Students in the treatment sites, especially those from high-SES backgrounds, report more socially mixed friendships, though the effects represent about half of the mechanical change in exposure—consistent with persistent social homophily in friendship formation. Low-SES students also show improvements in social attitudes relative to the control group, particularly in cooperative norms (+0.15 standard

[2]In France, legal restrictions prohibit the collection of data on students' ethnic background. Accordingly, our analysis focuses on socioeconomic background, and we rely on external administrative data to document its correlation with immigration background (see Section 2).

deviations—hereafter, s.d.), prosocial behavior (+0.09 s.d.), optimism about social mobility (+0.13 s.d.), rejection of ethnic discrimination (+0.17 s.d.), and redistributive values (+0.05 s.d.). These sizable effects are consistent with the program's goal of fostering social cohesion. Beyond social attitudes, social mixing also improves several dimensions of personal and social well-being. The only significant negative treatment effect concerns high-SES students, who report feeling 0.15 s.d. less safe inside and around the school. Otherwise, most of their socio-emotional outcomes remain unchanged, and they even exhibit higher academic self-concept (+0.25 s.d.) and a stronger growth mindset (+0.13 s.d.) than their control-group counterparts. The positive effect on academic self-concept is consistent with relative rank effects, as high-SES students find themselves surrounded by lower-achieving peers on average. For low-SES students, academic self-concept shows a negative, albeit insignificant, point estimate; yet they experience large gains in perceived school climate (+0.10 s.d.), sense of safety (+0.18 s.d.), trust in the school community (+0.08 s.d.), and quality of peer relationships (+0.24 s.d.). Overall, these findings suggest that social mixing at school benefits students not only by strengthening social cohesion, but also by improving important aspects of socio-emotional well-being.

Third, our results show that increased social mixing does not come at the expense of academic performance. We find no statistically significant effects on standardized test scores for either low- or high-SES students. Nor do we observe any impact on school-related behaviors, including absences, lateness, and disciplinary sanctions. Turning to teacher-assigned grades, we find that outcomes for low-SES students remain unchanged, while high-SES students in treatment schools have a 0.13 s.d. higher GPA than their control-group counterparts. This pattern is consistent with a big-fish-little-pond effect, whereby high-SES students benefit from an improved relative academic standing in a more heterogeneous peer environment, which in turn may elicit more favorable teacher grading. On balance, increased social mixing thus appears to be, if anything, academically beneficial for high-SES students, while leaving low-SES students unaffected.

Related literature. This paper is related to several strands of the literature. First, it contributes to a growing body of work on educational interventions designed to foster social cohesion by cultivating prosocial behaviors, perspective-taking, and a spirit of cooperation among students. Alan et al. (2021) show that a perspective-taking program implemented in ethnically diverse Turkish schools in the wake of the Syrian refugee crisis significantly reduced violent incidents and increased trust and reciprocity among students. Algan et al. (2022) demonstrate that an early-childhood intervention targeting prosocial behavior among disadvantaged boys generated sustained improvements in trust during adolescence and long-term gains in labor market outcomes. Wu et al. (2023) show that providing incentives for high-achieving students to help their low-achieving deskmate improves their agreeableness and extraversion. Relatedly,

Algan et al. (2013) link collaborative teaching practices to student beliefs about cooperation, and Briole et al. (2025) show that a multi-country civic education program enhanced social behavior, academic performance, and the diversity of students' friendship networks. Taken together, these studies establish that prosocial attitudes among adolescents are malleable and can be durably shaped through targeted educational programs. Our paper departs from this literature in a fundamental way: rather than implementing specific interventions targeting students or teachers, we show that changing the *composition* of students' peer environment—through social mixing—can, on its own, generate comparable improvements in social cohesion and socio-emotional well-being.

Second, we contribute to the literature on peer effects on contemporaneous student outcomes—we discuss the literature on long-term outcomes separately below. A large body of work has examined how peer composition in educational settings affects academic achievement (see Epple and Romano, 2011; Sacerdote, 2011, 2014, for surveys).[3] On balance, this literature finds null or small-sized average effects of peer composition on test scores or GPA, though several studies document some nonlinearities (e.g., Hoxby and Weingarth, 2005; Imberman et al., 2012; Burke and Sass, 2013). Consistent with this body of evidence, we find no statistically significant effects of changes in peer socioeconomic composition on standardized test scores. A parallel literature studies peer effects on social outcomes by exploiting variation in dormitory roommate assignments, and finds that sharing a room with a peer from a different socioeconomic or ethnic group improves cross-group friendships, empathy, and intergroup attitudes (e.g., Boisjoly et al., 2006; Camargo et al., 2010; Corno et al., 2022; Zárate, 2023). Comparatively little is known, however, about how social mixing in schools affects socio-emotional outcomes and social attitudes—a gap that is consequential given robust evidence that such skills are strong predictors of subsequent educational choices and labor market success (see Algan and Huillery, 2025, for a survey). A notable exception is Rao (2019), who shows that a quota policy granting disadvantaged students access to elite private schools in Delhi increases prosocial behavior and reduces discrimination among their wealthier peers. Our paper innovates by providing the first comprehensive evidence on the joint effects of social mixing on academic achievement, socio-emotional well-being, and social attitudes, leveraging a desegregation program that simultaneously reshuffles peer composition for both low- and high-SES students in a real-world school setting.

Third, our findings speak to a growing literature on the role of social capital and school networks in shaping long-term outcomes and intergenerational mobility. Chetty et al. (2022a,b)

[3]Most studies draw on quasi-random variation in peer characteristics across cohorts within schools (e.g., Hoxby, 2000; Ammermueller and Pischke, 2009) or admission cutoffs that generate discontinuous changes in peer groups (e.g., Dobbie and Fryer, 2014; Abdulkadiroğlu et al., 2014). Closer to our setting, a second group leverages policy-induced variation in the socioeconomic composition of peers, including court-ordered desegregation (e.g., Angrist and Lang, 2004; Billings et al., 2014), immigration shocks (e.g., Gould et al., 2009; Hunt, 2017), or the inflow of displaced students following natural disasters (Imberman et al., 2012).

show that the degree of cross-class interaction in social networks is among the strongest predictors of upward mobility in the United States. A key insight from this literature is that exposure to more privileged peers generates long term gains that do not operate mainly through improvements in academic performance. For example, the Moving to Opportunity experiment documents substantial long-run benefits for children who relocate early from high- to lower-poverty neighborhoods, despite no detectable effects on academic achievement (Sanbonmatsu et al., 2006; Chetty et al., 2016). This pattern recurs across a number of studies showing that changes in peer composition have modest effects on short-run academic outcomes but significantly influence later outcomes such as enrollment in selective higher education programs, access to top-tier jobs, crime, and intergenerational mobility (Deming, 2011; Billings et al., 2014; Bertoni et al., 2020; Chetty et al., 2020; Michelman et al., 2022; Billings and Hoekstra, 2023; Chetty et al., 2023; Cattan et al., 2025; Barrios-Fernández et al., forthcoming). Cattan et al. (2025) further show that these effects operate primarily through students' university application decisions, suggesting that the long-run returns to social or ability mixing arise largely through social capital channels. What remains underexplored in this literature, however, are the socio-emotional mechanisms through which social mixing operates, as most studies focus on long-run outcomes without directly observing the intermediate channels. Our paper provides direct evidence on these mechanisms: we show that school desegregation improves cooperative attitudes, cross-group friendships, optimism about social mobility, and attitudes towards ethnic discrimination. The absence of short-term effects on academic achievement is consistent with the view that the long-run consequences of social mixing operate chiefly through socio-emotional development and social capital formation—implying that evaluations focused narrowly on short-run test scores are likely to substantially understate its broader social and economic returns.

Organization. The remainder of the paper is organized as follows. Section 1 describes the institutional context of the French desegregation program. Section 2 presents the research design and data. Section 3 reports the main findings on the effects of the policy-induced increase in cross-group exposure on friendship formation, socio-emotional outcomes, social attitudes, and academic achievement. Section 4 presents robustness checks and heterogeneity analyses. Section 5 concludes.

1 Institutional Background

This section provides an overview of the French educational system, with a focus on middle schools and the institutional features relevant to the 2015 desegregation program.

1.1 The French Education System

Educational stages. At the time the reform was adopted, schooling in France was compulsory for children aged 6 to 16, with the school year running from September to June.[4] The system is organized into five years of elementary school (Grades 1 to 5), four years of middle school (*collège*, Grades 6 to 9), and three years of high school (*lycée*, Grades 10 to 12). Throughout middle school, students follow a unified and comprehensive curriculum, culminating in the *Diplôme national du brevet* (DNB) exam at the end of Grade 9. Tracking begins at the high school level, with approximately two-thirds of students enrolling in general upper secondary education and the remainder pursuing vocational education in specialized high schools.

Assignment to middle schools. Education in France is predominantly public, state-funded, and managed locally by education regions (*académies*) and administrative districts (*départements*).[5]. Students are assigned to public elementary and middle schools based on their place of residence, with catchment areas defined by the *département*—which is also responsible for the infrastructure and material operation of public middle schools. Each residential address is thus associated with a specific elementary and a specific middle school. Parents may request exemptions to enroll their children in other schools, but such exemptions are tightly regulated.[6] Alternatively, parents may opt for private schooling, which accounts for 21% of middle school enrollment (MEN-DEPP, 2024). Most private schools receive public funding in exchange for following the national curriculum and employing state-paid teachers, allowing them to charge relatively modest tuition fees, typically between 1,000 and 2,000 euros per year. Unlike public schools, private schools are not subject to catchment area constraints and may select students based on their own admission criteria, resulting in a student body drawn disproportionately from higher socioeconomic backgrounds than in public schools.

Teachers' assignment to middle schools. The assignment of teachers to public schools is centrally managed. Teachers submit rank-ordered preferences over *académies* and schools, while the administration assigns priorities using a point system based primarily on seniority, tenure at the current school, experience in disadvantaged schools, and family considerations such as spousal reunification. Teachers and schools are then matched using a variant of the deferred acceptance mechanism. Salaries are largely determined by a national pay scale: teachers with the same certification and experience earn nearly identical wages regardless of their school—except modest additional compensation for those teaching in disadvantaged schools. As a

[4] In 2019, the compulsory school starting age was lowered to 3.

[5] The boundaries of the 22 national education regions (*académies*) and the 96 administrative districts (*départements*) in metropolitan France are shown in Figure 2

[6] In 2017, an estimated 13% of middle school students attended a public school outside their designated catchment area (Touahir and Maugis, 2021).

result, teacher allocation across schools depends heavily on seniority, and the specific features of the assignment mechanism—analyzed in detail by Combe et al. (2022)—substantially limit mobility across schools compared to decentralized teacher labor markets.

1.2 The 2015 School Desegregation Program

Socioeconomic segregation in middle school. Since the early 2000s, increasing attention has been paid to the high levels of socioeconomic segregation in French middle schools (Hébrard, 2002). This segregation reflects a combination of factors, including pronounced residential segregation, a widening socioeconomic divide between public and private schools, and the use of catchment area exemptions that, until the late 2000s, disproportionately benefited high-SES families. Several policy interventions were introduced in response, including a 2007 reform granting priority to low-SES students in exemption requests (Fack and Grenet, 2012) and the formal recognition of social mixing as a core objective of the public education system in 2013.[7] However, evaluations of these measures documented only limited effects (Fack and Grenet, 2013; CNESCO, 2016), leading the Ministry of Education to shift towards more locally designed and implemented interventions.

The 2015 desegregation program. In November 2015, the Ministry of Education announced a program aimed at promoting greater social mixing in public middle schools through locally adapted measures to reduce socioeconomic disparities across schools. The program pursued two main objectives: fostering social cohesion by increasing interactions among students from diverse social backgrounds, and reducing socioeconomic inequalities in educational achievement (Vallaud-Belkacem and Dubet, 2024). The program targeted socioeconomic background rather than ethnicity, as the latter is not recorded in French administrative data. Socioeconomic and ethnic backgrounds are nonetheless closely related: drawing on a Ministry survey of a nationally representative cohort of students entering Grade 1 in 2011 (MEN-DEPP, 2011), we find that 22% of low-SES students have at least one parent born in North Africa, Sub-Saharan Africa, or Turkey, compared with 10% of high-SES students. In densely populated areas, this share is substantially higher among low-SES students—reaching 47% in Paris, for instance, compared with 21% among high-SES students. As a result, increases in socioeconomic mixing within schools can be expected to translate into greater ethnic diversity as well.

The Ministry pre-identified clusters of geographically proximate public middle schools with contrasting socioeconomic compositions (hereafter referred to as sites) and tasked *académies* and *départements* with proposing measures to increase social mixing within them. A *vademecum* outlining potential policy tools was provided as guidance (MENESR, 2016). Educational and local political authorities played a central role in initiating discussions, designing interventions,

[7] Article L111-1 of the French Education Code, amended by Law No. 2013-595 of July 8, 2013.

and overseeing their implementation in collaboration with school principals. Participation in the program thus reflected the ideological alignment of these authorities with the reform's objectives, while teachers and parents were not involved in the decision-making process. Sociological studies of the reform document widespread reluctance among both groups, who perceived the policy as disruptive to established practices and a source of considerable uncertainty (Gimel and Oberti, 2020).

In February 2016, the Ministry announced that 22 sites would implement social mixing measures starting either in 2016–17 (12 sites) or 2017–18 (10 sites)—hereafter referred to as treatment sites. Spread across 12 *académies* and 12 *départements*, these sites comprise a total of 56 public middle schools, with each site encompassing between two and six middle schools. Appendix Table A1 provides detailed information on the measures adopted in treatment sites.

Types of actions. The social mixing measures implemented in the 22 treatment sites can be grouped into four main categories, which were sometimes combined within a given site.

(i) *Redrawing catchment areas*. Eight sites rebalanced schools' socioeconomic composition by redrawing their catchment areas. In Strasbourg, for instance, a highly deprived neighborhood was reassigned from a socially disadvantaged middle school to a more socially mixed one.

(ii) *School closures and openings*. Four sites closed middle schools serving highly disadvantaged students and reassigned their students to neighboring, more socially mixed schools. For example, in Toulouse, students from one of the most disadvantaged suburban middle schools were reassigned to considerably more affluent middle schools in the city center and surrounding municipalities, with a dedicated bus service provided for transportation. In Nancy, the closure of a disadvantaged school was combined with the opening of a new one, strategically located in a socially mixed neighborhood. School closures generally required redrawing the catchment areas of all remaining middle schools in the affected site.

(iii) *Merging catchment areas.* The most widely adopted strategy—used in nine sites—consisted of merging the catchment areas of two or more neighboring middle schools. In seven of these sites, students were assigned through a school choice procedure that balanced socioeconomic composition across schools while accommodating parental preferences. In two Parisian sites, for example, the *département* implemented a structured assignment procedure based on the student-proposing deferred acceptance algorithm (Gale and Shapley, 1962) with income-based quotas. The two remaining sites used an "alternate" assignment scheme, though implemented differently. In one site (Paris), incoming Grade 6 students were assigned to one of the two schools each year, remaining there throughout middle school; after a transition period, each school served only two grade levels (either Grades 6 and 8 or Grades 7 and 9), alternating

annually. In the other site (Bischwiller), students always entered the same school for Grades 6 and 7, then transferred to the other school for Grades 8 and 9.[8]

(iv) *Enhancing school attractiveness.* Five sites sought to draw higher-SES families toward disadvantaged middle schools by improving their appeal, through facility renovations creating more modern and welcoming environments, or through elective offerings specifically designed to attract higher-SES families. This strategy was particularly relevant in areas where catchment areas were already socioeconomically mixed but local schools faced substantial enrollment avoidance. In Strasbourg, for instance, one disadvantaged school introduced several bilingual tracks, which are especially popular among higher-SES families.

2 Research Design and Data

This section describes our research design for estimating the causal effects of increased social mixing on student outcomes. We present the sampling and estimation strategies, the data sources, and the tests used to assess the validity of the design.

2.1 Sampling Strategy

Because our objective is to estimate the effects of sizable changes in the socioeconomic composition of students' school environments, we targeted sites and students with substantial ex ante potential for social mixing, operationalized using pre-treatment characteristics.

Treatment sites. Not all 22 sites participating in the program exhibited meaningful potential for social mixing. In some cases, middle schools within a site were socioeconomically similar to begin with; in others, the interventions appeared too limited to generate substantial changes in schools' socioeconomic composition. We therefore retained the 10 sites with sufficient potential for achieving a measurable impact on social mixing.

To quantify the initial level of social segregation of each site, we classified students into two socioeconomic groups based on their first registered parent's occupation, recorded using the Ministry's two-digit occupation code. A student is assigned to the high-SES group if their parent's occupation requires a college degree, and to the low-SES group otherwise.[9] Using this classification, we computed the normalized exposure index (Bell, 1954; Farley, 1984) for each site over the 2010–2015 period. This index measures the difference in exposure to high-SES students between high- and low-SES Grade 6 students enrolled in public middle schools, where

[8] See Grenet and Souidi (2021) for a detailed account of the actions implemented in Paris (in French).

[9] The high-SES group includes company managers, executives, liberal professionals, engineers, intellectual professionals, arts professionals, technicians, and associate professionals. The low-SES group includes farmers, craft and trades workers, service and sales workers, manual workers, and individuals without employment. Administrative records frequently register only one parent or legal guardian, even if the child lives with two; we therefore use the occupation of the first adult registered in Ministry data to assign students to their socioeconomic group.

individual exposure is defined as the share of high-SES students among Grade 6 enrollees in a given middle school.[10] Formally, the normalized exposure index for site s is defined as $P^s = \mu^s_{H,H} - \mu^s_{L,H}$, where $\mu^s_{H,H}$ denotes the average exposure of high-SES Grade 6 students to high-SES peers, and $\mu^s_{L,H}$ the corresponding exposure for low-SES students, both averaged over the 2010–2015 period. For example, a normalized exposure index of 10 indicates that, within a given site, the average high-SES student attends a middle school with a share of high-SES peers that is 10 percentage points (pp) higher than that of the average low-SES student.

Figure 1 reports the normalized exposure index values for all 22 treatment sites, revealing three broad categories: (i) seven sites with high initial segregation—exposure gaps exceeding 10 pp; (ii) six sites with low segregation—exposure gaps below 2 pp; and (iii) nine sites with moderate segregation—exposure gaps between 5 and 8 pp. We included all sites with high initial segregation and excluded those with low segregation. From the intermediate category, we selected three sites judged likely to generate measurable changes in social mixing given the nature of their interventions: a school closure in Saint Malo, a catchment area merger in Rive-de-Gier, and the introduction of bilingual tracks in Strasbourg. Surveys were administered only in these 10 sites, as investing substantial resources in sites with little potential for social mixing seemed unwarranted. As discussed in Section 3.1, this ex-ante selection strategy proved effective: the average impact of social mixing interventions on students' cross-group exposure was large in the 10 selected sites, but negligible in the remaining 12.

Control sites. For each of the 10 treatment sites, we constructed a matched control site using a nearest-neighbor matching procedure. Denoting by n_s the number of public middle schools in treatment site s, we first identified all n_s-tuples of public middle schools satisfying the following criteria: (i) located in the same or adjacent *académie* as the treatment site; (ii) located in a municipality whose population falls within the same size bracket (out of 10) as the treatment site's municipality; (iii) not participating in the desegregation program; and (iv) with a maximum geographic distance between schools no greater than that of the treatment site. From this pool of candidate control sites, we then selected the n_s-tuple minimizing the sum of squared differences between (i) the socioeconomic composition of the most and least advantaged schools in the site, and (ii) the average Grade 9 exit exam score in the highest- and lowest-performing schools. These variables were computed annually over the 2010–2015 period and standardized to ensure equal weighting across dimensions. The 10 matched control sites are displayed in Figure 2 alongside their corresponding treatment sites. In Section 2.4, we show that treatment and control sites are well balanced across a broad set of observable characteristics, including several not explicitly targeted by the matching procedure.

[10] With only two groups, the absolute value of the normalized exposure index is invariant to the choice of the reference group, since $\mu^s_{H,H} - \mu^s_{L,H} = \mu^s_{L,L} - \mu^s_{H,L}$.

Sampled cohorts. While we use administrative data covering all cohorts to measure school composition, our analysis of the effects of social mixing on student outcomes relies primarily on a dedicated student survey administered to two cohorts: students who entered Grade 6 in sampled schools in September 2017 and September 2018, respectively. Depending on the site, these correspond to the first and second, or second and third, post-treatment cohorts. The 2017 cohort was surveyed once, in the Spring term of Grade 6 in 2018; a second wave planned for the Spring term of Grade 8 in 2020 was canceled due to the COVID-19 pandemic. The 2018 cohort was surveyed twice: first in the Spring term of Grade 6 in 2019, and again in the Spring term of Grade 8 in 2021. Survey responses were complemented with administrative records on academic performance and behavioral outcomes, collected directly from schools during field visits (see Section 2.3 for details on data sources and outcomes).

"High-gap" students. In treatment sites with substantial potential for social mixing, the program's effect on cross-group exposure is expected to vary markedly across students. In sites where catchment areas were redrawn, for example, exposure effects should be stronger for students from reassigned neighborhoods; in sites where disadvantaged schools were closed, they should be stronger among re-allocated students. Following a rationale analogous to that used for selecting treatment sites, our empirical analysis focuses on students with high ex ante potential for increased social mixing.

To identify these students using only predetermined characteristics, we construct a pre-treatment "exposure gap" for each student, which captures the change in cross-group exposure that students who attended the same elementary school as our sampled students would have experienced in the pre-treatment period had they been uniformly distributed across the site's public middle schools. For a low-SES student i in site s attending elementary school e and entering Grade 6 year t, the exposure gap in each year $t-5$ to $t-1$ is defined as the difference between (i) the share of high-SES students among Grade 6 enrollees in public middle schools across the site, and (ii) the share of high-SES students in the middle school to which students from elementary school e were assigned—the analogous definition applies *mutatis mutandis* to high-SES students. For each student in our two cohorts, we average this gap over years $t-5$ to $t-1$.[11] Our analysis then focuses on the 50% of low-SES and high-SES students within each treatment–control site pair with the largest pre-treatment exposure gaps, whom we refer to as "high-gap" students. In Section 4, we examine the robustness of our results to alternative thresholds and verify that exposure effects were small for "low-gap" students, whose pre-treatment exposure gap fell in the bottom 50%.

[11] We exclude two groups of students for whom the exposure gap is either undefined or too imprecisely measured: those whose elementary school sent no students to any of the site's public middle schools during the five pre-treatment years, and those whose elementary school sent fewer than five students. Together, these account for 16% of students who entered Grade 6 in our public middle schools in September 2017 or 2018.

