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Understanding the Association Between Educational Experiences and Economic and Social Mobility: Evidence from the National Longitudinal Survey of Youth 1997

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Using data from the National Longitudinal Study of Youth 1997, we examine differences in educational experiences and in social and economic mobility for youths experiencing poverty relative to their more affluent peers. We also explore the extent to which different educational experiences are associated with greater mobility for students experiencing poverty. We find that youths from poverty are less than half as likely as their more affluent peers to earn a living wage, reach the top quartile of income, or attain a high level of economic wellbeing and stability. They also have less educational opportunity in their youth, particularly when it comes to academic experiences. Meanwhile, the educational experiences where there are the largest inequities are also the ones that are most predictive of long-term mobility for students from poverty, suggesting that having the opportunity to do well in school may help young people improve their economic standing and achieve broader levels of wellbeing later in life. At the same time, students experiencing poverty who have exceptional academic outcomes on average still do not manage to exceed the average adult income of the typical student not coming from poverty. Altogether, our findings point to both the importance and inadequacy of academic experiences for breaking the cycle of intergenerational poverty.

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Understanding the Association Between Educational Experiences and Economic and Social Mobility: Evidence from the National Longitudinal Survey of Youth 1997

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Abstract – Using data from the National Longitudinal Study of Youth 1997, we examine differences in educational experiences and in social and economic mobility for youths experiencing poverty relative to their more affluent peers. We also explore the extent to which different educational experiences are associated with greater mobility for students experiencing poverty. We find that youths from poverty are less than half as likely as their more affluent peers to earn a living wage, reach the top quartile of income, or attain a high level of economic wellbeing and stability. They also have less educational opportunity in their youth, particularly when it comes to academic experiences. Meanwhile, the educational experiences where there are the largest inequities are also the ones that are most predictive of long-term mobility for students from poverty, suggesting that having the opportunity to do well in school may help young people improve their economic standing and achieve broader levels of wellbeing later in life. At the same time, students experiencing poverty who have exceptional academic outcomes on average still do not manage to exceed the average adult income of the typical student not coming from poverty. Altogether, our findings point to both the importance and inadequacy of academic experiences for breaking the cycle of intergenerational poverty.

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INTRODUCTION

The immutability of poverty across generations is well documented (e.g., Bratberg et al. 2017; Chetty et al. 2014b; Chetty et al. 2014d), yet some escape the binds of poverty (Chetty et al. 2017; Chetty and Hendren 2018). Identifying manipulable pathways for upward mobility is pivotal for alleviating racial and economic disparities (Akee, Jones, and Porter 2019; Bhattacharya and Mazumder 2011; Chetty et al. 2020), and education is one potential lever. Researchers have accumulated plentiful evidence that students' outcomes are driven in part by their schools (e.g., Carlson and Cowan 2015; Mbekeani et al. 2023), which matter for a range of outcomes—from educational attainment to crime and adult earnings (Altonji and Mansfield 2011; Deming 2011; Deutsch, Johnson, and Gill 2021; Jackson et al. 2020). Yet, even as recent research suggests mechanisms through which schooling influences post-secondary outcomes, the nature of the relationship between educational experiences and economic and social mobility (ESM) remains opaque (Oreopoulos and Salvanes 2011). Recently widened academic and economic disparities (Fahle et al. 2023) point to a need to better understand this relationship, particularly for students coming from relative disadvantage.

In this paper, we explore the extent to which widely acknowledged patterns of inequitable access to upward mobility relate to youths' educational experiences. Specifically, we first document the extent to which students experiencing poverty obtain meaningful mobility; second, we explore how educational experiences differ between students experiencing poverty and their more affluent peers; and finally, we examine the extent to which different educational experiences may facilitate upward mobility for students experiencing poverty.