2.2 Estimation Framework

To study the effects of the social mixing interventions on cross-group exposure, we consider five pre-treatment cohorts ($k = -5$ to $k = -1$) and three post-treatment cohorts ($k = 0$ to $k = 2$). For each matched site pair $p(s)$, $t = 0$ corresponds to the cohort entering Grade 6 in the year the treatment site implemented its actions—2016–17 for some sites and 2017–18 for others. We estimate the following specification separately for high-gap low-SES and high-gap high-SES students:

$$Y_{i,s,t} = \alpha + \sum_{k=-5}^{2} \beta_k \left(D_s \times \mathbb{1}_{\{t=k\}} \right) + \mathbf{X}'_{i,s,t}\boldsymbol{\eta} + \lambda_{p(s)} + \theta_t + \epsilon_{i,s,t}, \tag{1}$$

where $Y_{i,s,t}$ denotes the outcome of student i in site s in entry cohort t; D_s is an indicator equal to one if site s participated in the desegregation program and zero otherwise, interacted with cohort indicators $\mathbb{1}_{\{t=k\}}$; $\mathbf{X}_{i,s,t}$ is a vector of student-level covariates; $\lambda_{p(s)}$ are treatment–control site-pair fixed effects; θ_t are entry cohort fixed effects; and $\epsilon_{i,s,t}$ is an idiosyncratic error term clustered at the site level. The coefficients of interest, β_k, trace the evolution of cross-group exposure over time, allowing us to assess both pre-treatment trends and post-treatment effects of the social mixing interventions.

For all other outcomes, we pool observations across survey waves and estimate the causal effects of the social mixing interventions on student outcomes by comparing post-reform cohorts in treatment and control sites. We estimate the following model, again separately for high-gap low-SES students and high-gap high-SES students:

$$Y_{i,s,t} = \alpha + \beta D_s + \mathbf{X}'_{i,s,t}\boldsymbol{\eta} + \lambda_{p(s)} + \theta_t + \epsilon_{i,s,t}, \tag{2}$$

with the same notations as in equation (1). Under the assumption of ignorable treatment assignment within matched site pairs, β identifies the average treatment effect of the social mixing interventions.

We also estimate the effects on the *social gap* in outcomes using a difference-in-differences approach. We pool high-gap students across SES groups and augment equation (2) with an indicator for low-SES status and its interaction with the treatment indicator:

$$Y_{i,s,t} = \alpha + \beta D_s + \delta\, \text{LowSES}_i + \gamma \left(D_s \times \text{LowSES}_i \right) + \mathbf{X}'_{i,s,t}\boldsymbol{\eta} + \lambda_{p(s)} + \theta_t + \epsilon_{i,s,t}, \tag{3}$$

where γ measures the differential treatment effect for high-gap low-SES students relative to their high-SES counterparts.

The set of control variables $\mathbf{X}_{i,s,t}$ is selected by the double-LASSO procedure of Belloni et al. (2014), applied separately for each outcome and subgroup, with candidate controls drawn from

the pre-treatment and treatment-unaffected variables listed in Tables 2 and 3. Given the small number of clusters, we adjust p-values using the wild cluster bootstrap procedure of Cameron et al. (2008). To address multiple hypothesis testing across outcomes, we also report false discovery rate-adjusted q-values computed via the sharpened two-stage procedure introduced by Benjamini et al. (2006) and further discussed in Anderson (2008).

2.3 Data

Our study combines administrative data provided by the French Ministry of Education with survey and administrative data collected directly from schools, merged through a non-personal identifier created for the project by the Ministry's statistical office (MEN-DEPP). This subsection describes the data sources, the resulting sample sizes, and the key variables used in the analysis.

Ministry data. The Ministry's statistical office provided access to several administrative data sources, described below.

Sample frame. The ministry provides comprehensive registers covering all students enrolled in public and private schools in France (MEN-DEPP, 2025b). We use these registers to construct our sample frame of high-gap students entering Grade 6 in 2017–18 or 2018–19 in public middle schools located in treatment and control sites. Table 1 reports the resulting sample size: 6,466 students total, among whom 4,050 low-SES (Panel A) and 2,416 high-SES (Panel B). Some students subsequently left the sample due to residential mobility or changes in school enrollment, but attrition rates are consistent with national benchmarks and do not differ significantly between treatment and control groups.[12]

Student and school characteristics. The ministry registers provide detailed socio-demographic information—including gender, date of birth, whether the student was born in France, and parents' occupations—as well as comprehensive enrollment histories linking students to their elementary schools of origin, and class assignments. We use registers spanning 2011–12 to 2021–22 to construct measures of socioeconomic composition at both the grade and class levels; a grade comprises approximately 100 students and a class approximately 25.

National assessments. Academic performance is assessed nationally at the beginning and end of middle school through externally administered anonymous exams. The national assessment at the start of Grade 6 (MEN-DEPP, 2025d) serves as a baseline, while the national exam at the end of Grade 9 (MEN-DEPP, 2025c) allows us to evaluate the program's impact on academic performance at the end of middle school. The Grade 6 assessment was introduced post-treatment in 2017, whereas Grade 9 exam data are available pre-treatment and are therefore also used in the matching procedure described in Section 2.1. We recover scores for between

[12] Among low-SES students, attrition rates are 9%, 7%, and 9% in Grades 7, 8, and 9 respectively; the corresponding figures for high-SES students are 5%, 4%, and 4%.

90% and 97% of students in our sample frame (Table 1). For both assessments, we focus on French and Mathematics, using both absolute (standardized) scores and relative (within-school percentile rank) scores.

Teachers. The ministry also provided teacher characteristics (MEN-DEPP, 2025a), including age, tenure at the current school, and qualification level (low, medium, or high).[13] This dataset covers 2017–18 to 2020–21 and is used to examine the impact of the social mixing interventions on students' learning environment.

School registers. During school visits, we collected student-level administrative data from school registers, comprising teacher-assigned grades, absences, instances of lateness, and disciplinary sanctions. Data collection covers school years 2017–18 to 2020–21, yielding four years of observations for the first cohort and three years for the second. As reported in Table 1, response rates range from 92% to just above 100% of the sample frame—the small excess reflects students recorded in school registers but absent from Ministry records. We construct an annual GPA on a 0–20 scale in which each subject is weighted by its weekly instructional hours, then standardize this variable at the cohort–grade level using the mean and standard deviation of the control group. We also measure relative GPA using within-school percentile ranks. Finally, we construct a school behavior index following Anderson (2008), aggregating the annual number of absences, instances of lateness, punishments, and sanctions.[14]

Student survey. A 45-minute tablet-based survey was administered in class during regular teaching hours, under the supervision of the research team's field assistants. Surveys were conducted with Grade 6 classes in Spring 2018 and 2019, and with Grade 8 classes in Spring 2021; the 2020 wave was canceled due to the COVID-19 pandemic. Our first cohort was thus surveyed only in Grade 6, while our second cohort was surveyed in both Grades 6 and 8. To limit survey costs, all classes were surveyed in schools with at most four classes, and up to six randomly selected classes in larger schools. As reported in Table 1, between 80% and 86% of students in the sample frame were randomly selected to participate ("Targeted"), of whom 84% to 92% completed the questionnaire ("Survey data").

Within each surveyed class, students were randomly assigned in equal shares to either an academic test in French and Mathematics or a socio-emotional survey. The academic test used items drawn from the Ministry's own assessment tools, providing—unlike teacher-assigned grades—a comparable measure of performance across schools. Scores are standardized at the cohort–grade level using the mean and standard deviation of the control group; we also measure relative performance using within-school percentile ranks.

[13] The high category comprises teachers who passed the most competitive national recruitment exam, the *concours d'agrégation*; the medium category those who passed the *concours de certification*; and the low category teachers recruited through local procedures on short-term contracts.

[14] We use the `icw_index` Stata command of Bouguen and Varejkova (2020).

The socio-emotional questionnaire covered multiple dimensions of students' self-perceptions, social relationships, beliefs, and attitudes. We construct three composite outcomes—personal well-being, social well-being, and social attitudes—each aggregating sub-indices that are also reported separately to shed light on the more specific effects of social mixing. Sub-indices are constructed by standardizing item-level responses and averaging them, and indices are built analogously by aggregating the sub-indices, with all measures re-standardized at the cohort level. Personal well-being comprises four sub-indices: general well-being, academic self-concept, growth mindset, and behavioral self-concept. Social well-being comprises five: perceived school climate, sense of safety, trust in the school community, relationships with parents, and relationships with friends. Social attitudes comprises six: cooperative attitudes, prosocial behavior, optimism about social mobility, rejection of ethnic discrimination, rejection of gender discrimination, and redistributive values. The construction of all indices and sub-indices is described in Appendix B.

In addition, beginning with the second wave in Spring 2019, all students were asked "Who are your friends in your class?" and could nominate up to five classmates from a roster of all other students in their class, or select "None of these students." These responses are used to compute measures of the socioeconomic composition of each student's friendship network.

2.4 Validity of the Research Design

To assess the validity of our matching strategy, we conduct a series of internal validity tests verifying that students enrolled in treatment sites are comparable to those in their matched control sites throughout the study period.

Site-level cross-group exposure. We begin by examining whether the socioeconomic composition of treatment and control sites remained comparable over time, estimating equation (1) with cross-group exposure as the outcome. By construction, our matching strategy ensures similar proportions of low- and high-SES students across sites prior to treatment. Since the program redistributed students within sites rather than across them, these proportions should remain balanced after implementation. A potential threat would arise if high-SES families responded to the program by avoiding treatment sites—for instance, by enrolling their children in private schools, transferring to public schools outside the site, or relocating. Such selective attrition would reduce the share of high-SES students in treatment sites relative to control sites and undermine internal validity.

Figure 3 provides no evidence of such avoidance behavior. Panel A reports site-level exposure of low-SES students to high-SES peers; Panel B reports the reverse, both for high-gap students in our sample. Cross-group exposure is stable before and after treatment, and closely aligned between treatment and control sites. Among high-gap low-SES students,

exposure to high-SES peers remains at approximately 40% throughout the study period; among high-gap high-SES students, exposure to low-SES peers remains at approximately 55%. This stability indicates high program compliance rather than selective opt-out by high-SES families. Corroborating evidence is presented in Appendix Figure F1, which tracks private school enrollment at Grade 6 entry among high-gap students from elementary schools feeding into treatment and control middle schools.[15] Private school enrollment rates at Grade 6 entry are comparable between treatment and control groups and show no significant change following treatment implementation, indicating no differential sorting into private schools in response to the program. Taken together, these patterns indicate high program compliance and no differential sorting by high-SES families, supporting the continued balance between treatment and control groups.

Balance tests. Second, we assess balance in observable characteristics between high-gap students in treatment and control sites by estimating equation (2) separately for low- and high-SES students. Table 2 reports balance tests for individual student characteristics, Table 3 for characteristics of their elementary schools of origin, and Table 4 for the socioeconomic and political characteristics of the neighborhoods where they reside.

Overall, the balance tables indicate a high degree of comparability between treatment and control students. Of the 48 mean differences tested, only four are statistically significant—a frequency consistent with what would be expected by chance when comparing randomly drawn groups from the same population—and their magnitudes are small. These results support the assumption that assignment to treatment and control sites is effectively as good as random, which is consistent with the institutional context of the program: participation was determined by education districts on the basis of site-level considerations, rather than by the degree of acceptance among parents and teachers.

The descriptive statistics reported in Table 2 nonetheless reveal sharp contrasts between socioeconomic groups. While the vast majority of high-gap students in both groups were born in France, this share is lower among low-SES students (88%) than among high-SES students (96%). Differences are particularly pronounced for the socioeconomic index[16], which averages 74 for low-SES students and 149 for high-SES students, both diverging substantially from the national average of 105 (Dauphant et al., 2023). Economic hardship is further reflected in scholarship eligibility rates (60% among low-SES students versus 8% among high-SES students) and family structure: low-SES students are more than three times as likely to live in single-parent households (17% versus 5%). These socioeconomic gaps are further mirrored

[15]Feeder elementary schools are defined as those that sent at least five students to a public middle school in our sample during the five pre-treatment years.

[16]The socioeconomic index (*indice de position sociale*), constructed by the Ministry from the occupations of students' legal guardians, measures how conducive a student's family environment is to learning; higher values indicate more favorable conditions.

in academic outcomes prior to middle school entry, with higher grade retention among low-SES students (11% versus 2%) and substantially lower performance on the Grade 6 national assessment (average percentile rank of 41 versus 69).

Table 3 reports characteristics of students' elementary schools, averaged over the five pre-treatment years. Although disparities are smaller than at the individual level, they nonetheless reflect clear socioeconomic segregation. Elementary schools attended by low-SES students have a markedly lower average socioeconomic index (87) than those attended by high-SES students (126), as well as higher scholarship eligibility rates (38% versus 12%). A striking difference concerns Priority Education status (*Réseaux d'Éducation Prioritaires* or REP), which is an official designation from the Ministry of Education indicating that schools serve highly disadvantaged student populations and catchment areas; REP+ denotes the most disadvantaged tier. Among elementary schools attended by low-SES students, 21% are classified as REP and 26% as REP+, compared with 1% and 0%, respectively, among schools attended by high-SES students.

Table 4 documents differences in the local socioeconomic and political environments of high-gap students. Neighborhoods of low-SES students are characterized by lower average living standards and higher poverty rates (measured at the 200-meter census grid-cell level) and a higher share of individuals born outside the EU (measured at the 1-km census grid-cell level) than those of high-SES students. Political preferences also differ systematically: areas where high-SES students live show higher support for centrist (E. Macron) and right-wing (F. Fillon) candidates in the first round of the 2017 presidential election, while areas where low-SES students live show higher vote shares for far-right (M. Le Pen) and left-wing (J.-L. Mélenchon) candidates, as well as higher abstention rates.

Taken together, these descriptive statistics paint a picture of sharp socioeconomic segregation: high-gap low-SES and high-SES students inhabit markedly different educational, economic, and political environments—yet, as shown above, treatment and control groups remain closely comparable within each SES category across all of these dimensions.

Pre-treatment within-school cross-group exposure. Our third validation test examines pre-treatment cross-group exposure at the grade level for students in treatment and control middle schools. It assesses whether, absent the program, students from each SES group would have experienced similar exposure to the other group upon entering middle school, regardless of subsequent treatment status. We focus on high-gap Grade 6 students enrolled in the sampled middle schools during the five pre-treatment years—2011–2015 for schools in sites treated in 2016, and 2012–2016 for those treated in 2017.

The white-background section of Figure 4 displays these pre-treatment exposure patterns at the grade level. Panel A reports exposure of low-SES students to high-SES peers; Panel B reports the reverse. In both panels, pre-treatment exposure rates are stable over time and

statistically indistinguishable between treatment and control groups, indicating no pre-existing differences in middle school socioeconomic composition, either in levels or in trends.

As expected, however, selected middle schools exhibit marked social segregation prior to treatment. School-level exposure rates fall well below site-level rates: low-SES students' exposure to high-SES peers averages 23% at the school level, compared with approximately 40% at the site level, while high-SES students' exposure to low-SES peers averages 40% versus approximately 55%.

In summary, these validity checks indicate that our matching strategy successfully constructs an appropriate counterfactual for students in treatment schools, supporting the interpretation of post-treatment differences as causal effects of the social mixing interventions.

3 Results

We first examine the effectiveness of the social mixing interventions at increasing cross-group exposure for high-gap students in the selected sites, at both the grade and class levels. We then turn to the effects of increased social mixing on a broad set of outcomes—friendships, well-being, social attitudes, and academic outcomes—estimated separately for low- and high-SES students.

3.1 Effectiveness of the Social Mixing Interventions in the Selected Sites

Cross-group exposure. Figure 4 presents cross-group exposure rates for high-gap students in treatment and control middle schools, where each student's exposure is computed using a leave-one-out procedure. Panel A reports low-SES students' within-school exposure to high-SES peers at the grade level; Panel B reports the reverse. The white-background areas display the pre-treatment rates, while the gray-background areas display the post-treatment rates.

In control schools, exposure rates remain stable throughout the event window. By contrast, treatment schools—whose pre-treatment exposure rates closely align with those of control schools—experience sizable increases in cross-group exposure of 10 to 15 pp depending on the year after treatment, sustained across post-treatment years and for both SES groups. As a result, low-SES students in treatment schools are exposed on average to approximately 35% high-SES peers, while high-SES students are exposed to around 50% low-SES peers.

These effects are substantial in magnitude. For both SES groups, the program closes roughly two-thirds of the gap between baseline school-level cross-group exposure rates—23% for low-SES students (exposure to high-SES peers) and 40% for high-SES students (exposure to low-SES peers)—and the site-level benchmarks corresponding to full mixing (40% and 55%, respectively). These results confirm that the social mixing interventions were effective at reducing segregation in the most socially segregated sites.

As a complementary check, we estimate exposure effects in the 12 sites excluded from our study, applying the same matching procedure and high-gap definition. Figure G1 shows that pre-treatment exposure rates are well balanced between treatment and control schools, and that post-treatment effects are close to zero and statistically insignificant. This confirms that our site-selection strategy successfully targeted the sites with the greatest potential for social mixing.

Educational environment. We next examine how the social mixing interventions affected students' educational environment at the school level. Table 5 reports estimates of the program's impact on peer composition and on school- and teacher-level characteristics over students' middle school years.[17]

Most school-level (Panel A) and teacher-level (Panel B) characteristics remain stable for treatment students, including average distance between elementary and middle schools, school size, class size, and teacher qualification levels. Although some actions may have increased commuting distances in specific cases, the effect on the average student is negligible. The program did, however, modestly affect teacher age and tenure: high-SES students in treatment sites are exposed to slightly younger teachers with less seniority, with teacher age and tenure falling by 1.58 and 1.06 years, respectively. Changes for low-SES students go in the opposite direction but are smaller and statistically insignificant. The program thus narrowed pre-existing SES gaps in teacher characteristics, contributing to a more equalized educational environment across socioeconomic groups. These changes are nonetheless modest, consistent with features of the French centralized teacher labor market (see Section 1) that limit mobility across schools and explain both the small baseline differences in teacher characteristics across SES groups and the limited scope for teacher reallocation in response to the program. Moreover, the literature finds relatively small returns to teacher experience on student achievement (e.g., Rockoff, 2004; Rivkin et al., 2005; Wiswall, 2013), suggesting that these modest shifts in teacher characteristics are unlikely to have first-order effects on student outcomes.

Peer characteristics. Panel C of Table 5 reports the program's impact on peer characteristics. As intended, treatment significantly altered the socioeconomic composition of peer groups. Low-SES students experienced an 11-pp decrease in the share of low-SES schoolmates within their grade, while high-SES students experienced a 14-pp increase—changes that together close roughly two-thirds of the baseline socioeconomic composition gap between the two groups. These magnitudes are consistent with the exposure patterns documented in Figure 4 for Grade 6 entrants and indicate that the shifts in socioeconomic composition persisted

[17]This analysis draws on Ministry administrative data covering all middle school years for the two cohorts entering Grade 6 in 2017–18 and 2018–19, allowing us to capture effects over the full period rather than Grade 6 alone.

throughout middle school. Importantly, school-level changes translate almost one-to-one to the classroom level, with comparable shifts of -11 pp and $+13$ pp for low- and high-SES students, respectively. This preservation of social mixing at the classroom level is particularly noteworthy, as peer interactions among middle school students in France take place predominantly within classrooms (Avvisati et al., 2014).

The program also significantly reduced the clustering of high-SES students from the same elementary school, both at the school and classroom levels. In the control group, approximately 20% of high-SES students' classmates had attended the same elementary school; the program reduced this share by 6 pp—a 30% decline—indicating that social mixing operated partly through the dispersion of high-SES students across nearby middle schools.

Beyond social origins, the program also reshuffled the academic composition of peer groups. Using average percentile ranks on the Grade 6 national assessment— administered at the start of the school year and thus unaffected by treatment—we find substantial changes in peer academic profiles: the average test score of low-SES students' peers increases by 6 percentile ranks in treatment schools, while that of high-SES students' peers decreases by 9 percentile ranks. These shifts reduce the baseline gap in peer academic composition by roughly three-quarters. As with socioeconomic composition, school-level changes are closely mirrored at the classroom level, confirming that the program successfully rebalanced academic peer environments where students primarily interact.

Overall, the social mixing interventions markedly transformed students' peer environments, harmonizing both social and academic compositions across SES groups. While high-SES students were also exposed to slightly younger teachers with lower tenure, these differences are small and unlikely to produce detectable effects on outcomes. The following sections examine the academic and non-academic consequences of these shifts in peer composition.

3.2 Impact on Friendships, Well-Being, and Social Attitudes

We now turn to the central question of how the harmonization of social and academic peer profiles affected student well-being and social attitudes. This section presents treatment effects on a range of outcomes designed to capture the program's objectives of fostering cooperation, tolerance, and social cohesion.

Social diversity of friendships. Figure 5 examines how the social mixing interventions affected relationships between students from different socioeconomic backgrounds through the lens of friendship networks. The results reveal significant but moderate changes in friendship composition, relative to what would be expected under random friendship formation among classmates. Among low-SES students in treatment schools, the share of low-SES friends decreases by 5 pp from a baseline of 77%, while among high-SES students it increases by 9 pp

from a baseline of 37%. By comparison, under random friendship formation, the observed changes in classroom composition—a 10-pp decrease in the share of low-SES classmates for low-SES students and a 14-pp increase for high-SES students—would translate one-to-one into friendship composition. The fact that friendship changes are smaller in magnitude than changes in classmate composition points to the presence of friending bias: low- and high-SES students are less likely to form cross-SES friendships than would be predicted by exposure alone.

Personal well-being. Figure 6 shows a sizable increase in the personal well-being index for high-SES students (+0.20 s.d.). Figure 7 decomposes this effect across its components. The program does not significantly affect general well-being for either SES group. Point-estimates are positive but not statistically significant, suggesting that social mixing does not compromise students' overall well-being—an important consideration for policymakers. For high-SES students, however, the program generates significant improvements in academic self-concept (+0.25 s.d.) and growth mindset (+0.13 s.d.). These gains are consistent with the relative performance gains documented in Panel B of Figure 10, and align with a large literature on relative rank effects showing that students' self-perceptions and behaviors are shaped by their position within the achievement distribution (e.g., Elsner and Isphording, 2017; Murphy and Weinhardt, 2020; Pagani et al., 2021; Del Bono et al., 2025). Symmetrically, low-SES students show a negative though statistically insignificant effect on academic self-concept (−0.14 s.d.), consistent with relative rank effects operating in the opposite direction. Taken together, these results suggest that exposure to more diverse peer environments leads high-SES students to attribute academic success more to effort and perseverance and less to social advantage—reflecting a more growth-oriented view of achievement.

Social well-being. Figure 6 shows a significant increase in the social well-being index for low-SES students (+0.18 s.d.). Figure 8 decomposes this effect across its components. For high-SES students, the overall index remains unchanged, masking two offsetting effects: a decline in sense of safety (−0.15 s.d.) alongside positive, though statistically insignificant, improvements in perceived relationships with parents and friends.

The reduction in sense of safety among high-SES students may reflect differences in behavioral norms across socioeconomic groups. Consistent with this interpretation, Panel C of Figure 10 shows that low-SES students score 0.19 s.d. below the mean on the behavior index, compared with 0.27 s.d. above the mean for high-SES students. Importantly, this decline does not translate into adverse effects on personal well-being or perceptions of school climate among high-SES students, both of which remain stable. For low-SES students, the improvement in overall social well-being is driven by gains in sense of safety (+0.18 s.d.), trust in the school

community (+0.08 s.d.), and perceived quality of friendships (+0.24 s.d.). Considered jointly, these results point to clear improvements in social well-being for low-SES students, while effects for high-SES students are broadly neutral.

Social attitudes. Figure 6 also shows a significant increase in the social attitudes index for low-SES students (+0.20 s.d.). Figure 9 breaks down this effect by component. High-SES students exhibit no significant changes across any dimension. By contrast, low-SES students experience significant improvements across multiple dimensions: cooperative attitudes (+0.15 s.d.), prosocial behavior (+0.09 s.d.), optimism about social mobility (+0.13 s.d.), rejection of ethnic discrimination (+0.17 s.d.), and redistributive values (+0.05 s.d.). These gains are particularly noteworthy given that low-SES students, at baseline, express less rejection of ethnic and gender discrimination and display lower redistributive values than their high-SES peers. These effects align closely with the program's objective of fostering social cohesion and may yield both immediate benefits, through enhanced social interactions and more positive expectations, and longer-term effects extending into adulthood.

Effect of peers' social origin or academic performance? The treatment effects on socio-emotional outcomes can plausibly be attributed to changes in the peer environment, but an important question is whether these effects stem from peers' social background, their academic profile, or both. In Appendix C, we examine how estimated treatment effects change when controlling for peers' baseline academic performance, measured by individual scores on the Grade 6 national assessment. Comparing coefficients with and without this control provides insight into the relative role of peers' academic performance.

We find very little difference between the two specifications, suggesting that shifts in peers' academic profile do not drive the socio-emotional effects of social mixing. The one exception concerns the effect on high-SES students' academic self-concept, which shows a noticeable reduction—an expected result, given that academic self-concept is precisely the outcome most directly tied to students' relative rank in the achievement distribution. Even so, a significant increase of +0.18 s.d. in academic self-concept remains after controlling for peers' academic performance. All other treatment effects are virtually unchanged. Taken together, these results indicate that the observed socio-emotional effects arise primarily from changes in peers' social origin rather than their academic profile.

3.3 Impact on Academic Outcomes

Figure 10 reports the effects of social mixing on academic outcomes along three dimensions: absolute performance, measured using standardized test scores (from both the student survey and the Grade 9 national exam) and GPA (Panel A); within-school relative performance,

measured by percentile ranks on standardized test scores and GPA within each school and grade level (Panel B); and school behavior, captured by a synthetic index combining absences, lateness, and disciplinary sanctions (Panel C).

The program had little impact on absolute academic performance. As shown in Panel A, standardized test scores are unaffected for both SES groups, with estimates close to zero and statistically insignificant, suggesting that the combined changes in peer composition and school environment did not alter overall academic learning during middle school. GPA outcomes follow the same pattern for low-SES students, whose grades remain unchanged. High-SES students in treatment schools, however, experience a modest GPA increase of $+0.13$ s.d. relative to their counterparts in control schools, statistically significant at the 10% level.

Panel B shows that the program primarily affected relative performance within schools. High-SES students in treatment schools rank approximately 10 percentile points higher than comparable students in control schools on both standardized tests and GPA. Conversely, low-SES students experience a small decline in relative test rankings of around 5 percentile points, although no significant change is observed in their GPA. Finally, Panel C indicates that the program had no discernible effects on school behavior for either group.

Taken together, these results show that social mixing altered the relative performance hierarchy within schools—improving the standing of high-SES students while slightly reducing that of low-SES students. The modest GPA increase among high-SES students suggests that teachers may have adjusted grades upward in response to their improved relative standing, without penalizing low-SES students. However, despite the significant improvement in academic self-concept among high-SES students documented in Section 3.2, these shifts in relative performance do not translate into changes in absolute test scores or school behavior for either group.

4 Robustness Checks and Heterogeneity Analysis

This section examines the robustness of our findings to the definition of high-gap students and explores heterogeneity in treatment effects by gender and baseline academic performance.

4.1 Robustness Checks

We begin by assessing the sensitivity of our results to the definition of high-gap students, varying the threshold used to identify them. We then turn to the subset of excluded "low-gap" students to evaluate whether the program generated any effects for individuals with more limited scope for changes in peer exposure.

Alternative thresholds for defining high-gap students. Our main analysis focuses on the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to the other SES group (see Section 2). To assess the sensitivity of our results to this threshold, we consider two alternatives: 40% and 60%. By construction, students in the top 40% have larger baseline exposure gaps on average, while those in the top 60% have smaller ones.

Results are reported in Appendix D. As expected, treatment effects on cross-group exposure at both the school and class levels are slightly larger for the top 40% (Table D1) and slightly smaller for the top 60% (Table D4) than for the top 50%, but remain of similar magnitude. Reassuringly, effects on student outcomes are statistically similar across thresholds: point estimates are close, confidence intervals overlap, and all main conclusions hold. Some effects that fell just short of conventional significance levels at the 50% threshold become statistically significant under alternative thresholds. In particular, low-SES students in the treatment group exhibit a slightly higher share of high-SES friends (Tables D1 and D4), and lower academic self-concept (Tables D2 and D5) relative to the control group. These patterns reinforce our interpretation that changes in relative standing affect perceived academic ability positively for high-SES students and negatively for low-SES students without affecting absolute achievement. The negative effect on low-SES students' academic self-concept may warrant particular attention from policymakers seeking to promote social mixing.

Treatment effects on "low-gap" students. Our main analysis excludes the 50% of students with the smallest predicted exposure gaps. For these "low-gap" students, the scope for changes in peer composition was limited: their school-level exposure to the other SES group was close to the site-level average, with some slightly below and others slightly above—the latter including low-SES students enrolled in the most advantaged schools and high-SES students in the most disadvantaged schools within a site. Consequently, the impact of social mixing on peer composition for low-gap students as a whole could go in either direction and is expected to be small on average.

Results are reported in Appendix Tables D7 to D9. For low-gap high-SES students, we find no significant changes in peer composition (Table D7), academic outcomes (Table D9), or aggregate socio-emotional outcomes (Table D8, Panel A). Some negative effects appear in specific socio-emotional components—general well-being, sense of safety, cooperative attitudes (each around -0.11 s.d.), and optimism about social mobility (-0.13 s.d.)—but only the last remains significant after correcting for multiple hypothesis testing (Table D8, Panels B, C and D). Given the absence of peer composition changes for this group, these small effects are unlikely to reflect peer mechanisms and may instead stem from broader discussions or concerns surrounding the program within families or schools.

For low-gap low-SES students, the program slightly increases exposure to low-SES peers by around 6 pp at both the school and classroom levels (Table D7)—a modest shift in the opposite direction relative to high-gap students. Consistently, these students experience relative academic gains of 4 to 5 percentile ranks in within-school rankings on both standardized tests and GPA, and a +0.13 s.d. increase in average GPA (Table D9). As in the main analysis, standardized test scores remain unchanged, suggesting that teachers responded to relative performance shifts by adjusting grades upward rather than penalizing relatively weaker students. Composite socio-emotional outcomes are unaffected (Table D8, Panel A), and changes in most components do not survive multiple hypothesis testing corrections, with the exception of a 0.10 s.d. increase in rejection of ethnic discrimination (Table D8, Panels B, C and D).

Overall, low-gap students are, as expected, far less affected by the program than high-gap students. They experienced little to no change in peer composition, no detectable effects on absolute academic achievement, and only limited, isolated socio-emotional effects. These findings confirm that our sampling strategy successfully identifies the students for whom the program generated the largest increases in social mixing, which constitutes the central focus of this paper.

4.2 Treatment Effect Heterogeneity

Finally, we examine treatment effect heterogeneity across two pre-defined subgroups that may plausibly respond differently to increased social mixing: gender (boys versus girls) and baseline academic performance (low- versus high-achieving students).[18]

By gender. Appendix Figures E1 to E3 report treatment effects for high-gap students separately by gender. One might expect boys, who tend to exhibit higher rates of disruptive behavior, to be more affected by changes in peer composition than girls, particularly with respect to academic behavior and outcomes. We find no such systematic pattern, however: across all outcome dimensions, point estimates are of similar magnitude for boys and girls.

One notable exception concerns personal well-being among high-SES students: the effect is twice as large for girls (+0.32 s.d.) as for boys (+0.14 s.d.), a difference driven by the academic self-concept component, suggesting that girls may be more sensitive to changes in relative academic standing when forming perceptions of their own ability.[19] Aside from this difference, treatment effects are remarkably similar across genders.

[18]We also explored a more flexible, data-driven approach using the Generic Machine Learning framework of Chernozhukov et al. (2025). The Best Linear Predictor (BLP) estimates, however, reveal no statistically significant heterogeneity in treatment effect, rendering further analysis using Sorted Group Average Treatment Effects (GATES) and Classification Analysis (CLAN) uninformative. We therefore focus on the pre-specified subgroups, which are of independent substantive interest.

[19]This is consistent with recent evidence by Del Bono et al. (2025) showing that girls' self-perceptions are more responsive to relative academic rank, particularly along dimensions related to confidence and internalizing skills.

By baseline academic performance. Appendix Figures E4 to E6 present treatment effects for high-gap students by baseline academic performance. Students are classified as low- or high-achieving based on whether their Grade 6 national assessment score falls below or above the median of their SES group, so that achievement is defined relative to peers with similar socioeconomic backgrounds.

One might expect heterogeneous responses along this dimension. High-achieving low-SES students might benefit more from exposure to higher-achieving peers, while high-achieving high-SES students might be adversely affected if increased mixing widens the gap between their performance and the classroom average. Consistent with this consideration, Panel A of Figure E6 shows that in the control group, high-achieving low-SES students perform at levels comparable to low-achieving high-SES students—and substantially below high-achieving high-SES students—confirming that baseline peer environments differ markedly across groups.

Despite these considerations, we find no meaningful heterogeneity by baseline academic performance. Treatment effects are quantitatively similar for low- and high-achieving students within each SES group across all outcome dimensions, suggesting that the effects documented above on friendships, socio-emotional outcomes, and academic performance hold regardless of students' initial academic standing.

5 Conclusion

This paper examines whether policy-induced social mixing in middle schools can improve social cohesion, socio-emotional development, and educational trajectories. Exploiting the French Ministry of Education's desegregation program and a matched comparison across treatment and control sites, we isolate the causal effects of substantial increases in cross-group exposure for students with the highest ex-ante potential for social mixing. Our results show that the program effectively reshaped peer environments, closing roughly two-thirds of the pre-existing SES exposure gap, and that these compositional changes translated into meaningful improvements in students' social experiences and attitudes. Low-SES students became more optimistic, more prosocial and more trusting, and reported a substantially improved sense of safety and quality of peer relationships. High-SES students experienced gains in academic self-concept and growth mindset, indicating that social mixing can shift perceptions of academic ability without detriment to school climate or other aspects of well-being. Importantly, we find no adverse effects on standardized test scores or school-related behaviors for either group, while GPA increases modestly for high-SES students. One nuance concerns academic self-concept: while high-SES students experience significant gains, low-SES students exhibit a negative though statistically insignificant effect, consistent with relative rank effects pulling in opposite directions for the two groups.

These findings carry direct implications for education policy. France's ambitious desegregation program, launched in the aftermath of the Charlie Hebdo attack, had the explicit goal of rebuilding social cohesion in a deeply polarized society. Our results suggest that this objective was well-founded: policies promoting greater social mixing in schools can meaningfully strengthen social cohesion by fostering cooperative attitudes, tolerance, trust, and more positive intergroup relationships—without generating academic losses. Locally designed, data-driven school assignment reforms therefore appear to offer a scalable approach to reducing social polarization, precisely the goal that motivated the French initiative. At the same time, our evidence underscores an important limitation: social mixing alone does not raise average academic achievement for either disadvantaged or advantaged students. Policymakers should thus view desegregation as a tool for strengthening civic and social outcomes, to be complemented by targeted academic interventions that more directly address students' learning needs.

Our study has several limitations that point to avenues for further research. First, we examine the effects of medium shifts in peer socioeconomic composition, on the order of a 10–15 percentage-point increase in cross-group exposure on average, and therefore cannot speak to the consequences of more radical changes. Second, our study captures parents' behavioral responses over a time horizon of three years, and stronger responses, such as residential relocation or school avoidance by socially advantaged families, may emerge as the policy matures. Third, and perhaps most importantly, we cannot determine whether the improvements in social attitudes and intergroup relationships we document persist beyond middle school, or whether they translate into lasting gains in adult life. Yet the pattern we document—substantial socio-emotional gains alongside the absence of academic effects—is precisely what one would expect if the returns to school desegregation operate primarily through the accumulation of social capital rather than through academic spillovers. This interpretation resonates with the growing body of evidence showing that cross-class exposure during schooling shapes long-run outcomes such as enrollment in selective degree programs, access to high-paying jobs, and intergenerational income mobility (Bertoni et al., 2020; Chetty et al., 2022a,b; Cattan et al., 2025; Michelman et al., 2022). These studies attribute their findings to social capital mechanisms but cannot observe them directly. Our results, by contrast, provide direct evidence on the underlying socio-emotional and relational channels, suggesting that the returns to school desegregation may be substantially larger than short-run academic evaluations alone would imply. Tracking the long-term economic trajectories of the students in our sample, which we plan to do in future work, will allow us to test this hypothesis directly. Understanding whether the improvements in adolescents' social experiences and attitudes induced by school desegregation translate into durable life-cycle gains remains an important frontier for both economics and public policy.

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Figures

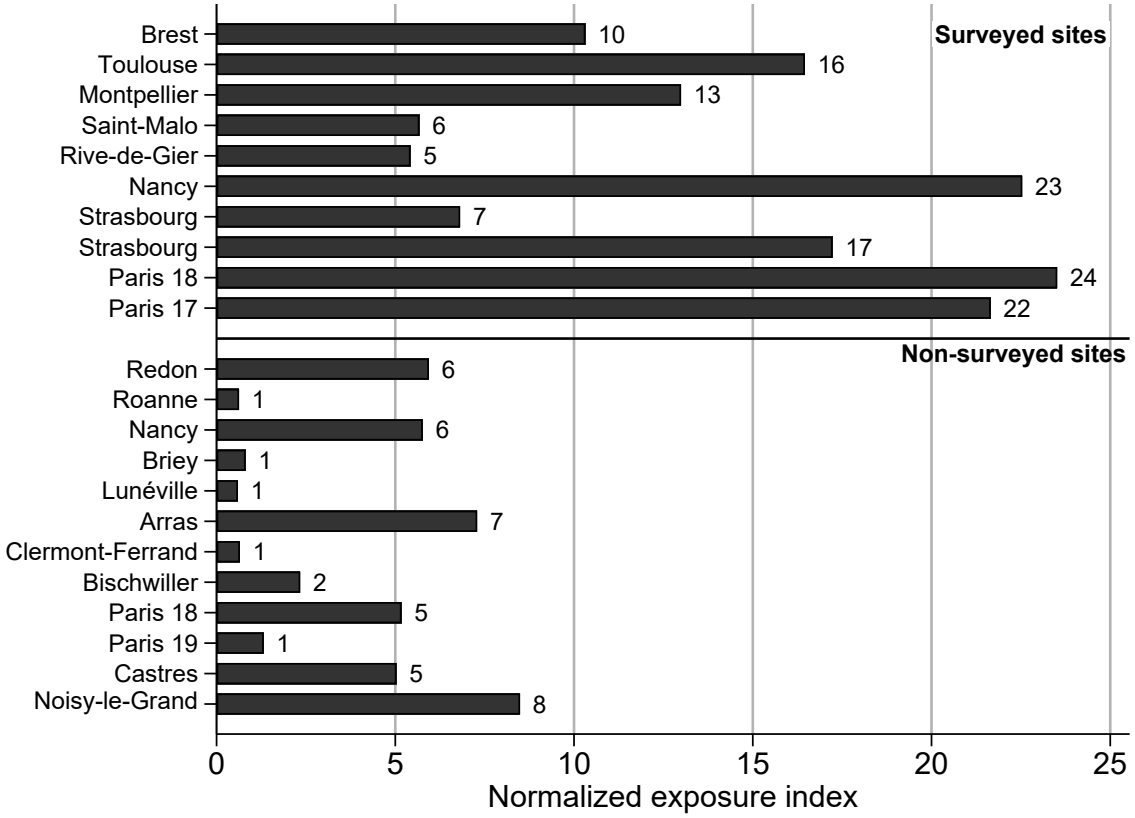


Figure 1 – School-Level Distribution of the Normalized Exposure Index Across Surveyed and Non-Surveyed Sites

Notes: This figure reports between-school socioeconomic segregation across all sites participating in the desegregation program, measured by the normalized exposure index. For each site, the index measures the difference in percentage points between high- and low-SES students in their exposure to high-SES peers across public middle schools. A value of 10 indicates that, within a given site, the average high-SES student attends a middle school with a share of high-SES students that is 10 percentage points higher than that of the average low-SES student; higher values thus reflect greater between-school segregation. The 10 surveyed sites are shown in the upper panel; the 12 non-surveyed sites in the lower panel. See Section 2 for details on the site selection procedure.

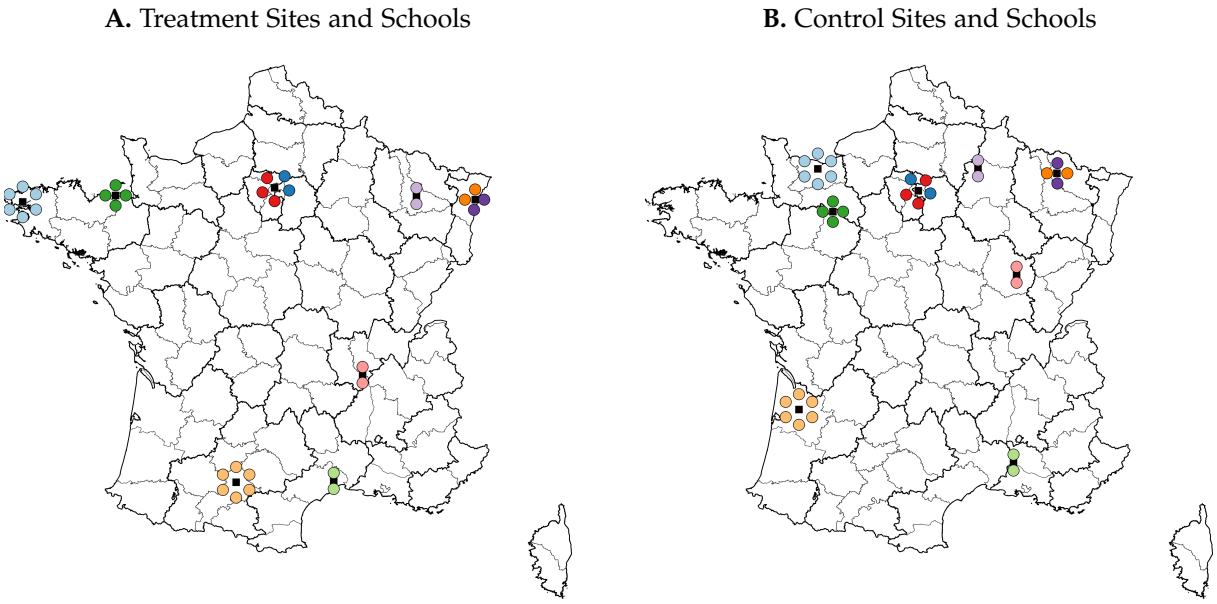
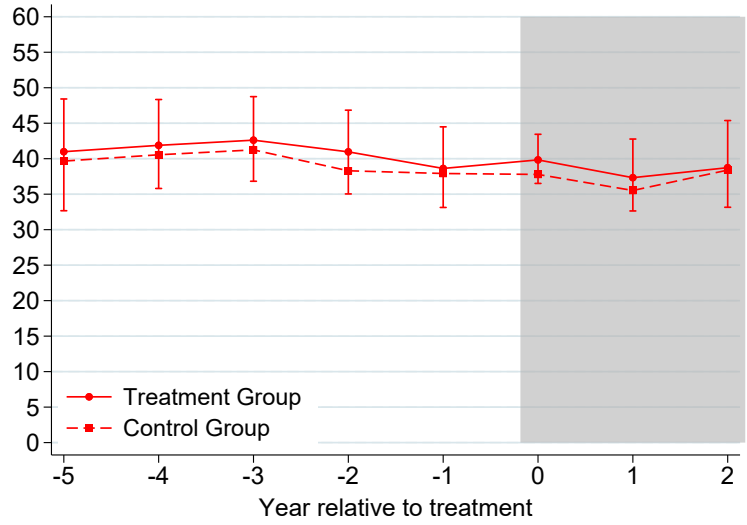


Figure 2 – Geographical Distribution of Middle Schools in the 10 Surveyed Treatment and Control Site Pairs

Notes: Thick lines delineate French national education districts (*académies*); thin lines indicate administrative districts (*départements*). The left panel displays the 10 treatment sites selected for the study and the right panel displays their matched control sites. In each panel, black squares indicate the location of each site, and colored circles represent the middle schools belonging to that site as of 2016–17. Colors identify treatment–control site pairs.

A. Site-Level Exposure of Low-SES Students to High-SES Peers



B. Site-Level Exposure of High-SES Students to Low-SES Peers

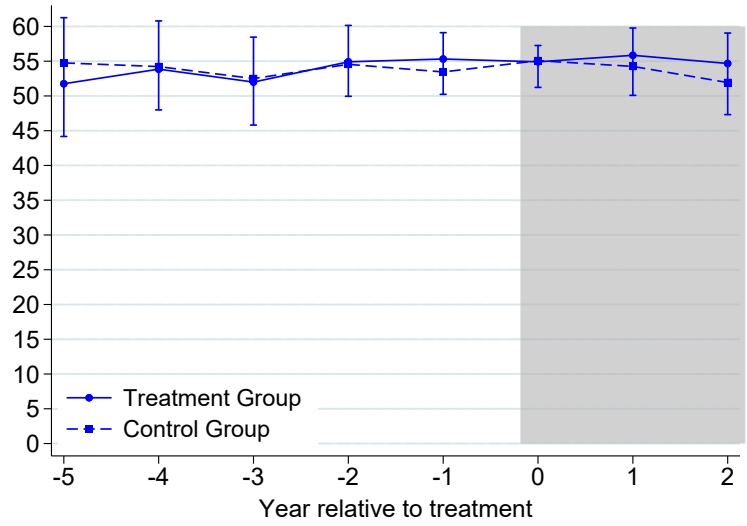
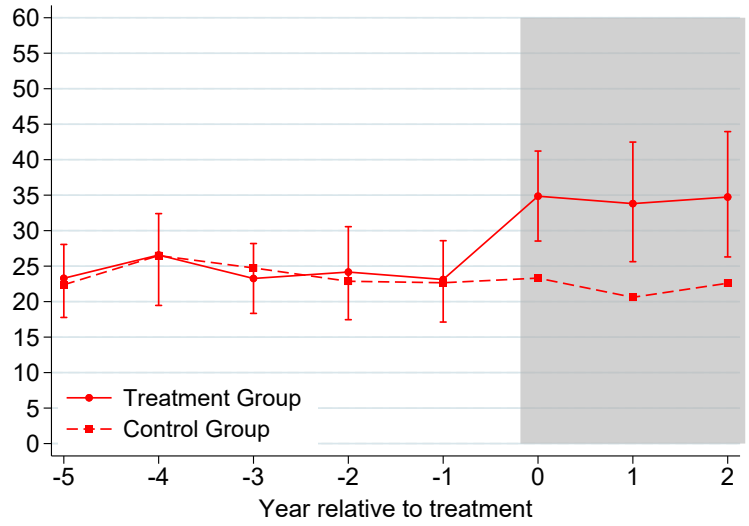


Figure 3 – Evolution of Cross-Group Exposure at the Site Level (High-Gap Students)

Notes: This figure shows the evolution of average site-level cross-group exposure for high-gap students entering Grade 6 in public middle schools. Exposure is computed using a leave-one-out procedure. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). Panel A reports exposure of high-gap low-SES students to high-SES peers; Panel B reports exposure of high-gap high-SES students to low-SES peers. Dashed lines show the raw evolution in control sites. Solid lines for treatment sites are obtained by adding to the control-group trend the estimated coefficients from a regression of the exposure outcome on year fixed effects and their interactions with a treatment indicator. All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Vertical bars indicate 95% confidence intervals. Shaded areas mark the post-treatment period.