We observe deep inequities in access to educational experiences and socio-economic wellbeing in adulthood. Consistent with prior research (e.g., Chetty et al. 2014b; Lee and Solon

2009), we find that the average young person whose family was in the bottom quartile of household income was disproportionately unlikely to experience upward economic mobility. We also find deep inequities in access to high-quality educational experiences. These differences are crucial because, when we examine pathways to mobility, the secondary-education experiences that are most associated with mobility are also the ones where students have the most inequitable access. Experiences related to academic opportunity and performance—in particular, students' *Academic Outcomes* (course grades, advanced course-taking, and attendance)—are those with the largest differences across the family income distribution. These same experiences also confer the greatest predicted increase in mobility when students from poverty have better opportunity.

We add to what is currently a large but relatively piecemeal body of evidence across individual types of experiences by looking at students' educational experiences holistically. Importantly, while much of the literature on ESM and schooling attempts to examine effects on long-term outcomes, data limitations typically prevent us from seeing further than early adulthood. For example, much of the research on the relationship between education and mobility defines outcomes in terms of early-adulthood earnings or educational attainment, (e.g., Allensworth and Clark 2020; Altonji and Mansfield 2011; Brunner, Dougherty, and Ross 2023; Long, Conger, and Iataroloa 2012). We expand on this literature by exploring longer-term wellbeing, tracking students into their thirties. To do so, we leverage the National Longitudinal Survey of Youth 1997 (NLSY97), which tracks life experiences and labor-market outcomes for children born between 1980 and 1984. While our data do not encompass all potentially important experiences, by bringing in a rich, long-term panel, we provide a broader look at pathways to mobility and the ways in which educational experiences might facilitate movement up the socioeconomic ladder.

BACKGROUND

Childhood socio-economic contexts strongly predict—but by no means guarantee—economic and social wellbeing in adulthood. Economic opportunity is malleable based on many factors, including education from Kindergarten (Chetty et al. 2011; Dynarski, Hyman, & Schanzenbach 2013) through high school (Fiel 2020; Mbekeani et al. 2023) and beyond (Akee et al. 2019; Chetty et al. 2020; Torche 2011). Yet, we know little about the specifics of what K-12 students are learning or experiencing that might explain long-run effects. Meanwhile, research also points to the importance of individual experiences for shorter-term wellbeing. Given the scope of experiences youths have while in school, the literature is both rich and broad. We categorize the evidence on these experiences into three general domains: (a) academic experiences—including cognitive skills (e.g., academic achievement), non-cognitive skills (e.g., behaviors), and academic contexts—; (b) social (peer) networks; and (c) career and technical education (CTE). For each, we briefly describe the literature about differential access to the respective domain, as well as what current evidence suggests regarding its relationship to longer-term wellbeing.

Academic Experiences

Prominent among academic experiences is the learning, often measured by achievement, that students demonstrate in academic subjects. A substantial literature affirms relationships between: (a) "cognitive skills" (e.g., Doty et al. 2022; Hellerstein, Luo, and Urzúa 2024) and subsequent economic and social wellbeing; (b) "non-cognitive" skills (which can include behavioral factors such as attendance and suspensions, personality traits like self-regulation, and course grades[i]; Browman et al. 2019; Liu, Kuhfield, and Lee 2023) and long-term outcomes; and (c) student demographic traits and identities (e.g., Browman et al. 2019; Reardon et al. 2022).

Cognitive and noncognitive skills are each independently important for both short- and longer-term outcomes (Allensworth and Clark 2020; Hanushek et al. 2015; Jackson et al. 2020; Liu et al. 2023). Researchers studying an earlier NLSY cohort (i.e., youths first surveyed in 1979) found that childhood cognitive differences largely explain away the Black-White gap in intergenerational upward mobility (Battacharya and Mazumder 2011). While returns to cognitive skills may have declined somewhat over recent decades, the relationship remains strong and is sensitive to the overall skill distribution of the cohorts entering the labor market (Hellerstein et al. 2024); meanwhile, noncognitive skills may be growing in importance (Deming 2017).