A. School-Level Exposure of Low-SES Students to High-SES Peers



B. School-Level Exposure of High-SES Students to Low-SES Peers

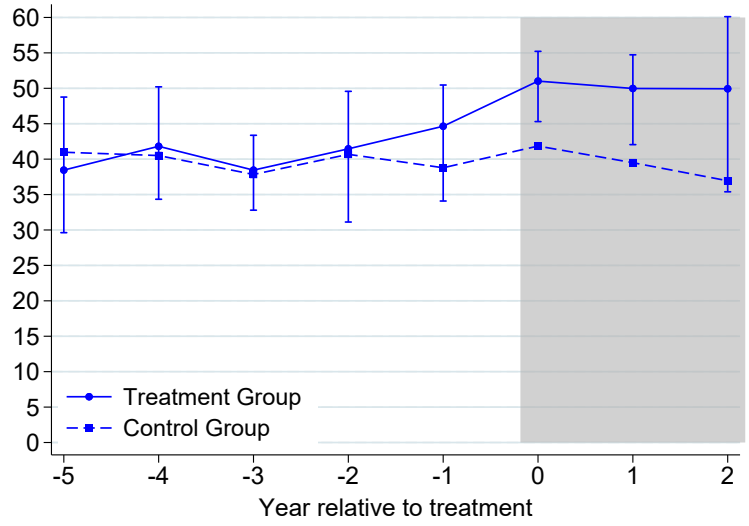


Figure 4 – Impact of the Social Mixing Interventions on School-Level Cross-Group Exposure in Surveyed Sites (High-Gap Students)

Notes: This figure shows the evolution of average school-level cross-group exposure within the same grade for high-gap students entering Grade 6 in public middle schools located in the surveyed sites. Exposure is computed using a leave-one-out procedure. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). Panel A reports exposure of high-gap low-SES students to high-SES peers; Panel B reports exposure of high-gap high-SES students to low-SES peers. Dashed lines show the raw evolution in control sites. Solid lines for treatment sites are obtained by adding to the control-group trend the estimated coefficients from a regression of the exposure outcome on year fixed effects and their interactions with a treatment indicator. All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Vertical bars indicate 95% confidence intervals. Shaded areas mark the post-treatment period.

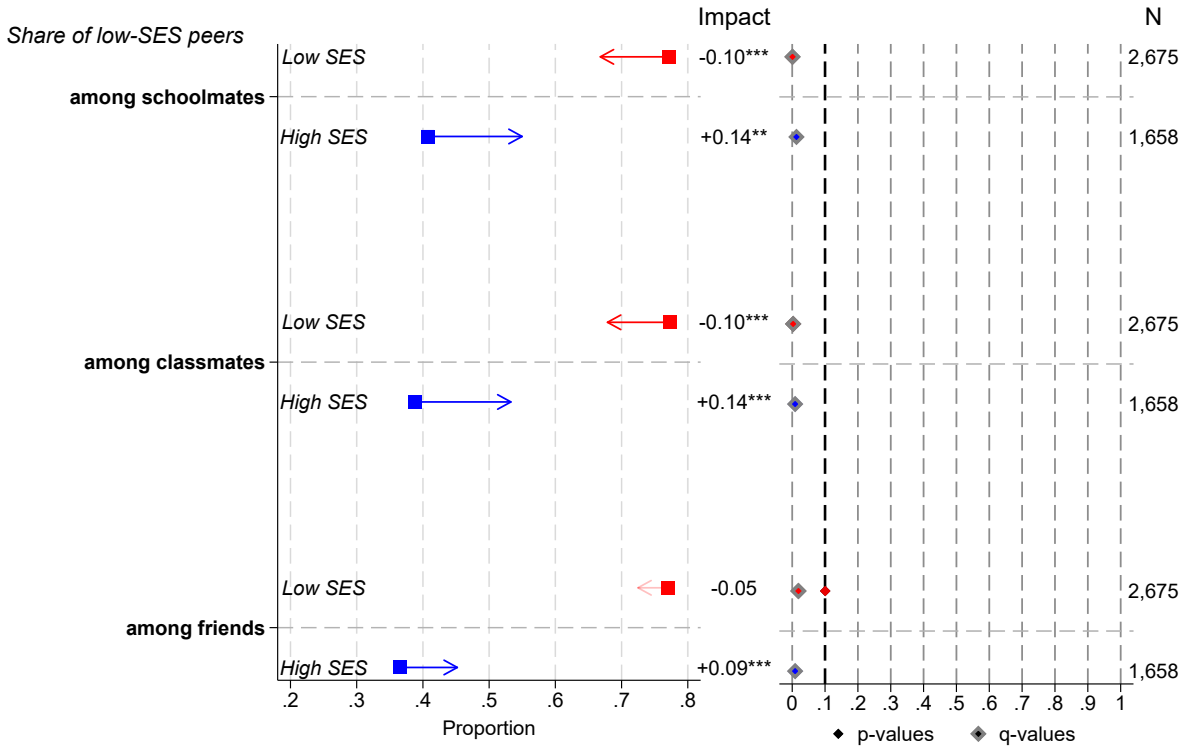


Figure 5 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends

Notes: This figure reports treatment-effect estimates of the social mixing interventions on the socioeconomic composition of high-gap students' peer environments. Outcomes are the share of low-SES students among (i) schoolmates (grade-level peers), (ii) classmates, and (iii) friends among classmates, all computed using a leave-one-out procedure. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The unit of observation is the student-year. The sample consists of the cohort entering Grade 6 in 2018–19, surveyed in Grade 6 in Spring 2019 and in Grade 8 in Spring 2021. Schoolmate and classmate composition outcomes are drawn from Ministry administrative data; friendship outcomes are measured from survey responses. Treatment effects are shown separately for high-gap low-SES (red) and high-gap high-SES (blue) students. Each row corresponds to a separate linear regression for a given outcome and SES group. Squares on the left axis indicate control-group means; arrows show the estimated treatment-induced change relative to that mean, with the corresponding estimate reported in the middle column. On the right axis, diamonds denote p-values and circled diamonds denote Anderson (2008)'s sharpened q-values controlling for multiple hypothesis testing, computed separately within each outcome family. The far-right column reports the sample size (N). All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Full regression results are reported in Panel A of Table 6. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

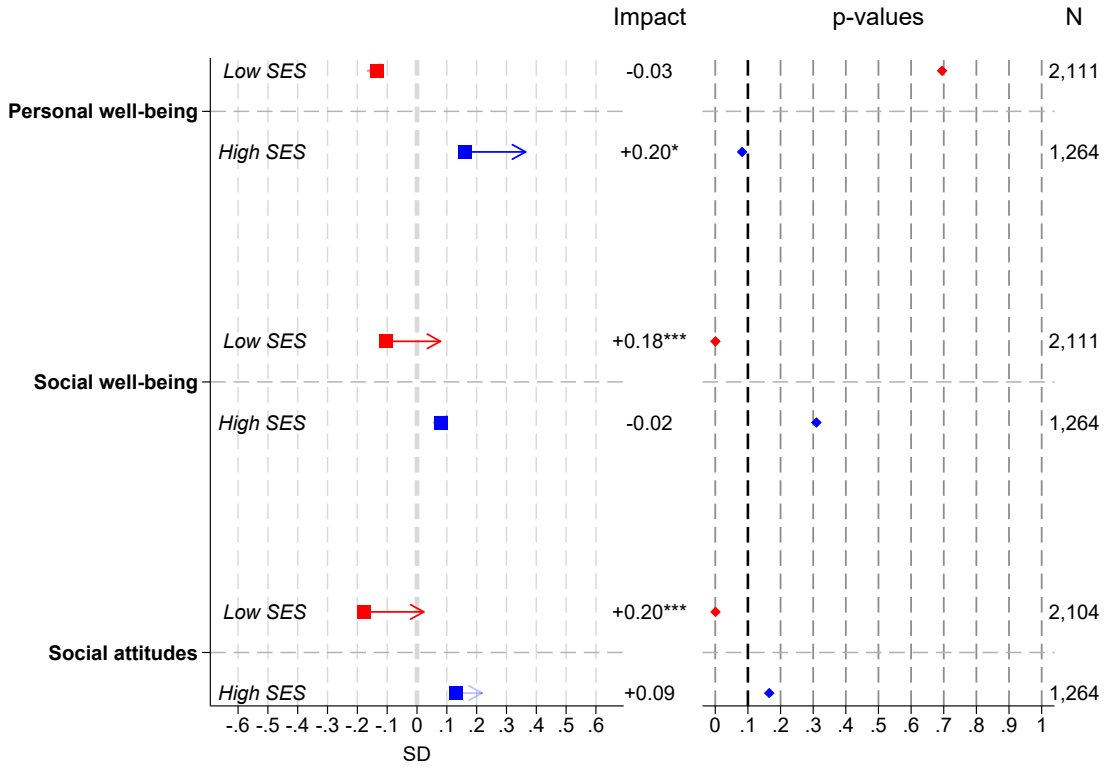


Figure 6 – Treatment Effects on Socio-Emotional Outcomes

Notes: This figure reports treatment-effect estimates of the social mixing interventions on high-gap students' socio-emotional outcomes along three dimensions: (i) personal well-being, (ii) social well-being, and (iii) social attitudes. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 (surveyed in Grade 6 in Spring 2018) and 2018–19 (surveyed in Grade 6 in Spring 2019 and in Grade 8 in Spring 2021). Each dimension is summarized by a standardized index constructed by first standardizing item-level survey responses using the control group's mean and standard deviation, aggregating them into sub-indices, and then averaging these into an overall index that is re-standardized at the cohort level. Treatment effects are shown separately for high-gap low-SES (red) and high-gap high-SES (blue) students. Each row corresponds to a separate linear regression for a given outcome and SES group. Squares on the left axis indicate control-group means; arrows show the estimated treatment-induced change relative to that mean, with the corresponding estimate reported in the middle column. On the right axis, diamonds denote p-values. The far-right column reports the sample size (N). All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Full regression results are reported in Panel A of Table 7. Treatment effects on the components of each index are reported in Figures 7 to 9. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

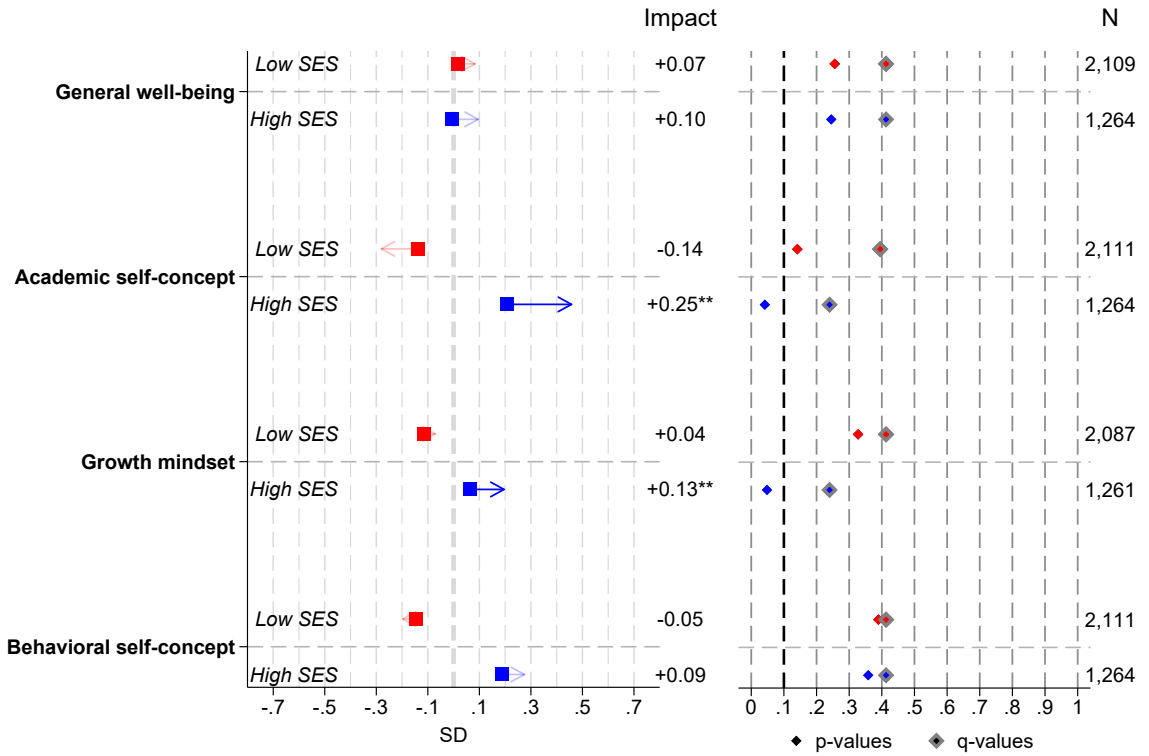


Figure 7 – Treatment Effects on Personal Well-being Components

Notes: This figure reports treatment-effect estimates of the social mixing interventions on the four components of high-gap students' personal well-being index: (i) general well-being, (ii) academic self-concept, (iii) growth mindset, and (iv) behavioral self-concept. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 (surveyed in Grade 6 in Spring 2018) and 2018–19 (surveyed in Grade 6 in Spring 2019 and in Grade 8 in Spring 2021). Each component is constructed by first standardizing the corresponding item-level survey responses using the control group's mean and standard deviation, then averaging the standardized item-level responses within each index, and finally re-standardizing the resulting index at the cohort level. Treatment effects are shown separately for high-gap low-SES (red) and high-gap high-SES (blue) students. Each row corresponds to a separate linear regression for a given outcome and SES group. Squares on the left axis indicate control-group means; arrows show the estimated treatment-induced change relative to that mean, with the corresponding estimate reported in the middle column. On the right axis, diamonds denote p-values and circled diamonds denote Anderson (2008)'s sharpened q-values controlling for multiple hypothesis testing, computed separately within each outcome family. The far-right column reports the sample size (N). All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Full regression results are reported in Panel B of Table 7. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

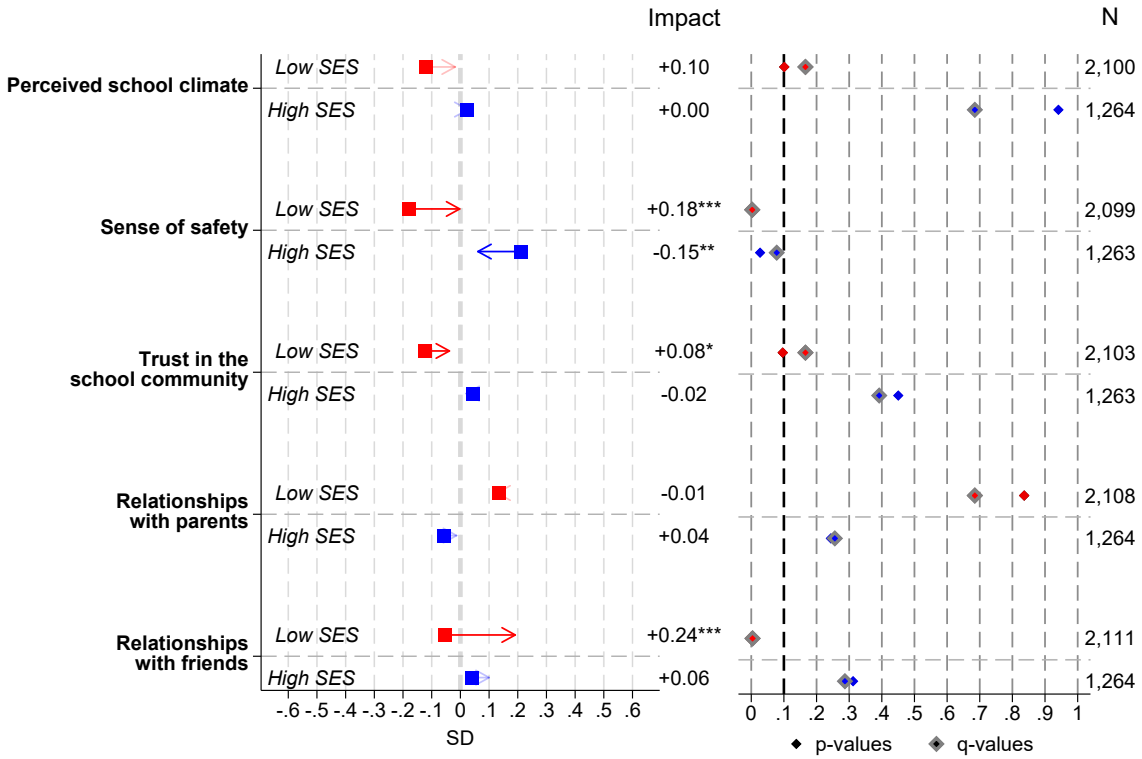


Figure 8 – Treatment Effects on Social Well-being Components

Notes: This figure reports treatment-effect estimates of the social mixing interventions on the five components of the social well-being index: (i) perceived school climate, (ii) sense of safety, (iii) trust in the school community, (iv) perceived quality of relationships with parents, and (v) perceived quality of relationships with friends. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 (surveyed in Grade 6 in Spring 2018) and 2018–19 (surveyed in Grade 6 in Spring 2019 and in Grade 8 in Spring 2021). Each component is constructed by first standardizing the corresponding item-level survey responses using the control group's mean and standard deviation, then averaging the standardized item-level responses within each index, and finally re-standardizing the resulting index at the cohort level. Treatment effects are shown separately for high-gap low-SES (red) and high-gap high-SES (blue) students. Each row corresponds to a separate linear regression for a given outcome and SES group. Squares on the left axis indicate control-group means; arrows show the estimated treatment-induced change relative to that mean, with the corresponding estimate reported in the middle column. On the right axis, diamonds denote p-values and circled diamonds denote Anderson (2008)'s sharpened q-values controlling for multiple hypothesis testing, computed separately within each outcome family. The far-right column reports the sample size (N). All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Full regression results are reported in Panel C of Table 7. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

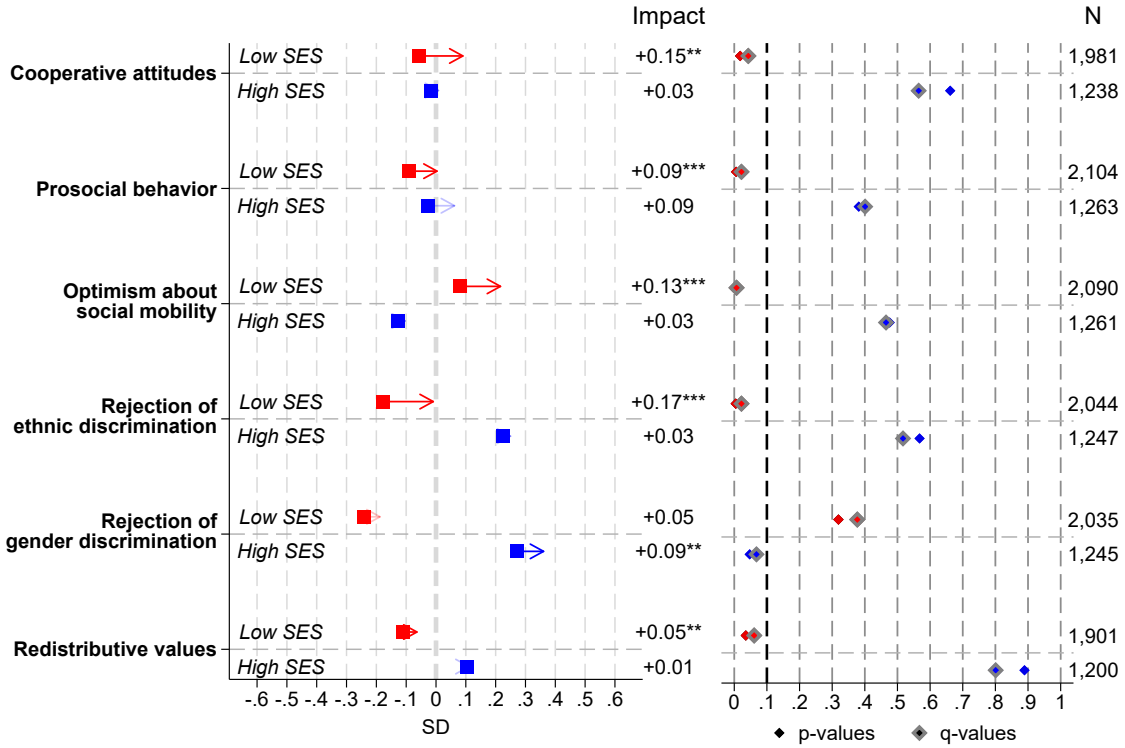


Figure 9 – Treatment Effects on Social Attitudes Components

Notes: This figure reports treatment-effect estimates of the social mixing interventions on the six components of the social attitudes index: (i) cooperative attitudes, (ii) prosocial behavior, (iii) optimism about social mobility, (iv) rejection of ethnic discrimination, (v) rejection of gender discrimination, and (vi) redistributive values. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 (surveyed in Grade 6 in Spring 2018) and 2018–19 (surveyed in Grade 6 in Spring 2019 and in Grade 8 in Spring 2021). Each component is constructed by first standardizing the corresponding item-level survey responses using the control group's mean and standard deviation, then averaging the standardized item-level responses within each index, and finally re-standardizing the resulting index at the cohort level. Treatment effects are shown separately for high-gap low-SES (red) and high-gap high-SES (blue) students. Each row corresponds to a separate linear regression for a given outcome and SES group. Squares on the left axis indicate control-group means; arrows show the estimated treatment-induced change relative to that mean, with the corresponding estimate reported in the middle column. On the right axis, diamonds denote p-values and circled diamonds denote Anderson (2008)'s sharpened q-values controlling for multiple hypothesis testing, computed separately within each outcome family. The far-right column reports the sample size (N). All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Full regression results are reported in Panel D of Table 7. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

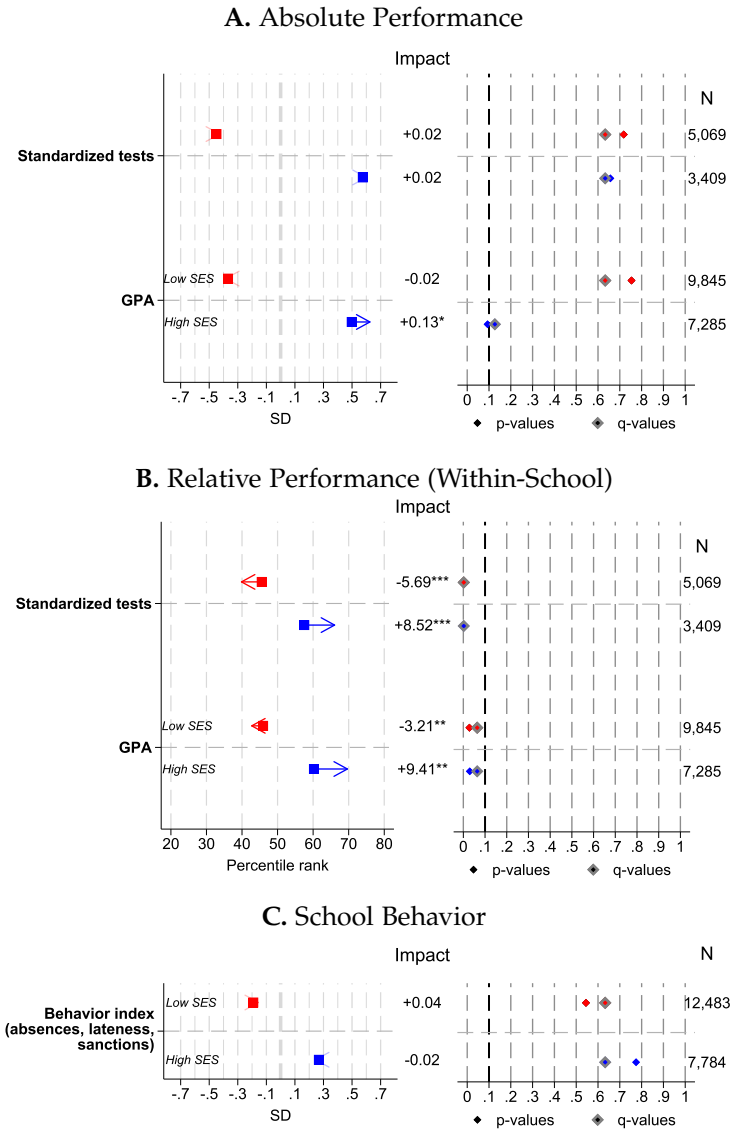


Figure 10 – Treatment Effects on Academic Outcomes

Notes: This figure reports treatment-effect estimates of the social mixing interventions on high-gap students' academic outcomes along three dimensions: absolute performance, measured by standardized test scores and GPA (Panel A); within-school relative performance, measured by percentile ranks on standardized test scores and GPA within each school and grade level (Panel B); and school behavior, captured by a composite index combining absences, lateness, and disciplinary sanctions (Panel C). All outcomes are standardized to mean zero and standard deviation one in the control group. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 and 2018–19. Standardized test scores combine survey-based tests (administered in Spring 2018 for the 2017–18 cohort, and Spring 2019 and Spring 2021 for the 2018–19 cohort) and Grade 9 national exam scores. GPA and school behavior are measured over all four middle school years for the first cohort and through Grade 8 for the second. Treatment effects are shown separately for high-gap low-SES (red) and high-gap high-SES (blue) students. Each row corresponds to a separate linear regression for a given outcome and SES group. Squares on the left axis indicate control-group means; arrows show the estimated treatment-induced change relative to that mean, with the corresponding estimate reported in the middle column. On the right axis, diamonds denote p-values and circled diamonds denote Anderson (2008)'s sharpened q-values controlling for multiple hypothesis testing, computed separately within each outcome family. The far-right column reports the sample size (N). All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap procedure of Cameron et al. (2008) to account for the small number of clusters. Full regression results are reported in Table 8. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Tables

Table 1 – Sample Size by Data Source

	Grade 6		Grade 7		Grade 8		Grade 9	
Year of middle school entry:	2017	2018	2017	2018	2017	2018	2017	2018
Panel A. Low-SES students								
Ministry data (sample frame)	2,040	2,010	1,836	1,832	1,688	1,733	1,529	1,579
Targeted	1,740	1,730	–	–	–	1,484	–	–
(% of the sample frame)	0.85	0.86	–	–	–	0.86	–	–
Survey data	1,453	1,503	–	–	–	1,236	–	–
(% of targeted)	0.84	0.87	–	–	–	0.83	–	–
School data	1,988	1,962	1,784	1,794	1,653	1,745	1,559	–
(% of the sample frame)	0.97	0.98	0.97	0.98	0.98	1.01	1.02	–
Grade 6 national assessment data	1,826	1,872	–	–	–	–	–	–
(% of the sample frame)	0.90	0.93	–	–	–	–	–	–
Grade 9 national exam data	–	–	–	–	–	–	1,479	1,511
(% of the sample frame)	–	–	–	–	–	–	0.97	0.96
Panel B. High-SES students								
Ministry data (sample frame)	1,221	1,195	1,168	1,137	1,117	1,105	1,076	1,062
Targeted	972	954	–	–	–	892	–	–
(% of the sample frame)	0.80	0.80	–	–	–	0.81	–	–
Survey data	858	877	–	–	–	807	–	–
(% of targeted)	0.88	0.92	–	–	–	0.90	–	–
School data	1,122	1,126	1,123	1,116	1,116	1,113	1,097	–
(% of the sample frame)	0.92	0.94	0.96	0.98	1.00	1.01	1.02	–
Grade 6 national assessment data	1,176	1,163	–	–	–	–	–	–
(% of the sample frame)	0.96	0.97	–	–	–	–	–	–
Grade 9 national exam data	–	–	–	–	–	–	1,080	1,052
(% of the sample frame)	–	–	–	–	–	–	1.00	0.99

Notes: This table reports sample sizes by data source, grade, cohort, and socioeconomic status for the main analysis sample of "high-gap" students. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). Panel A covers low-SES students and Panel B covers high-SES students. Columns correspond to students' year of entry into Grade 6 (2017 or 2018) and subsequent middle school grades. *Ministry data* refers to administrative enrollment and demographic records. *Targeted* refers to students whose class was randomly selected to participate in the student survey. *Survey data* refers to students with completed survey responses. *School data* refers to administrative records collected directly from schools, including grades, absences, lateness, and disciplinary sanctions. The last two rows in each panel report the availability of Grade 6 national assessment scores and Grade 9 national exam scores, respectively.

Table 2 – Balancing Tests: Student Characteristics

	Low SES			High SES		
	N	Control mean	T−C	N	Control mean	T−C
	(1)	(2)	(3)	(4)	(5)	(6)
Female	12,482	0.51	−0.02 [0.43]	7,784	0.50	−0.01 [0.74]
Born in France	12,483	0.88	−0.01 [0.50]	7,784	0.96	−0.01 [0.29]
Socioeconomic index	12,483	74.47	−1.43 [0.42]	7,784	149.20	−0.13 [0.97]
Scholarship	12,478	0.60	0.03 [0.58]	7,747	0.08	−0.02 [0.19]
Single-parent household	12,483	0.17	−0.03 [0.13]	7,784	0.05	−0.00 [0.96]
Ever repeated	12,483	0.11	0.02 [0.43]	7,784	0.02	−0.00 [0.61]
Grade 6 national assessment	11,284	40.68	−1.22 [0.33]	7,095	69.48	−1.35 [0.57]

Notes: This table reports balancing tests for student-level characteristics of the main analysis sample. Each row reports estimates from two regressions run separately for high-gap low-SES and high-gap high-SES students. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The dependent variable is listed on the left. The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 and 2018–19, observed throughout middle school. Scholarships are awarded to low-income families with a child enrolled in middle school. The socioeconomic index, constructed by the Ministry of Education, ranges from 45 to 185. Grade 6 national assessment scores are expressed as percentile ranks in the national distribution. Columns 1 and 4 report sample sizes; columns 2 and 5 report control-group means; columns 3 and 6 report treatment–control differences estimated from regressions including cohort fixed effects and site-pair fixed effects. Standard errors are clustered at the site level, and p-values reported in square brackets are adjusted using the wild cluster bootstrap of Cameron et al. (2008) to account for the small number of clusters. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3 – Balancing Tests: Elementary School Characteristics

	Low SES			High SES		
	N	Control mean	T−C	N	Control mean	T−C
	(1)	(2)	(3)	(4)	(5)	(6)
Share females	12,483	0.49	0.01 [0.00]***	7,784	0.49	0.01 [0.17]
Share pupils born in France	12,483	0.91	−0.02 [0.47]	7,784	0.95	−0.03 [0.19]
Mean socioeconomic index	12,483	87.11	−1.99 [0.64]	7,784	126.17	2.27 [0.68]
Share pupils with scholarship	12,483	0.38	−0.02 [0.68]	7,784	0.12	−0.01 [0.75]
Share pupils in single-parent household	12,483	0.24	0.00 [0.98]	7,784	0.14	−0.01 [0.36]
Share repeaters	12,483	0.16	0.02 [0.41]	7,784	0.07	−0.00 [0.83]
Priority Education School (REP)	12,483	0.21	0.19 [0.38]	7,682	0.01	−0.01 [0.05]*
Priority Education School (REP+)	12,483	0.26	0.04 [0.85]	7,682	0.00	0.00 [0.99]

Notes: This table reports balancing tests for the characteristics of students' elementary schools of origin, averaged over the five pre-treatment years, for the main analysis sample. Each row reports estimates from two regressions run separately for high-gap low-SES and high-gap high-SES students. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The dependent variable is listed on the left. The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 and 2018–19, observed throughout middle school. Scholarships are awarded to low-income families with a child enrolled in middle school. The socioeconomic index, constructed by the Ministry of Education, ranges from 45 to 185. Grade 6 national assessment scores are expressed as percentile ranks in the national distribution. Priority Education schools (REP) carry the official *éducation prioritaire* designation from the Ministry of Education, reflecting high levels of socioeconomic disadvantage among their students and in their catchment area; REP+ denotes the most disadvantaged tier. Columns 1 and 4 report sample sizes; columns 2 and 5 report control-group means; columns 3 and 6 report treatment–control differences estimated from regressions including cohort fixed effects and site-pair fixed effects. Standard errors are clustered at the site level, and p-values reported in square brackets are adjusted using the wild cluster bootstrap of Cameron et al. (2008) to account for the small number of clusters. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4 – Balancing Tests: Local Socioeconomic and Political Characteristics of Students' Neighborhoods

	Low SES			High SES		
	N	Control mean	T−C	N	Control mean	T−C
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Local socioeconomic characteristics						
Share living in a priority neighborhood (QPV)	3,769	0.41	0.07 [0.50]	2,372	0.01	−0.00 [0.48]
Average equivalized disposable income (€)	3,744	18,870	−534 [0.51]	2,367	26,910	1,410 [0.41]
Poverty rate	3,744	0.27	0.01 [0.68]	2,367	0.13	0.01 [0.47]
Share of individuals born outside the EU	3,744	0.17	0.03 [0.52]	2,367	0.10	0.01 [0.43]
Panel B. First-round vote shares, 2017 French presidential election						
Voter turnout	3,715	0.71	0.00 [0.90]	2,265	0.81	−0.00 [0.87]
Vote share for E. Macron (centrist)	3,715	0.18	−0.01 [0.60]	2,265	0.25	−0.01 [0.48]
Vote share for F. Fillon (right-wing)	3,715	0.10	0.01 [0.66]	2,265	0.19	0.02 [0.78]
Vote share for M. Le Pen (far-right)	3,715	0.13	−0.02 [0.00]***	2,265	0.08	−0.01 [0.44]
Vote share for J.-L. Mélenchon (left-wing)	3,715	0.17	0.02 [0.07]*	2,265	0.16	−0.00 [0.98]

Notes: Each row reports estimates from two regressions run separately for high-gap low-SES and high-gap high-SES students. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). The dependent variable is listed on the left. Panel A reports neighborhood socioeconomic characteristics measured at the 200-meter census grid-cell level (INSEE, 2017), as well as immigration characteristics measured at the 1-km census grid-cell level corresponding to the student's residential address (INSEE, 2021). QPV (*Quartiers prioritaires de la politique de la ville*) refers to an official designation assigned to urban neighborhoods characterized by low average income and high socioeconomic disadvantage, used to target place-based public policies. Panel B reports voter turnout and candidate vote shares in the first round of the 2017 French presidential election, measured at the polling station closest to the student's residence (Ministère de l'Intérieur, 2017). Samples pool two cohorts entering Grade 6 in 2017–18 and 2018–19. Columns 1 and 4 report sample sizes; columns 2 and 5 report control-group means; columns 3 and 6 report treatment–control differences estimated from regressions including cohort fixed effects and site-pair fixed effects. Standard errors are clustered at the site level, and p-values reported in square brackets are adjusted using the wild cluster bootstrap of Cameron et al. (2008) to account for the small number of clusters. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5 – Treatment Effects on Students' Educational Environment

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Middle school characteristics								
Distance to elementary school (km)	12,483	1.15	0.24 [0.63] ⟨1.00⟩	7,682	1.24	0.19 [0.38] ⟨1.00⟩	−0.08	0.04 [0.92] ⟨1.00⟩
School size	12,485	430.25	80.51 [0.11] ⟨1.00⟩	7,813	616.41	40.10 [0.45] ⟨1.00⟩	−186.17	40.41 [0.69] ⟨1.00⟩
Class size	12,483	24.64	0.66 [0.25] ⟨1.00⟩	7,784	27.96	−0.68 [0.70] ⟨1.00⟩	−3.32	1.34 [0.46] ⟨1.00⟩
Panel B. Teacher characteristics								
Age	12,483	42.14	1.06 [0.18] ⟨0.95⟩	7,784	46.49	−1.58 [0.03]** ⟨0.19⟩	−4.35	2.64 [0.00]*** ⟨0.00⟩***
Tenure at school (years)	12,483	5.19	0.24 [0.40] ⟨1.00⟩	7,784	7.22	−1.06 [0.03]** ⟨0.19⟩	−2.04	1.30 [0.02]** ⟨0.04⟩**
Qualification level								
Low	12,485	0.10	−0.03 [0.27] ⟨1.00⟩	7,813	0.09	0.01 [0.53] ⟨1.00⟩	0.02	−0.04 [0.07]* ⟨0.07⟩*
Medium	12,485	0.82	0.02 [0.46] ⟨1.00⟩	7,813	0.83	0.00 [0.98] ⟨1.00⟩	−0.01	0.02 [0.57] ⟨0.40⟩
High	12,483	0.08	−0.00 [0.99] ⟨1.00⟩	7,784	0.09	−0.01 [0.84] ⟨1.00⟩	−0.01	0.01 [0.76] ⟨0.44⟩

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Table 5 – Treatment Effects on Students' Educational Environment (Continued)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Peer characteristics								
Share of peers from the same elementary school								
among schoolmates	12,466	0.18	−0.02 [0.56] ⟨0.12⟩	7,806	0.15	−0.04 [0.07]* ⟨0.03⟩**	0.03	0.02 [0.46] ⟨0.16⟩
among classmates	12,465	0.16	−0.01 [0.70] ⟨0.13⟩	7,804	0.17	−0.06 [0.04]** ⟨0.02⟩**	−0.01	0.05 [0.12] ⟨0.05⟩**
Share of low-SES peers								
among schoolmates	12,485	77.86	−11.54 [0.00]*** ⟨0.00⟩***	7,813	40.68	14.09 [0.00]*** ⟨0.00⟩***	37.18	−25.64 [0.00]*** ⟨0.00⟩***
among classmates	12,485	78.26	−11.08 [0.00]*** ⟨0.00⟩***	7,813	38.97	13.40 [0.00]*** ⟨0.00⟩***	39.29	−24.48 [0.00]*** ⟨0.00⟩***
Average Grade 6 national assessment percentile rank of peers								
among schoolmates	12,094	44.52	5.99 [0.00]*** ⟨0.00⟩***	7,513	64.27	−8.71 [0.00]*** ⟨0.00⟩***	−19.75	14.72 [0.00]*** ⟨0.00⟩***
among classmates	11,961	44.26	5.48 [0.00]*** ⟨0.00⟩***	7,479	64.61	−8.17 [0.00]*** ⟨0.00⟩***	−20.35	13.66 [0.00]*** ⟨0.00⟩***

Notes: This table reports treatment-effect estimates of the social mixing interventions on high-gap students' educational environment. Panel A reports middle school characteristics, Panel B teacher characteristics, and Panel C peer characteristics. Peer characteristics are computed using a leave-one-out procedure. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). Each row corresponds to three separate regressions: one for high-gap low-SES students, one for high-gap high-SES students, and one pooling both groups. The unit of observation is the student-year. Samples pool two cohorts entering Grade 6 in 2017–18 and 2018–19. Outcomes are drawn from Ministry administrative data covering all middle school years. Columns 1 and 4 report sample sizes, columns 2 and 5 report control-group means, and columns 3 and 6 report treatment–control differences estimated from regressions including cohort fixed effects, site-pair fixed effects, and control variables selected via Belloni et al. (2014)'s double-lasso procedure from the set listed in Tables 2 and 3. Column 7 reports the average outcome gap between high- and low-SES students in the control group; column 8 reports the differential treatment effect between the two groups, based on equation (3). Standard errors are clustered at the site level, and p-values reported in square brackets are adjusted using the wild cluster bootstrap of Cameron et al. (2008) to account for the small number of clusters. To address multiple hypothesis testing, Anderson (2008)'s sharpened q-values are computed separately within each outcome family and reported in angle brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of low-SES peers								
among schoolmates	2,675	0.77	−0.10 $[0.00]^{***}$ $\langle 0.00 \rangle^{***}$	1,658	0.41	0.14 $[0.01]^{**}$ $\langle 0.01 \rangle^{**}$	0.36	−0.25 $[0.00]^{***}$ $\langle 0.00 \rangle^{***}$
among classmates	2,675	0.77	−0.10 $[0.00]^{***}$ $\langle 0.00 \rangle^{***}$	1,658	0.39	0.14 $[0.01]^{***}$ $\langle 0.01 \rangle^{***}$	0.38	−0.24 $[0.00]^{***}$ $\langle 0.00 \rangle^{***}$
among friends	2,675	0.77	−0.05 $[0.10]$ $\langle 0.02 \rangle^{**}$	1,658	0.37	0.09 $[0.01]^{***}$ $\langle 0.01 \rangle^{***}$	0.41	−0.13 $[0.01]^{***}$ $\langle 0.00 \rangle^{***}$

Notes: See the notes to Figure 5 for outcome and sample definitions, and the notes to Table 5 for column definitions, regression specification, and inference. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7 – Treatment Effects on Socio-Emotional Outcomes

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Summary indices								
Personal well-being	2,111	−0.13	−0.03	1,264	0.16	0.20	−0.29	−0.24
			[0.69]			[0.08]*		[0.12]
Social well-being	2,111	−0.10	0.18	1,264	0.08	−0.02	−0.18	0.20
			[0.00]***			[0.31]		[0.00]***
Social attitudes	2,104	−0.18	0.20	1,264	0.13	0.09	−0.31	0.11
			[0.00]***			[0.17]		[0.19]
Panel B. Components of personal well-being								
General well-being	2,109	0.02	0.07	1,264	−0.00	0.10	0.02	−0.03
			[0.26]			[0.25]		[0.80]
			⟨0.41⟩			⟨0.41⟩		⟨0.67⟩
Academic self-concept	2,111	−0.14	−0.14	1,264	0.21	0.25	−0.35	−0.39
			[0.14]			[0.04]**		[0.00]***
			⟨0.40⟩			⟨0.24⟩		⟨0.00⟩***
Growth mindset	2,087	−0.11	0.04	1,261	0.06	0.13	−0.18	−0.09
			[0.33]			[0.05]**		[0.41]
			⟨0.41⟩			⟨0.24⟩		⟨0.41⟩
Behavioral self-concept	2,111	−0.15	−0.05	1,264	0.19	0.09	−0.33	−0.14
			[0.39]			[0.36]		[0.15]
			⟨0.41⟩			⟨0.41⟩		⟨0.28⟩

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Table 7 – Treatment Effects on Socio-Emotional Outcomes (Continued)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Components of social well-being								
Perceived school climate	2,100	−0.12	0.10 [0.10] ⟨0.17⟩	1,264	0.02	0.00 [0.94] ⟨0.69⟩	−0.14	0.10 [0.16] ⟨0.09⟩*
Sense of safety	2,099	−0.18	0.18 [0.00]*** ⟨0.00⟩***	1,263	0.21	−0.15 [0.03]** ⟨0.08⟩*	−0.39	0.33 [0.00]*** ⟨0.02⟩**
Trust in the school community	2,103	−0.12	0.08 [0.10]* ⟨0.17⟩	1,263	0.04	−0.02 [0.45] ⟨0.39⟩	−0.17	0.11 [0.04]** ⟨0.05⟩**
Relationships with parents	2,108	0.14	−0.01 [0.84] ⟨0.69⟩	1,264	−0.06	0.04 [0.24] ⟨0.26⟩	0.19	−0.05 [0.44] ⟨0.22⟩
Relationships with friends	2,111	−0.05	0.24 [0.00]*** ⟨0.00⟩***	1,264	0.04	0.06 [0.31] ⟨0.29⟩	−0.09	0.18 [0.02]** ⟨0.04⟩**
Panel D. Components of social attitudes								
Cooperative attitudes	1,981	−0.06	0.15 [0.02]** ⟨0.04⟩**	1,238	−0.02	0.03 [0.66] ⟨0.56⟩	−0.04	0.12 [0.23] ⟨0.44⟩
Prosocial behavior	2,104	−0.09	0.09 [0.01]*** ⟨0.02⟩**	1,263	−0.03	0.09 [0.38] ⟨0.40⟩	−0.06	0.00 [0.97] ⟨0.94⟩
Optimism about social mobility	2,090	0.08	0.13 [0.00]*** ⟨0.01⟩***	1,261	−0.13	0.03 [0.48] ⟨0.47⟩	0.21	0.11 [0.02]** ⟨0.13⟩
Rejection of ethnic discrimination	2,044	−0.18	0.17 [0.00]*** ⟨0.02⟩**	1,247	0.22	0.03 [0.57] ⟨0.52⟩	−0.40	0.14 [0.07]* ⟨0.21⟩
Rejection of gender discrimination	2,035	−0.24	0.05 [0.32] ⟨0.38⟩	1,245	0.27	0.09 [0.05]** ⟨0.07⟩*	−0.51	−0.04 [0.67] ⟨0.86⟩
Redistributive values	1,901	−0.11	0.05 [0.04]** ⟨0.06⟩*	1,200	0.11	0.01 [0.89] ⟨0.80⟩	−0.22	0.04 [0.50] ⟨0.86⟩

Notes: See the notes to Figures 6 to 9 for outcome and sample definitions, and the notes to Table 5 for column definitions, regression specification, and inference. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8 – Treatment Effects on Academic Outcomes

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Standardized tests								
Standardized tests	5,069	−0.45	0.02 [0.72] ⟨0.63⟩	3,409	0.58	0.02 [0.66] ⟨0.63⟩	−1.02	−0.00 [0.97] ⟨0.63⟩
Within-school percentile rank	5,069	45.54	−5.69 [0.00]*** ⟨0.00⟩***	3,409	57.52	8.52 [0.00]*** ⟨0.00⟩***	−11.98	−14.20 [0.00]*** ⟨0.00⟩***
Panel B. Continuous assessments								
Grade Point Average	9,845	−0.37	−0.02 [0.75] ⟨0.63⟩	7,285	0.50	0.13 [0.09]* ⟨0.13⟩	−0.87	−0.14 [0.09]* ⟨0.10⟩
Within-school percentile rank	9,845	45.94	−3.21 [0.03]** ⟨0.06⟩*	7,285	60.23	9.41 [0.03]** ⟨0.06⟩*	−14.29	−12.66 [0.00]*** ⟨0.00⟩***
Panel C. School-reported behavior								
School-reported behavior index	12,483	−0.19	0.04 [0.54] ⟨0.63⟩	7,784	0.27	−0.02 [0.77] ⟨0.63⟩	−0.46	0.06 [0.56] ⟨0.39⟩

Notes: See the notes to Figure 10 for outcome and sample definitions, and the notes to Table 5 for column definitions, regression specification, and inference. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

(For Online Publication)

Appendix to

The Impact of Social Mixing at School: Evidence From a French Desegregation Program

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List of Appendices

A Social Mixing Measures Implemented

Table A1 – Social Mixing Measures Implemented in the 22 Treatment Sites

	Redrawing catchment areas	School closures and openings	Merging catchment areas		Enhancing school attractiveness
			School choice	Alternate assignment	
	(1)	(2)	(3)	(4)	(5)
Brest		✓	✓		✓
Toulouse	✓	✓			
Montpellier					✓
Redon			✓		
Saint-Malo	✓	✓			
Rive-de-Gier			✓		
Roanne	✓				
Nancy - 1			✓		
Briey			✓		
Lunéville			✓		
Nancy - 2		✓	✓		✓
Arras	✓				
Clermont-Ferrand	✓				
Strasbourg - 1					✓
Strasbourg - 2	✓				
Bischwiller				✓	
Paris 18 - 1			✓		
Paris 18 - 2				✓	
Paris 19			✓		
Paris 17	✓				
Castres					✓
Noisy-le-Grand	✓				
Total (full sample)					
Number of sites	8	4	9	2	5
Number of schools	24	16	22	4	15
Total (survey sample)					
Number of sites	4	4	3	1	4
Number of schools	12	16	10	2	12

Notes: Each row corresponds to one treatment site. Columns indicate the types of social mixing measures implemented in that site, as described in Section 1.2. Shaded rows correspond to the 10 sites selected for the survey (see Section 2).