Many other academic experiences, including course-taking opportunities, school and teacher quality, and school-family engagement also correlate with demographics and predict longer-term wellbeing. For example, students of color tend to have lower access to advanced and more-rigorous coursework, while also reaping larger socio-economic benefits from these opportunities (Hemelt, Schartz, and Dynarski 2020; Long et al. 2012). While substantial sorting of students across and within schools may yield differential access to high-quality educational experiences, a rich literature demonstrates the importance of individual teachers and schools for students' short- and long-term success, as well as the importance of relationships and engagement between students, parents, and schools (Chetty, Friedman, and Rockoff 2014a; Deutsch, Johnson, and Gill 2021; Jackson 2018; Jackson et al. 2020; Jeynes 2007; Kraft 2019; Kraft and Dougherty 2013; Mbekeani et al. 2023).

Social Networks

Due to differential assignment to schools and across and within classrooms, students tend to learn and interact with others with similar demographic backgrounds, home experiences, and achievement (Angrist 2014; Reardon et al. 2022; Reardon et al. 2024). Ultimately, youths from

traditionally disadvantaged backgrounds have markedly lower access to strong peers. For example, students living in more violent neighborhoods are more likely to exhibit anti-social behaviors and these behaviors may disrupt learning and lower norms for their classroom peers (Burdick-Will 2018; Carrell, Hoekstra, and Kuka 2018; Figlio 2007). Access to higher-performing or better-behaved peers may also bring stronger social capital, such as through entry into privileged networks that offer otherwise-inaccessible knowledge, expectations, and opportunities (Burgess and Umaña-Aponte 2011; Jackson and Yariv 2011; Murray et al. 2020).

Peer effects are difficult to causally identify (Angrist 2014) and the shorter-term effects of school peers are generally better understood than long-term peer effects (see Sacerdote 2011), but emerging evidence suggests long-reaching consequences of the quality, composition, and behaviors of one's peers in school. Causal estimates have been identified in an array of educational settings, from early elementary (Chetty et al. 2011) through higher education (Chetty et al. 2020), and across a variety of peer traits, ranging from peer achievement (Chetty et al., 2011) to behaviors (Carrell et al. 2018; Roska and Robinson 2017) and socioeconomic status (Black et al. 2013; Burgess and Umaña-Aponte 2011; Chetty et al. 2020; Chetty et al. 2022). For example, Chetty et al. (2011) found that students randomly assigned to early elementary classrooms with higher average peer achievement are more likely to attend college by their early 20s and earn higher incomes in early adulthood. Carrell et al. (2018) found that negative peer qualities are also important; higher contact with disruptive peers—driven by the peers' exposure to domestic violence—affects educational attainment and earnings. Peer effects may be heterogeneous and particularly potent for students coming from relative disadvantage; in some cases, researchers have found mobility effects to be larger for students from less advantaged

socioeconomic circumstances when they have access to peers with stronger economic, social, or cultural capital (e.g., Roksa and Robinson 2017; Chetty et al. 2022).

Career and Technical Education

The evidence around career preparation is mixed and generally poorly suited toward a single narrative around what aspects of career awareness and readiness may most matter for long-term success. Part of the reason for this is that the focus and nature of CTE is highly variable and has evolved over time. In recent years, in part due to federal policies shifting curricular emphases toward more rigorous and academic coursework (i.e., the No Child Left Behind Act of 2001 and the Carl D. Perkins Career and Technical Education Act of 2006; Kim et al. 2021), CTE has more broadly addressed college and career readiness than traditional vocational education (Ecton and Dougherty 2023).

In general, students with greater CTE exposure are more likely to be male, have learning disabilities, live in rural communities, come from lower-income families, and have lower academic achievement (Ecton and Dougherty 2023; Kreisman and Stange 2020; Theobald et al. 2022), although demographic patterns vary according to the nature of the CTE program and experience (Ecton and Dougherty 2023; Kim et al. 2021). Access to CTE also correlates with school resources and features of the local labor market (Sutton 2017).

Overall, CTE programs can boost post-secondary and long-term earnings for students who are on track for high school graduation but do not plan on pursuing higher education (Carnevale et al. 2023; Kreisman and Stange 2020). The returns to CTE vary across concentration areas, although in some higher-return sectors earnings appear to peak early and subsequently decline (Ecton and Dougherty 2023). Earnings advantages may additionally be

larger for students attending CTE-dedicated schools (Ecton and Dougherty 2023), highlighting the importance of depth for program quality (Kreisman and Stange 2020; Theobald et al. 2019).