B Survey Instruments

This appendix describes the indices and sub-indices used to measure the effects of social mixing on student outcomes, along with the survey items underlying the construction of each index. Items are translated from the original French versions administered to students, and are drawn from standardized psychology scales, OECD PISA instruments, and items developed by the French Ministry of Education; the source of each group of items is indicated below.

B.1 Personal Well-Being

Personal well-being is captured through four sub-indices: (i) general well-being, (ii) academic self-concept, (iii) behavioral self-concept, and (iv) growth mindset. Each sub-index is constructed by standardizing item-level responses using the control group's mean and standard deviation, averaging the standardized responses within the sub-index, and re-standardizing the result at the cohort level. The overall personal well-being score is the average of the four sub-indices, re-standardized at the cohort level.

B.1.1 Items Used to Construct the "General Well-Being" Sub-Index

[1] Generally speaking, my life is more or less as I would like it to be
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[2] What happens in my life is great
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[3] I am happy about my life
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[4] So far, I have had the most important things I want in life
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[5] If I could live my life over, I would choose the same life
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[6] Do you feel good at your school?
☐ Very well ☐ Quite well ☐ Not very well ☐ Not at all well

[7] Do you feel good in your class?
☐ Very well ☐ Quite well ☐ Not very well ☐ Not at all well

[8] I enjoy holidays
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[9] I enjoy school
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[10] I enjoy recess
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[11] I wake up during the night
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[12] I feel sick
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[13] I have stomach aches or headaches
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[14] I feel bored in life
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[15] I get angry when I do not get what I want
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[16] I sometimes feel sad
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[17] I have fears in life
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

Sources. All items are adapted from Gayral-Taminh et al. (2005), except items **[6]** and **[7]**, which are adapted from MEN-DEPP (2015).

B.1.2 Items Used to Construct the "Academic Self-Concept" Sub-Index

[1] Do you think that grades at your school are
☐ Very fair ☐ Rather fair ☐ Rather unfair ☐ Very unfair

[2] I enjoy being called on in class
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[3] I work well in class
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[4] I am worried I will not understand new lessons
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[5] I am worried about tests and exams
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[6] I am happy when my parents meet my teacher
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree ☐ N/A

[7] I am happy when I show my grades to my parents
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree ☐ N/A

[8] Some young people feel they are as intelligent as others their age
☐ Exactly like me ☐ A little like me
BUT
Other young people are not so sure and wonder whether they are as intelligent as others their age
☐ A little like me ☐ Exactly like me

[9] Some young people do very well in their schoolwork
☐ Exactly like me ☐ A little like me
BUT
Other young people do not do very well in their schoolwork
☐ A little like me ☐ Exactly like me

[10] Some young people think they are quite intelligent
☐ Exactly like me ☐ A little like me
BUT
Other young people wonder whether they are intelligent
☐ A little like me ☐ Exactly like me

[11] Some young people are rather slow at finishing their schoolwork
☐ Exactly like me ☐ A little like me
BUT
Other young people can finish their schoolwork more quickly
☐ A little like me ☐ Exactly like me

[12] Some young people have difficulty solving problems presented in class
☐ Exactly like me ☐ A little like me
BUT
Other young people can almost always solve the problems presented in class
☐ A little like me ☐ Exactly like me

[13] I do my work very well in class
☐ Completely true ☐ True ☐ Rather true ☐ Somewhat true ☐ Not at all true

[14] In class, I know how to answer the teacher's questions well
☐ Completely true ☐ True ☐ Rather true ☐ Somewhat true ☐ Not at all true

Sources. All items are adapted from Gayral-Taminh et al. (2005), except item **[1]**, which is adapted from MEN-DEPP (2015), and items **[8]**–**[12]**, which are adapted from Harter (1988).

B.1.3 Items Used to Construct the "Growth Mindset" Sub-Index

[1] If I put in enough effort, I can succeed at school
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[2] Succeeding or failing at school depends only on me
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[3] Family or other obligations prevent me from devoting much time to school
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[4] I would put in more effort at school if I had different teachers
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[5] If I wanted to, I could get good results at school
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree

[6] Whether I study for my exams or not, I do not get good results at school
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[7] In your opinion, how likely is a gifted student who does not work hard to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

[8] In your opinion, how likely is a moderately gifted student who works consistently to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

[9] In your opinion, how likely is a student who currently has poor grades to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Sources. All items are adapted from OECD (2012), except items **[7]**–**[9]**, which are adapted from Guyon and Huillery (2021).

B.1.4 Items Used to Construct the "Behavioral Self-Concept" Sub-Index

[1] I get punished at school
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[2] Since the beginning of the school year, how many times have you been punished?
☐ Never ☐ 1 or 2 times ☐ 3 or 4 times ☐ More than 4 times

[3] More generally, have you ever been absent from school without authorization?
☐ Never ☐ 1 or 2 times ☐ 3 or 4 times ☐ More than 4 times

[4] Some young people generally do what is right
☐ Exactly like me ☐ A little like me

BUT

Other young people often do not do what they know is right
☐ A little like me ☐ Exactly like me

[5] Some young people feel really good about the way they behave
☐ Exactly like me ☐ A little like me

BUT

Other young people often do not feel good about the way they behave
☐ A little like me ☐ Exactly like me

[6] Some young people usually behave as they know they are supposed to
☐ Exactly like me ☐ A little like me

BUT

Other young people often do not behave as they are supposed to
☐ A little like me ☐ Exactly like me

[7] Some young people get into trouble because of what they do
☐ Exactly like me ☐ A little like me

BUT

Other young people generally do not do things that would get them into trouble
☐ A little like me ☐ Exactly like me

[8] Some young people do things they know they should not do
☐ Exactly like me ☐ A little like me

BUT

Other young people almost never do things they know they should not do
☐ A little like me ☐ Exactly like me

[9] I often misbehave
☐ Completely true ☐ True ☐ Rather true ☐ Somewhat true ☐ Not at all true

[10] I do things that I should not do
☐ Completely true ☐ True ☐ Rather true ☐ Somewhat true ☐ Not at all true

Sources. Items **[1]**, **[9]**, and **[10]** are adapted from Gayral-Taminh et al. (2005). Items **[2]** and **[3]** are adapted from MEN-DEPP (2015). Items **[4]**–**[8]** are adapted from Harter (1988).

B.2 Social Well-Being

Social well-being is captured through five sub-indices: (i) perceived school climate, (ii) sense of safety, (iii) trust in the school community, (iv) perceived quality of relationships with parents, and (v) perceived quality of relationships with friends. Sub-indices and the overall social well-being index are constructed following the same procedure as described above for personal well-being.

B.2.1 Items Used to Construct the "Perceived School Climate" Sub-Index

[1] In general, relationships with teachers at your school are
☐ Very good ☐ Good ☐ Not very good ☐ Bad

[2] When teachers notice that a student is not following the rules, they intervene
☐ Never ☐ Rather rarely ☐ Not often ☐ Every time

[3] Is there aggressiveness in relationships between students and teachers?
☐ Not at all ☐ Not much ☐ Quite a lot ☐ A lot

[4] In general, relationships with other school staff (supervisors, administrative, reception, school cafeteria staff) are
☐ Very good ☐ Good ☐ Not very good ☐ Bad

[5] In your opinion, at your school, students learn
☐ Very well ☐ Quite well ☐ Not very well ☐ Not at all well

[6] The punishments given at your school are
☐ Very fair ☐ Rather fair ☐ Rather unfair ☐ Very unfair

[7] How would you describe the atmosphere among students?
☐ Very good ☐ Quite good ☐ Not very good ☐ Not at all good

Source. All items are adapted from MEN-DEPP (2015).

B.2.2 Items Used to Construct the "Sense of Safety" Sub-Index

[1] Would you say that there is violence in your school?
☐ Not at all ☐ Not much ☐ Quite a lot ☐ A lot

[2] Since the beginning of the school year, have you ever stayed away from school because you were afraid of violence?
☐ Never ☐ 1 or 2 times ☐ 3 or 4 times ☐ More than 4 times

[3] Do you feel safe inside your school?
☐ Completely safe ☐ Rather safe ☐ Not very safe ☐ Not at all safe

[4] Do you feel safe in the neighborhood around your school?
☐ Completely safe ☐ Rather safe ☐ Not very safe ☐ Not at all safe

[5] Do you feel safe on school transportation?
☐ Completely safe ☐ Rather safe ☐ Not very safe ☐ Not at all safe ☐ N/A

Source. All items are adapted from MEN-DEPP (2015).

B.2.3 Items Used to Construct the "Trust in the School Community" Sub-Index

[1] In general, other students can be trusted
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[2] In general, teachers can be trusted
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[3] In general, the school counselor can be trusted
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[4] In general, school supervisors can be trusted
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

Source. All items are adapted from Gayral-Taminh et al. (2005).

B.2.4 Items Used to Construct the "Perceived Quality of Relationships with Parents" Sub-Index

[1] I enjoy talking with my parents
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree ☐ N/A

[2] I like it when my parents talk about me
☐ Strongly agree ☐ Agree ☐ Disagree ☐ Strongly disagree ☐ N/A

[3] I get scolded by my parents
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never ☐ N/A

[4] At home, someone helps me with my homework
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

Source. All items are adapted from Gayral-Taminh et al. (2005).

B.2.5 Items Used to Construct the "Perceived Quality of Relationships with Friends" Sub-Index

[1] Do you have friends in your school?
☐ A lot ☐ Quite a lot ☐ Not many ☐ None at all

[2] Other students make fun of me
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[3] Other students talk with me during recess
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[4] After school, I meet up with friends
☐ Always ☐ Often ☐ Sometimes ☐ Rarely ☐ Never

[5] Some young people have many friends ☐ Exactly like me ☐ A little like me BUT Other young people do not have many friends ☐ A little like me ☐ Exactly like me

[6] Some young people are well liked by others their age ☐ Exactly like me ☐ A little like me BUT Other young people are not very well liked by others their age ☐ A little like me ☐ Exactly like me

[7] Some young people feel accepted by others their age ☐ Exactly like me ☐ A little like me BUT Other young people wish that more people their age would accept them ☐ A little like me ☐ Exactly like me

[8] Some young people find it hard to make friends ☐ Exactly like me ☐ A little like me BUT Others find it fairly easy to make friends ☐ A little like me ☐ Exactly like me

[9] Some young people are not easily liked ☐ Exactly like me ☐ A little like me BUT Other young people are really easy to like ☐ A little like me ☐ Exactly like me

[10] It is easy for me to make friends
☐ Completely true ☐ True ☐ Rather true ☐ Somewhat true ☐ Not at all true

[11] My friends like me
☐ Completely true ☐ True ☐ Rather true ☐ Somewhat true ☐ Not at all true

Sources. Item **[1]** is adapted from MEN-DEPP (2015). Items **[2]–[4]** and **[10]–[11]** are adapted from Gayral-Taminh et al. (2005). Items **[5]–[9]** are adapted from Harter (1988).

B.3 Social Attitudes

Social attitudes are captured through six sub-indices: (i) cooperative attitudes, (ii) prosocial behavior, (iii) optimism about social mobility, (iv) rejection of ethnic discrimination, (v) rejection of gender discrimination, and (vi) redistributive values. Sub-indices and the overall social attitudes index are computed following the same procedure as described above for personal well-being.

B.3.1 Items Used to Construct the "Cooperative Attitudes" Sub-Index

[1] I prefer working in a group rather than alone
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[2] I am a good listener
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[3] I enjoy seeing my classmates succeed
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[4] I take into account what others are interested in
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[5] I think that decisions made as a group are better than those made individually
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[6] I enjoy considering different possibilities
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[7] I think that working in a group improves my own skills
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

[8] I enjoy working collaboratively with classmates
☐ Strongly disagree ☐ Disagree ☐ Agree ☐ Strongly agree

Source. All items are adapted from OECD (2017).

B.3.2 Items Used to Construct the "Prosocial Behavior" Sub-Index

[1] I try to be kind to others
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[2] I usually share with others (food, games, pens, etc.)
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[3] I willingly help when someone is hurt or not feeling well
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[4] I am kind to younger children
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

[5] I am always ready to help others (parents, teachers, and people my age)
☐ Very true ☐ Quite true ☐ Somewhat true ☐ Not at all true

Source. All items are adapted from Gayral-Taminh et al. (2005).

B.3.3 Items Used to Construct the "Optimism about Social Mobility" Sub-Index

[1] In your opinion, how likely is a student who lives in an advantaged neighborhood to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

[2] In your opinion, how likely is a student who lives in a disadvantaged neighborhood to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

[3] In your opinion, how likely is a student whose parents did not pursue higher education to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

[4] In your opinion, how likely is a student whose parents were successful in their education and careers to succeed in their studies?
☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Source. All items are adapted from Guyon and Huillery (2021).

B.3.4 Items Used to Construct the "Rejection of Ethnic Discrimination" Sub-Index

[1] It happens that someone is refused a job because of their origin or their religion
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[2] Some people say that only those with a certain skin color can be French
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[3] Some people think that people are more or less intelligent depending on their origin
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[4] It happens that some people marry someone of a different skin color or religion
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[5] It happens that a young person's best friend is of a different origin or religion
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[6] There are countries where students attend different schools depending on their skin color
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

Source. All items are adapted from MEN-DEPP (2007).

B.3.5 Items Used to Construct the "Rejection of Gender Discrimination" Sub-Index

[1] Some employers prefer to hire men rather than women
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[2] Some people think there should be as many women as men among government ministers
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[3] In some companies, women are paid less than men for doing the same job
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[4] In some countries, girls do not attend the same schools as boys
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[5] Women are more often unemployed than men
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[6] Some people think that women must obey men
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

Source. All items are adapted from MEN-DEPP (2007).

B.3.6 Items Used to Construct the "Redistributive Values" Sub-Index

[1] If someone is sick and cannot pay for hospital care, society should pay for them
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[2] There are countries where unemployed people receive no financial assistance
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[3] Some people say we should help the poor in France rather than help those far away
☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[4] Some people say that most unemployed people are out of work because they do not want to work

☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

[5] Some people say that older people are too great a financial burden for those who work

☐ Normal ☐ Not very normal, but not serious ☐ Unacceptable

Source. All items are adapted from MEN-DEPP (2007).

C Controlling for Peers' Baseline Academic Performance

This section examines how treatment effect estimates change when we control for peers' baseline academic performance, measured by the leave-one-out average Grade 6 national assessment score among same-grade classmates. Comparing estimates with and without this control allows us to assess whether the effects of social mixing are driven by changes in peers' academic performance or by changes in their socioeconomic composition.

Table C1 – Treatment Effects on Socio-Emotional Outcomes Controlling for Peers' Baseline Academic Performance

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Summary indices								
Personal well-being	2,111	−0.13	0.00 [0.96]	1,264	0.16	0.18 [0.12]	−0.29	−0.18 [0.19]
Social well-being	2,111	−0.10	0.18 [0.00]***	1,264	0.08	0.01 [0.75]	−0.18	0.17 [0.03]**
Social attitudes	2,104	−0.18	0.17 [0.01]***	1,264	0.13	0.10 [0.06]*	−0.31	0.07 [0.46]
Panel B. Components of personal well-being								
General well-being	2,109	0.02	0.09 [0.13] ⟨0.44⟩	1,264	−0.00	0.11 [0.22] ⟨0.44⟩	0.02	−0.02 [0.83] ⟨0.76⟩
Academic self-concept	2,111	−0.14	−0.07 [0.33] ⟨0.46⟩	1,264	0.21	0.18 [0.08]* ⟨0.44⟩	−0.35	−0.25 [0.01]** ⟨0.05⟩**
Growth mindset	2,087	−0.11	0.05 [0.23] ⟨0.44⟩	1,261	0.06	0.13 [0.05]** ⟨0.44⟩	−0.18	−0.08 [0.44] ⟨0.76⟩
Behavioral self-concept	2,111	−0.15	−0.05 [0.41] ⟨0.46⟩	1,264	0.19	0.08 [0.42] ⟨0.46⟩	−0.33	−0.13 [0.22] ⟨0.48⟩

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Table C1 – Treatment Effects on Socio-Emotional Outcomes Controlling for Peers' Baseline Academic Performance (Continued)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Components of social well-being								
Perceived school climate	2,100	−0.12	0.10	1,264	0.02	0.06	−0.14	0.05
			[0.14]			[0.31]		[0.59]
			⟨0.24⟩			⟨0.27⟩		⟨0.31⟩
Sense of safety	2,099	−0.18	0.17	1,263	0.21	−0.11	−0.39	0.28
			[0.02]**			[0.08]*		[0.01]**
			⟨0.07⟩*			⟨0.19⟩		⟨0.04⟩**
Trust in the school community	2,103	−0.12	0.09	1,263	0.04	−0.04	−0.17	0.13
			[0.07]*			[0.23]		[0.04]**
			⟨0.19⟩			⟨0.25⟩		⟨0.05⟩**
Relationships with parents	2,108	0.14	−0.01	1,264	−0.06	0.04	0.19	−0.05
			[0.80]			[0.37]		[0.54]
			⟨0.47⟩			⟨0.27⟩		⟨0.31⟩
Relationships with friends	2,111	−0.05	0.25	1,264	0.04	0.09	−0.09	0.16
			[0.00]***			[0.11]		[0.02]**
			⟨0.02⟩**			⟨0.21⟩		⟨0.04⟩**
Panel D. Components of social attitudes								
Cooperative attitudes	1,981	−0.06	0.13	1,238	−0.02	0.05	−0.04	0.08
			[0.05]**			[0.38]		[0.40]
			⟨0.09⟩*			⟨0.53⟩		⟨0.58⟩
Prosocial behavior	2,104	−0.09	0.07	1,263	−0.03	0.13	−0.06	−0.06
			[0.02]**			[0.17]		[0.48]
			⟨0.09⟩*			⟨0.25⟩		⟨0.58⟩
Optimism about social mobility	2,090	0.08	0.13	1,261	−0.13	−0.00	0.21	0.14
			[0.02]**			[0.96]		[0.02]**
			⟨0.09⟩*			⟨0.93⟩		⟨0.14⟩
Rejection of ethnic discrimination	2,044	−0.18	0.16	1,247	0.22	0.03	−0.40	0.14
			[0.01]***			[0.58]		[0.12]
			⟨0.08⟩*			⟨0.64⟩		⟨0.44⟩
Rejection of gender discrimination	2,035	−0.24	0.01	1,245	0.27	0.10	−0.51	−0.09
			[0.82]			[0.03]**		[0.32]
			⟨0.83⟩			⟨0.09⟩*		⟨0.58⟩
Redistributive values	1,901	−0.11	0.03	1,200	0.11	−0.01	−0.22	0.04
			[0.40]			[0.83]		[0.46]
			⟨0.53⟩			⟨0.83⟩		⟨0.58⟩

Notes: See notes of Table 7 in the main text. All regressions control for peers' baseline academic performance, measured by the leave-one-out average Grade 6 national assessment score among same-grade classmates. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

D Robustness to the Definition of High-Gap Students

This section examines the sensitivity of our results to the threshold used to define high-gap students. Appendices D.1 and D.2 vary this threshold, considering the top 40% (a smaller group with larger gaps on average) and the top 60% (a larger group with smaller gaps on average); results are consistent across all three thresholds. Appendix D.3 reports treatment effects for the excluded "low-gap" students (bottom 50%), for whom the scope for changes in peer composition is limited and effects are expected to be small on average.

D.1 Results for the Top 40% Threshold

Table D1 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends (Top 40% Threshold)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of low-SES peers								
among schoolmates	2,137	0.79	−0.12 [0.00]*** ⟨0.00⟩***	1,341	0.40	0.14 [0.04]** ⟨0.05⟩**	0.40	−0.26 [0.00]*** ⟨0.00⟩***
among classmates	2,137	0.80	−0.10 [0.00]*** ⟨0.00⟩***	1,341	0.38	0.15 [0.02]** ⟨0.03⟩**	0.42	−0.25 [0.00]*** ⟨0.00⟩***
among friends	2,137	0.79	−0.04 [0.06]* ⟨0.05⟩**	1,341	0.36	0.07 [0.09]* ⟨0.05⟩**	0.43	−0.11 [0.04]** ⟨0.01⟩**

Notes: See notes of Table 6 in the main text. The sample consists of the 40% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D2 – Treatment Effects on Socio-Emotional Outcomes (Top 40% Threshold)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Summary indices								
Personal well-being	1,664	−0.14	−0.03 [0.60]	1,038	0.12	0.25 [0.01]***	−0.26	−0.28 [0.01]***
Social well-being	1,664	−0.10	0.20 [0.00]***	1,038	0.05	−0.04 [0.24]	−0.15	0.24 [0.00]***
Social attitudes	1,660	−0.20	0.15 [0.00]***	1,038	0.14	0.04 [0.50]	−0.33	0.11 [0.30]
Panel B. Components of personal well-being								
General well-being	1,663	0.02	0.07 [0.19] ⟨0.12⟩	1,038	−0.05	0.12 [0.08]* ⟨0.07⟩*	0.07	−0.05 [0.51] ⟨0.25⟩
Academic self-concept	1,664	−0.15	−0.19 [0.03]** ⟨0.06⟩*	1,038	0.18	0.31 [0.01]*** ⟨0.05⟩*	−0.33	−0.50 [0.00]*** ⟨0.00⟩***
Growth mindset	1,646	−0.13	0.06 [0.16] ⟨0.12⟩	1,035	0.07	0.17 [0.02]** ⟨0.05⟩*	−0.19	−0.11 [0.15] ⟨0.11⟩
Behavioral self-concept	1,664	−0.15	−0.04 [0.46] ⟨0.21⟩	1,038	0.15	0.12 [0.02]** ⟨0.05⟩*	−0.29	−0.15 [0.04]** ⟨0.06⟩*

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Table D2 – Treatment Effects on Socio-Emotional Outcomes (Top 40% Threshold) (Continued)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Components of social well-being								
Perceived school climate	1,656	−0.12	0.08 [0.18] ⟨0.27⟩	1,038	0.00	0.01 [0.82] ⟨0.51⟩	−0.12	0.07 [0.16] ⟨0.13⟩
Sense of safety	1,656	−0.18	0.20 [0.00]*** ⟨0.00⟩***	1,037	0.21	−0.14 [0.11] ⟨0.24⟩	−0.39	0.35 [0.00]*** ⟨0.01⟩***
Trust in the school community	1,659	−0.12	0.10 [0.04]** ⟨0.12⟩	1,037	0.02	−0.03 [0.65] ⟨0.48⟩	−0.14	0.13 [0.07]* ⟨0.08⟩*
Relationships with parents	1,662	0.15	0.01 [0.85] ⟨0.51⟩	1,038	−0.09	0.06 [0.17] ⟨0.27⟩	0.25	−0.05 [0.46] ⟨0.22⟩
Relationships with friends	1,664	−0.07	0.27 [0.00]*** ⟨0.00⟩***	1,038	0.04	0.04 [0.42] ⟨0.44⟩	−0.11	0.24 [0.00]*** ⟨0.01⟩***
Panel D. Components of social attitudes								
Cooperative attitudes	1,551	−0.03	0.12 [0.12] ⟨0.31⟩	1,015	−0.03	−0.01 [0.86] ⟨0.70⟩	−0.01	0.14 [0.32] ⟨1.00⟩
Prosocial behavior	1,660	−0.11	0.06 [0.17] ⟨0.39⟩	1,037	−0.03	0.11 [0.10]* ⟨0.31⟩	−0.07	−0.05 [0.54] ⟨1.00⟩
Optimism about social mobility	1,649	0.13	0.08 [0.24] ⟨0.40⟩	1,035	−0.11	−0.01 [0.88] ⟨0.70⟩	0.24	0.09 [0.28] ⟨1.00⟩
Rejection of ethnic discrimination	1,609	−0.21	0.12 [0.03]** ⟨0.24⟩	1,023	0.22	0.02 [0.76] ⟨0.70⟩	−0.43	0.10 [0.28] ⟨1.00⟩
Rejection of gender discrimination	1,600	−0.29	0.05 [0.34] ⟨0.42⟩	1,021	0.28	0.07 [0.09]* ⟨0.31⟩	−0.57	−0.01 [0.82] ⟨1.00⟩
Redistributive values	1,495	−0.15	0.06 [0.03]** ⟨0.24⟩	981	0.11	0.02 [0.70] ⟨0.70⟩	−0.26	0.04 [0.49] ⟨1.00⟩

Notes: See notes of Table 7 in the main text. The sample consists of the 40% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D3 – Treatment Effects on Academic Outcomes (Top 40% Threshold)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Standardized tests								
Standardized tests	3,992	−0.49	0.02 [0.70] ⟨0.77⟩	2,770	0.61	0.05 [0.37] ⟨0.35⟩	−1.10	−0.03 [0.66] ⟨0.38⟩
Within-school percentile rank	3,992	46.01	−6.49 [0.00]*** ⟨0.01⟩***	2,770	57.93	9.32 [0.01]*** ⟨0.02⟩**	−11.91	−15.82 [0.00]*** ⟨0.00⟩***
Panel B. Continuous assessments								
Grade Point Average	7,515	−0.37	−0.09 [0.09]* ⟨0.15⟩	5,935	0.51	0.11 [0.29] ⟨0.31⟩	−0.88	−0.19 [0.05]* ⟨0.06⟩*
Within-school percentile rank	7,515	47.04	−4.76 [0.00]*** ⟨0.02⟩**	5,935	60.19	9.75 [0.09]* ⟨0.15⟩	−13.15	−14.63 [0.01]*** ⟨0.01⟩**
Panel C. School-reported behavior								
School-reported behavior index	9,793	−0.22	0.01 [0.92] ⟨0.85⟩	6,338	0.28	−0.05 [0.78] ⟨0.77⟩	−0.49	0.06 [0.69] ⟨0.38⟩

Notes: See notes of Table 8 in the main text. The sample consists of the 40% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

D.2 Results for the Top 60% Threshold

Table D4 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends (Top 60% Threshold)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of low-SES peers								
among schoolmates	3,065	0.74	−0.09 [0.00]*** ⟨0.00⟩***	1,967	0.42	0.12 [0.01]** ⟨0.01⟩**	0.33	−0.21 [0.00]*** ⟨0.00⟩***
among classmates	3,065	0.75	−0.08 [0.01]*** ⟨0.01⟩***	1,967	0.40	0.12 [0.00]*** ⟨0.01⟩***	0.35	−0.20 [0.00]*** ⟨0.00⟩***
among friends	3,065	0.74	−0.04 [0.10]* ⟨0.02⟩**	1,967	0.37	0.08 [0.01]** ⟨0.01⟩**	0.37	−0.12 [0.01]*** ⟨0.00⟩***

Notes: See notes of Table 6 in the main text. The sample consists of the 60% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D5 – Treatment Effects on Socio-Emotional Outcomes (Top 60% Threshold)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Summary indices								
Personal well-being	2,411	−0.11	−0.04 [0.53]	1,506	0.17	0.15 [0.10]*	−0.28	−0.19 [0.09]*
Social well-being	2,411	−0.08	0.14 [0.00]***	1,506	0.07	−0.02 [0.19]	−0.15	0.16 [0.00]***
Social attitudes	2,403	−0.14	0.16 [0.00]***	1,506	0.12	0.06 [0.08]*	−0.26	0.10 [0.11]
Panel B. Components of personal well-being								
General well-being	2,409	0.02	0.05 [0.14] ⟨0.33⟩	1,506	−0.01	0.06 [0.32] ⟨0.36⟩	0.03	−0.01 [0.90] ⟨0.82⟩
Academic self-concept	2,411	−0.12	−0.14 [0.09]* ⟨0.33⟩	1,506	0.23	0.19 [0.08]* ⟨0.33⟩	−0.35	−0.34 [0.00]*** ⟨0.00⟩***
Growth mindset	2,385	−0.08	0.02 [0.65] ⟨0.48⟩	1,503	0.08	0.08 [0.07]* ⟨0.33⟩	−0.17	−0.06 [0.36] ⟨0.57⟩
Behavioral self-concept	2,411	−0.13	−0.03 [0.57] ⟨0.48⟩	1,506	0.17	0.09 [0.28] ⟨0.36⟩	−0.31	−0.12 [0.20] ⟨0.43⟩

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Table D5 – Treatment Effects on Socio-Emotional Outcomes (Top 60% Threshold) (Continued)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Components of social well-being								
Perceived school climate	2,399	−0.09	0.07 [0.19] ⟨0.24⟩	1,506	0.03	−0.02 [0.25] ⟨0.25⟩	−0.12	0.08 [0.13] ⟨0.09⟩*
Sense of safety	2,398	−0.15	0.17 [0.00]*** ⟨0.02⟩**	1,505	0.20	−0.14 [0.02]** ⟨0.03⟩**	−0.35	0.31 [0.00]*** ⟨0.01⟩**
Trust in the school community	2,402	−0.10	0.07 [0.10]* ⟨0.14⟩	1,505	0.05	0.00 [0.92] ⟨0.55⟩	−0.14	0.07 [0.12] ⟨0.09⟩*
Relationships with parents	2,408	0.12	−0.02 [0.49] ⟨0.43⟩	1,506	−0.08	0.06 [0.01]*** ⟨0.03⟩**	0.20	−0.08 [0.06]* ⟨0.09⟩*
Relationships with friends	2,411	−0.03	0.19 [0.00]*** ⟨0.02⟩**	1,506	0.05	0.03 [0.54] ⟨0.43⟩	−0.08	0.15 [0.03]** ⟨0.07⟩*
Panel D. Components of social attitudes								
Cooperative attitudes	2,270	−0.03	0.13 [0.01]*** ⟨0.04⟩**	1,476	−0.03	0.02 [0.70] ⟨0.61⟩	−0.00	0.11 [0.15] ⟨0.55⟩
Prosocial behavior	2,403	−0.06	0.07 [0.01]** ⟨0.04⟩**	1,505	−0.04	0.05 [0.50] ⟨0.45⟩	−0.02	0.01 [0.81] ⟨0.68⟩
Optimism about social mobility	2,388	0.09	0.12 [0.02]** ⟨0.04⟩**	1,503	−0.14	0.04 [0.30] ⟨0.35⟩	0.22	0.08 [0.09]* ⟨0.55⟩
Rejection of ethnic discrimination	2,342	−0.15	0.14 [0.01]*** ⟨0.04⟩**	1,489	0.23	0.04 [0.34] ⟨0.35⟩	−0.38	0.10 [0.18] ⟨0.55⟩
Rejection of gender discrimination	2,333	−0.20	0.03 [0.52] ⟨0.45⟩	1,487	0.26	0.08 [0.03]** ⟨0.05⟩*	−0.46	−0.05 [0.45] ⟨0.55⟩
Redistributive values	2,190	−0.10	0.04 [0.10]* ⟨0.12⟩	1,440	0.10	0.00 [0.94] ⟨0.90⟩	−0.20	0.04 [0.35] ⟨0.55⟩

Notes: See notes of Table 7 in the main text. The sample consists of the 60% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D6 – Treatment Effects on Academic Outcomes (Top 60% Threshold)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Standardized tests								
Standardized tests	5,883	−0.40	0.02 [0.75] ⟨0.62⟩	4,066	0.59	0.02 [0.62] ⟨0.62⟩	−0.99	−0.01 [0.91] ⟨0.57⟩
Within-school percentile rank	5,883	45.00	−4.84 [0.00]*** ⟨0.01⟩***	4,066	58.81	7.53 [0.00]*** ⟨0.00⟩***	−13.81	−12.37 [0.00]*** ⟨0.00⟩***
Panel B. Continuous assessments								
Grade Point Average	11,664	−0.32	−0.03 [0.51] ⟨0.58⟩	8,742	0.52	0.11 [0.09]* ⟨0.18⟩	−0.84	−0.14 [0.05]* ⟨0.05⟩*
Within-school percentile rank	11,664	45.77	−2.62 [0.11] ⟨0.18⟩	8,742	61.29	7.89 [0.01]** ⟨0.04⟩**	−15.52	−10.57 [0.00]*** ⟨0.00⟩***
Panel C. School-reported behavior								
School-reported behavior index	14,454	−0.16	0.03 [0.49] ⟨0.58⟩	9,322	0.27	−0.02 [0.77] ⟨0.62⟩	−0.43	0.05 [0.51] ⟨0.34⟩

Notes: See notes of Table 8 in the main text. The sample consists of the 60% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

D.3 Results for the Bottom 50%: "Low-Gap" Students

Table D7 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends (Bottom 50%: "Low-Gap" Students)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of low-SES peers								
among schoolmates	2,281	0.55	0.06 [0.03]** ⟨0.08⟩*	1,519	0.57	0.00 [0.97] ⟨0.94⟩	−0.02	0.06 [0.09]* ⟨0.09⟩*
among classmates	2,281	0.57	0.06 [0.03]** ⟨0.08⟩*	1,519	0.54	−0.00 [0.95] ⟨0.94⟩	0.02	0.06 [0.08]* ⟨0.09⟩*
among friends	2,281	0.57	0.07 [0.04]** ⟨0.08⟩*	1,519	0.50	−0.02 [0.34] ⟨0.35⟩	0.06	0.09 [0.03]** ⟨0.09⟩*

Notes: See notes of Table 6 in the main text. The sample consists of "low-gap" students, defined as the 50% of low- and high-SES students within each treatment–control site pair with the smallest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D8 – Treatment Effects on Socio-Emotional Outcomes (Bottom 50%: "Low-Gap" Students)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Summary indices								
Personal well-being	1,811	−0.09	−0.02 [0.78]	1,165	0.26	−0.05 [0.49]	−0.35	0.03 [0.41]
Social well-being	1,811	0.00	−0.03 [0.64]	1,165	0.08	−0.05 [0.13]	−0.08	0.03 [0.63]
Social attitudes	1,808	0.01	0.03 [0.51]	1,165	0.16	−0.05 [0.24]	−0.15	0.09 [0.15]
Panel B. Components of personal well-being								
General well-being	1,811	−0.02	0.01 [0.78] ⟨1.00⟩	1,165	0.09	−0.11 [0.02]** ⟨0.22⟩	−0.11	0.12 [0.00]*** ⟨0.00⟩***
Academic self-concept	1,811	−0.17	−0.02 [0.74] ⟨1.00⟩	1,165	0.30	−0.04 [0.59] ⟨1.00⟩	−0.46	0.02 [0.81] ⟨1.00⟩
Growth mindset	1,796	0.01	−0.09 [0.05]** ⟨0.22⟩	1,161	0.13	−0.02 [0.76] ⟨1.00⟩	−0.12	−0.07 [0.33] ⟨0.98⟩
Behavioral self-concept	1,811	−0.08	0.04 [0.49] ⟨1.00⟩	1,165	0.20	0.05 [0.49] ⟨1.00⟩	−0.29	−0.01 [0.85] ⟨1.00⟩

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Table D8 – Treatment Effects on Socio-Emotional Outcomes (Bottom 50%: "Low-Gap" Students) (Continued)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel C. Components of social well-being								
Perceived school climate	1,805	0.06	−0.08 [0.18] ⟨0.83⟩	1,165	0.05	−0.04 [0.67] ⟨1.00⟩	0.00	−0.04 [0.55] ⟨1.00⟩
Sense of safety	1,802	−0.02	−0.05 [0.55] ⟨1.00⟩	1,163	0.10	−0.11 [0.04]** ⟨0.40⟩	−0.12	0.06 [0.44] ⟨1.00⟩
Trust in the school community	1,806	0.03	−0.04 [0.56] ⟨1.00⟩	1,165	0.09	−0.04 [0.23] ⟨0.83⟩	−0.06	0.01 [0.91] ⟨1.00⟩
Relationships with parents	1,811	−0.07	0.03 [0.51] ⟨1.00⟩	1,165	−0.06	0.05 [0.06]* ⟨0.40⟩	−0.01	−0.02 [0.75] ⟨1.00⟩
Relationships with friends	1,811	0.02	0.04 [0.60] ⟨1.00⟩	1,165	0.09	−0.01 [0.84] ⟨1.00⟩	−0.07	0.05 [0.33] ⟨1.00⟩
Panel D. Components of social attitudes								
Cooperative attitudes	1,743	0.05	−0.06 [0.21] ⟨0.41⟩	1,125	0.04	−0.11 [0.10]* ⟨0.28⟩	0.01	0.04 [0.55] ⟨1.00⟩
Prosocial behavior	1,806	0.06	−0.07 [0.23] ⟨0.41⟩	1,165	0.00	−0.05 [0.44] ⟨0.64⟩	0.06	−0.02 [0.82] ⟨1.00⟩
Optimism about social mobility	1,797	0.03	−0.02 [0.68] ⟨0.74⟩	1,161	−0.11	−0.13 [0.00]*** ⟨0.00⟩***	0.14	0.11 [0.04]** ⟨0.32⟩
Rejection of ethnic discrimination	1,785	−0.08	0.10 [0.01]** ⟨0.09⟩*	1,148	0.21	−0.01 [0.87] ⟨0.74⟩	−0.28	0.10 [0.12] ⟨0.42⟩
Rejection of gender discrimination	1,780	−0.02	0.08 [0.04]** ⟨0.15⟩	1,146	0.24	0.07 [0.28] ⟨0.41⟩	−0.26	0.01 [0.75] ⟨1.00⟩
Redistributive values	1,687	−0.02	0.05 [0.50] ⟨0.68⟩	1,112	0.11	0.05 [0.26] ⟨0.41⟩	−0.13	0.00 [0.98] ⟨1.00⟩

Notes: See notes of Table 7 in the main text. The sample consists of "low-gap" students, defined as the 50% of low- and high-SES students within each treatment–control site pair with the smallest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table D9 – Treatment Effects on Academic Outcomes (Bottom 50%: "Low-Gap" Students)

	Low SES			High SES			Low vs. High	
	N	Control mean	T−C	N	Control mean	T−C	Control diff.	T−C
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Standardized tests								
Standardized tests	4,587	−0.11	0.03 [0.35] ⟨0.96⟩	3,120	0.50	−0.00 [0.93] ⟨1.00⟩	−0.61	0.04 [0.51] ⟨1.00⟩
Within-school percentile rank	4,587	43.15	4.33 [0.01]** ⟨0.05⟩**	3,120	62.47	1.33 [0.78] ⟨1.00⟩	−19.32	3.01 [0.11] ⟨1.00⟩
Panel B. Continuous assessments								
Grade Point Average	10,028	−0.20	0.13 [0.01]** ⟨0.05⟩**	6,515	0.50	0.06 [0.66] ⟨1.00⟩	−0.70	0.07 [0.48] ⟨1.00⟩
Within-school percentile rank	10,027	43.61	5.34 [0.01]** ⟨0.05⟩**	6,515	64.30	3.49 [0.54] ⟨1.00⟩	−20.69	1.78 [0.46] ⟨1.00⟩
Panel C. School-reported behavior								
School-reported behavior index	10,865	−0.02	0.09 [0.27] ⟨0.89⟩	7,256	0.20	0.01 [0.68] ⟨1.00⟩	−0.23	0.09 [0.31] ⟨1.00⟩

Notes: See notes of Table 8 in the main text. The sample consists of "low-gap" students, defined as the 50% of low- and high-SES students within each treatment–control site pair with the smallest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

E Heterogeneity Analysis

E.1 Heterogeneity by Gender

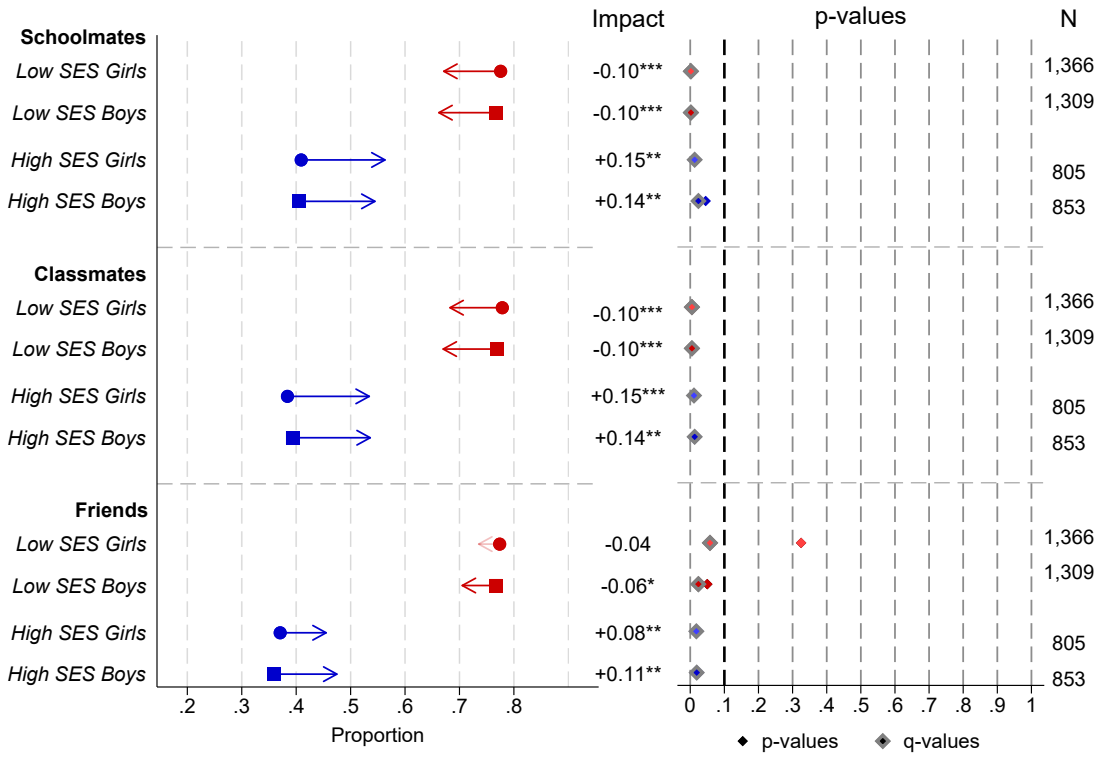

Figure E1 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends, by Gender

Notes: See notes of Figure 5 in the main text. Treatment effects are estimated separately by SES group and gender.

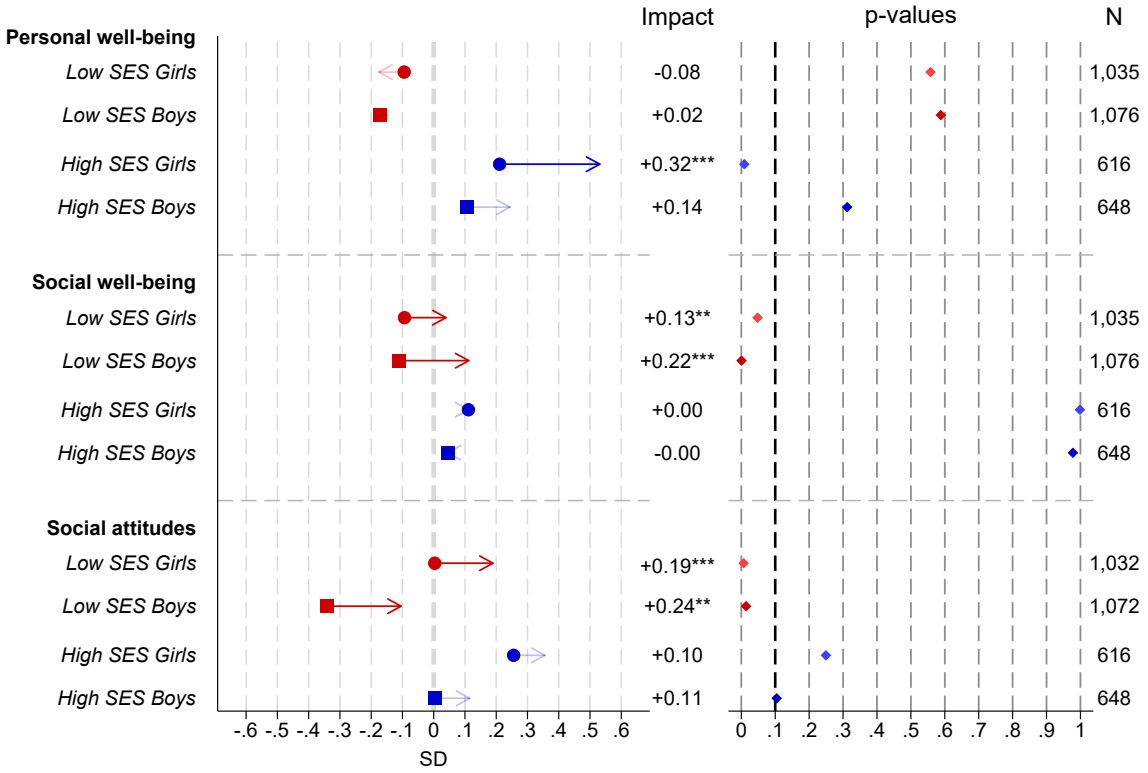

Figure E2 – Treatment Effects on Socio-Emotional Outcomes, by Gender

Notes: See notes of Figure 6 in the main text. Treatment effects are estimated separately by SES group and gender.

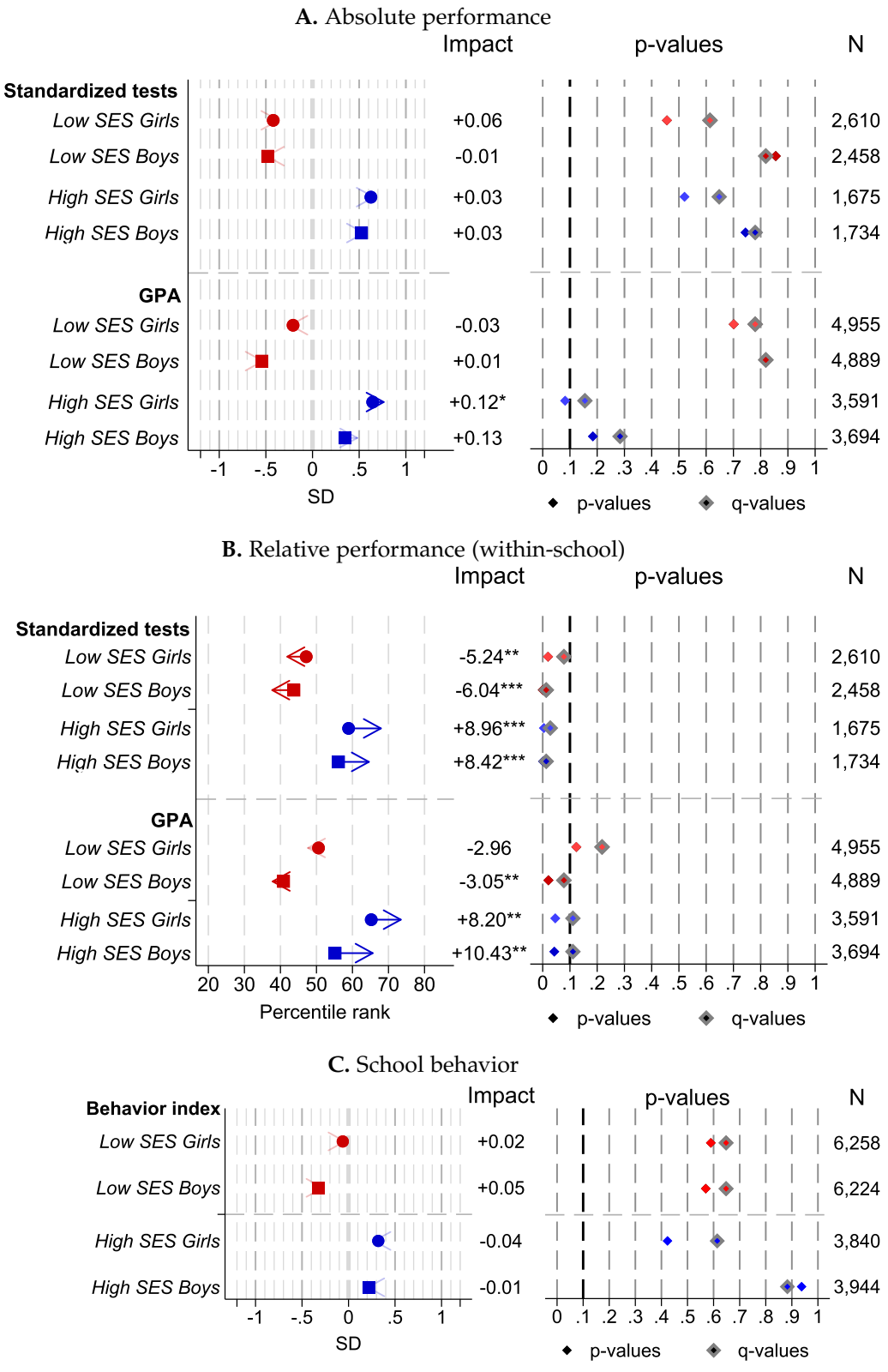

Figure E3 – Treatment Effects on Academic Outcomes, by Gender

Notes: See notes of Figure 10 in the main text. Treatment effects are estimated separately by SES group and gender.

E.2 Heterogeneity by Baseline Academic Performance

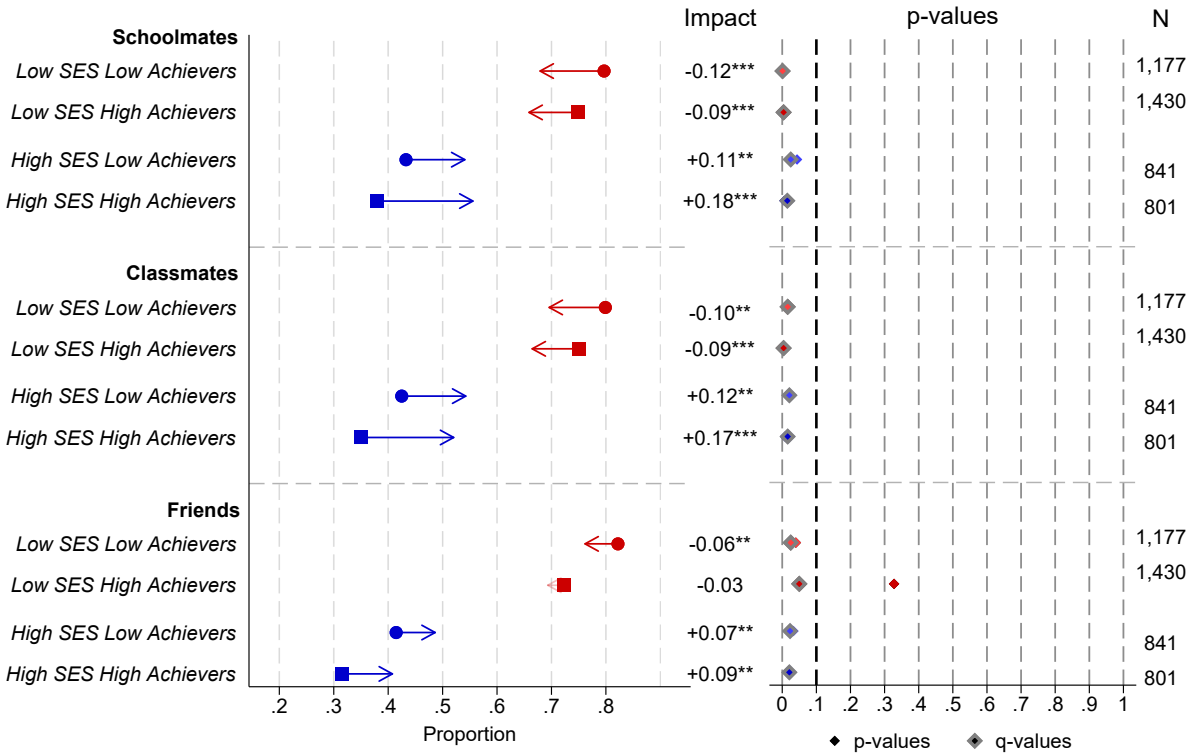

Figure E4 – Treatment Effects on the Socioeconomic Composition of Schoolmates, Classmates, and Friends, by Baseline Academic Performance

Notes: See notes of Figure 5 in the main text. Treatment effects are estimated separately by SES group and baseline academic achievement. Students are classified as low- or high-achieving based on whether their Grade 6 national assessment score falls below or above the median within their SES group.

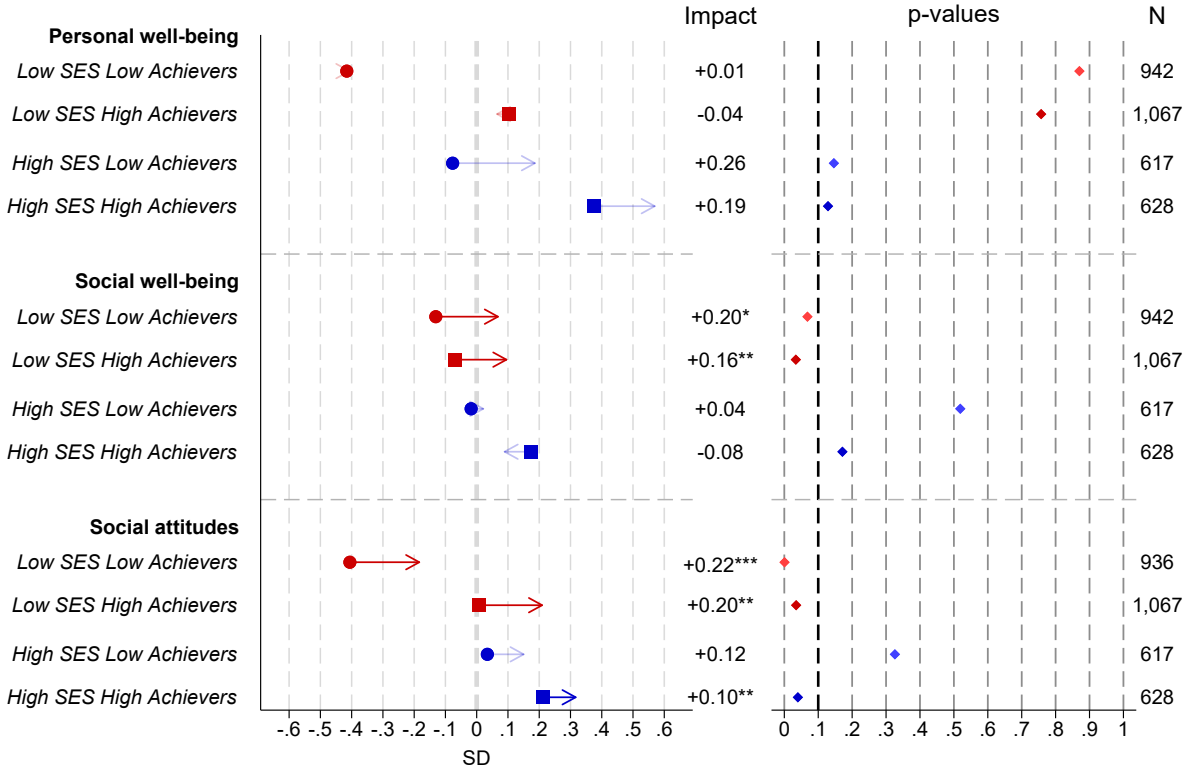

Figure E5 – Treatment Effects on Socio-Emotional Outcomes, by Baseline Academic Performance

Notes: See notes of Figure 6 in the main text. Treatment effects are estimated separately by SES group and baseline academic achievement. Students are classified as low- or high-achieving based on whether their Grade 6 national assessment score falls below or above the median within their SES group.

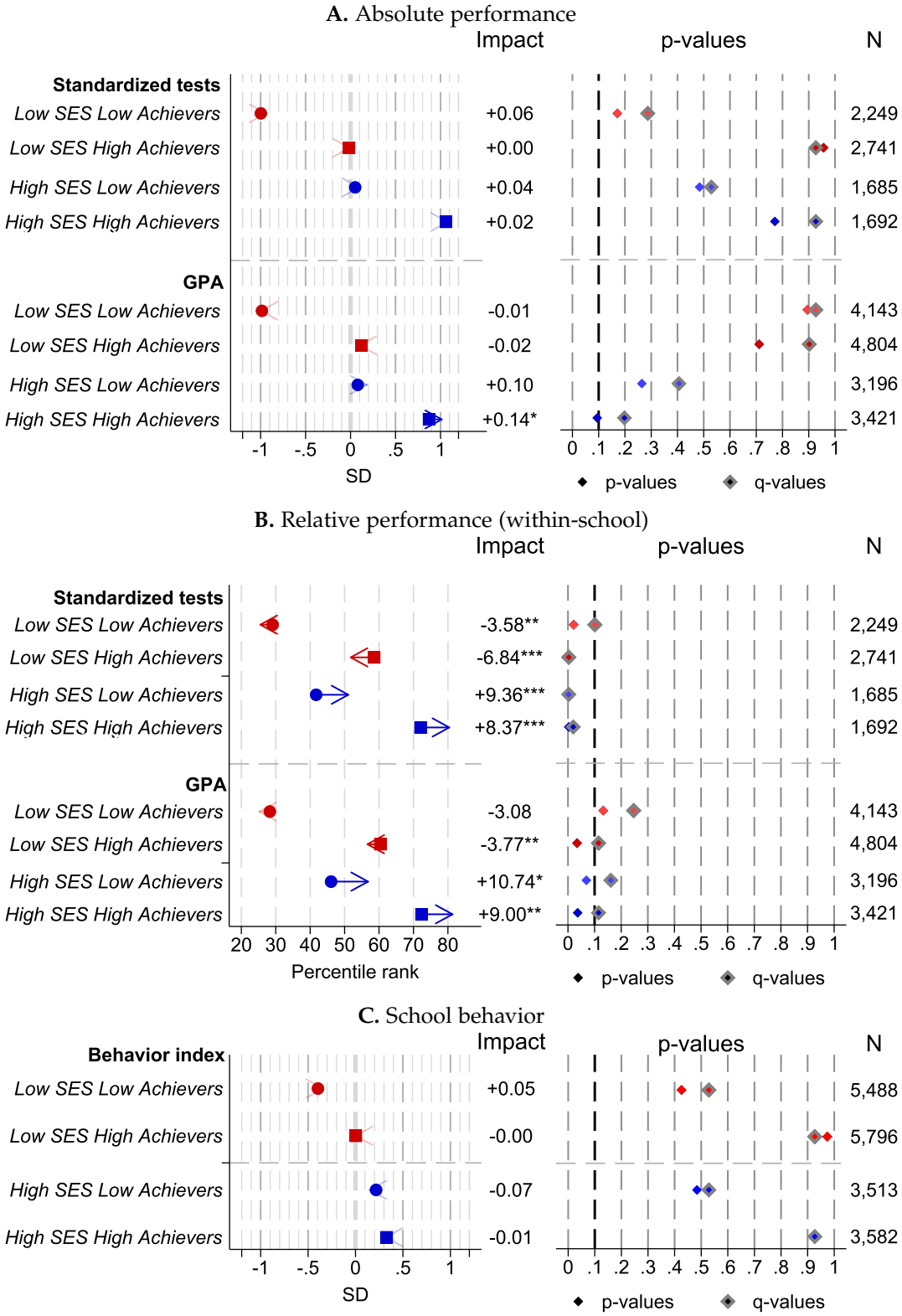

Figure E6 – Treatment Effects on Academic Outcomes, by Baseline Academic Performance

Notes: See notes of Figure 10 in the main text. Treatment effects are estimated separately by SES group and baseline academic achievement. Students are classified as low- or high-achieving based on whether their Grade 6 national assessment score falls below or above the median within their SES group.

F Enrollment in Private Schools

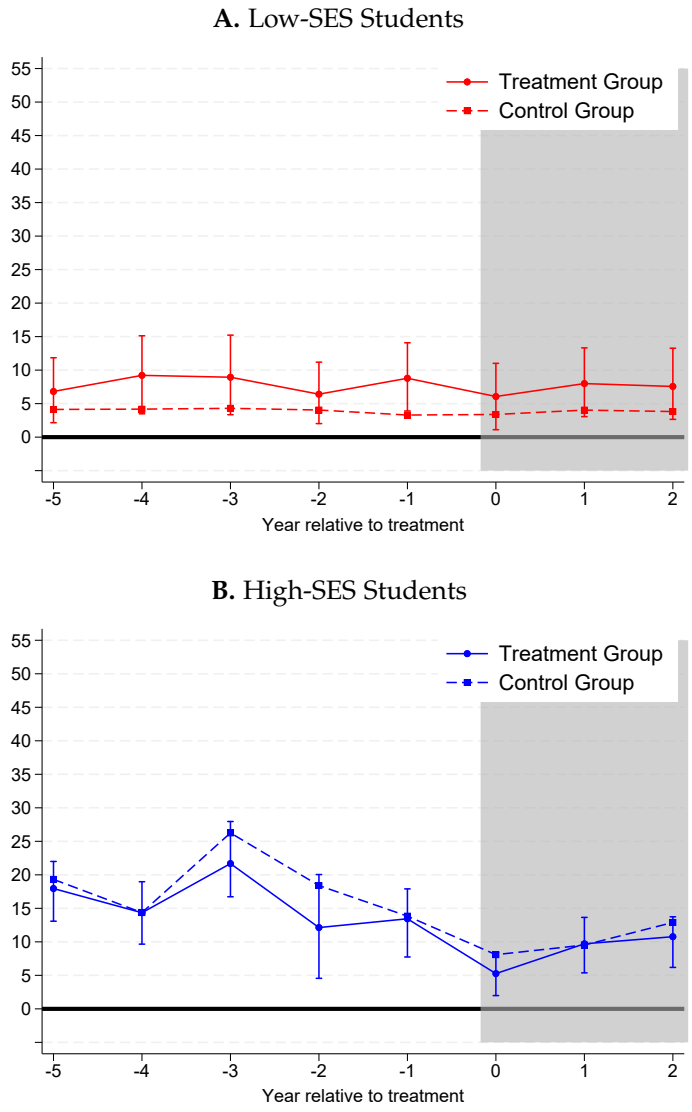

Figure F1 – Share of Grade 6 Students from Feeder Elementary Schools Enrolling in Private Middle Schools

Notes: This figure shows the evolution of private middle school enrollment rates at Grade 6 entry for low-SES students (Panel A) and high-SES students (Panel B). The sample includes high-gap students enrolled in Grade 5 in feeder elementary schools. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2). Feeder elementary schools are defined as those that sent at least five students to a public middle school in our sample during the five-year pre-treatment period. Dashed lines show the raw evolution in control sites. Solid lines for treatment sites are obtained by adding to the control-group trend the estimated coefficients on the interaction between the treatment indicator and year fixed effects, from a regression of private school enrollment on year fixed effects and the interactions of year fixed effects with the treatment indicator. All regressions include cohort fixed effects, site-pair fixed effects, and control variables selected via the double-lasso procedure of Belloni et al. (2014) from the set listed in Tables 2 and 3. Observations are weighted by the number of students from each feeder school who enrolled in the surveyed sites' public middle schools during the pre-treatment period. Standard errors are clustered at the site level, and p-values are adjusted using the wild cluster bootstrap of Cameron et al. (2008) to account for the small number of clusters. Vertical bars indicate 95% confidence intervals. Shaded areas mark the post-treatment period.

G Non-Surveyed Sites

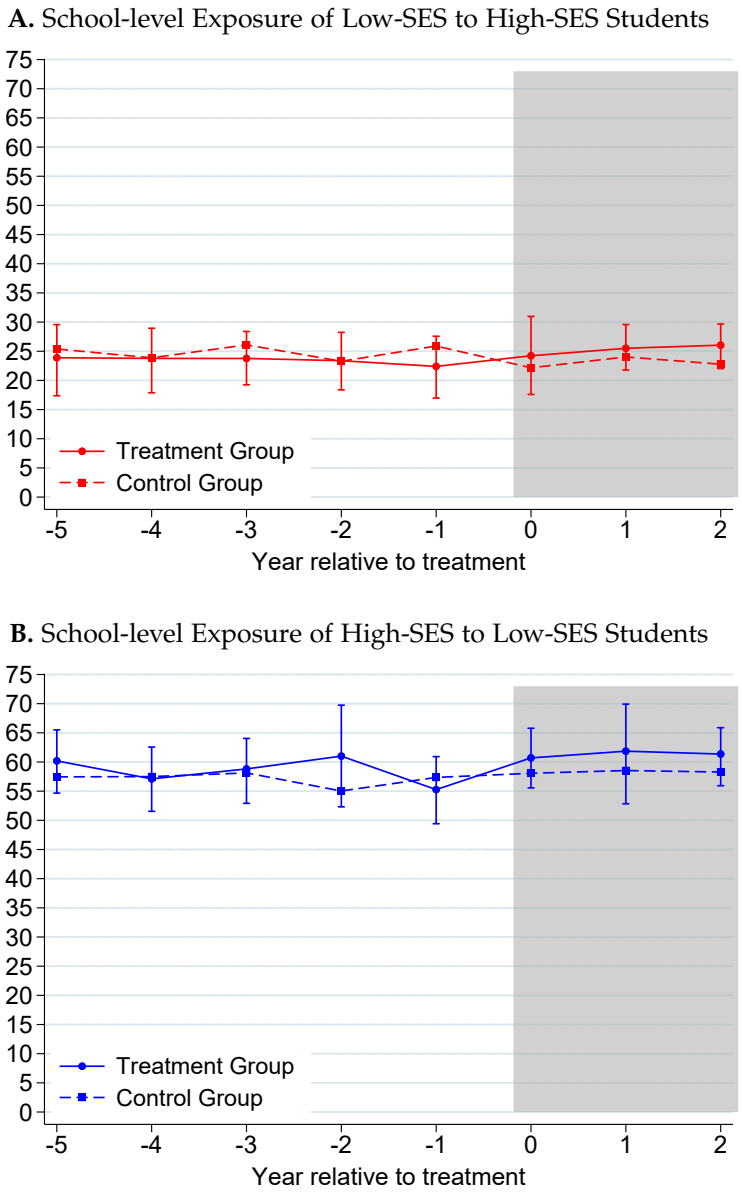

Figure G1 – Impact of Social Mixing Interventions on School-Level Cross-Group Exposure in Non-Surveyed Sites (High-Gap Students)

Notes: See notes of Figure 4 in the main text. The sample consists of high-gap students entering Grade 6 in the 12 treatment and 12 matched control public middle schools in non-surveyed sites. High-gap students are defined as the 50% of low- and high-SES students within each treatment–control site pair with the largest predicted exposure gap to students from the other SES group in the absence of treatment (see Section 2).

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