Evidence on who most benefits varies, potentially reflecting differences in labor market contexts, CTE definitions, and the era being studied. While CTE can improve early adulthood outcomes across the socioeconomic spectrum, benefits often accrue toward groups that are already relatively advantaged—specifically male students, and white males in particular—such that CTE may exacerbate inequality (Brunner et al. 2023; Carnevale et al. 2023; Kreisman and Stange 2020). In addition, CTE can increase high school graduation and two-year-college enrollment but may reduce total years of education by diverting students from four-year colleges (Cellini 2006). However, CTE programs that prioritize depth and academic rigor tend to yield larger socioeconomic returns (Kreisman and Stange 2020; Brunner et al. 2023). For example, CTE-aligned dual enrollment is associated with higher post-secondary attainment, including for traditionally marginalized subgroups (Edmunds et al. 2023), and concentration in CTE coursework may confer educational attainment and employment benefits for students with disabilities (Theobald et al. 2019).

DATA AND METHODS

The National Longitudinal Survey of Youth 1997

To connect high school experiences with long-run ESM, we use publicly accessible longitudinal data from the Bureau of Labor Statistics (BLS). In 1997, the BLS's National Longitudinal Surveys (NLS) program launched the NLSY97 to track the life experiences and labor-market outcomes of children born between 1980 and 1984 (aged 12-18 at the initial interview). A nationally representative sample was surveyed annually through 2011, after which the NLSY97 switched to a biannual schedule. Data are currently available through the 2021-22

survey wave (Round 20), which includes approximately three quarters of the initial 8,984 respondents. See Appendix A for more detail about the survey and the composition of our analytic sample.

Definitions

The NLSY97 provides an opportunity to connect secondary-school experiences to life outcomes, including income, wealth, career satisfaction, and general wellbeing. Because the NLSY97 provides a window into families' economic standing while respondents were school-aged, we focus specifically on the types of educational experiences that made individuals most economically mobile. We define these experiences broadly, incorporating opportunities, skills, and behaviors while in school. These experiences are a blend of inputs and outputs—from achievement to peer groups and more—reflecting a range of school-age opportunities.

The crux of the NLSY97 is surveys of the students (now adults) themselves, although the NLSY97 also surveyed students' parents and schools. Thus, there is a broad array of experiences we can connect to long-term mobility. We reviewed survey questions across rounds to identify items that were pertinent to youths' experiences while in middle and high school and their wellbeing as adults, in addition to a range of demographic characteristics. We then used data-reduction techniques described briefly here, and in more detail in Appendix B, to classify and create holistic measures of the experiences and mobility these youths encountered.

Students Experiencing Poverty

We focus our analyses on students who come from families experiencing poverty, which we categorize according to whether respondents' families were in the bottom quartile of the household-adjusted poverty distribution. To define this sample, we first establish baseline poverty according to family income as reported in the initial survey wave and then estimate the

ratio of family income to the US Census Bureau's household-size-specific poverty thresholds.[ii] We then assign sample-weighted percentile rankings. We consider students to be experiencing poverty when their household-adjusted poverty ratio places them in the bottom quartile. For a family of four, students experiencing poverty according to our definition have household incomes below approximately 126% of the 1997 federal poverty level, or $39,400 in 2023 dollars.

In several analyses, we compare experiences and outcomes for students experiencing poverty with experiences and outcomes for those not experiencing poverty. We define this comparison group as those from the upper half of the family-income distribution; these students come from households earning roughly $79,300 or more in 2023 dollars (for a household of four).[iii, iv] Table 1 compares the two groups' demographic and income traits. The median student not experiencing poverty has a household income six and a half times that of the median student from a family experiencing poverty ($132,847, compared to $20,341 in 2023 dollars). There are also large differences in terms of the youths' parental education levels, parental health, and other demographics. Students experiencing poverty are approximately three times as likely to identify as Black or Hispanic, and are somewhat more likely to come from multi-lingual households or have special education needs.

Educational Experiences

To define educational experiences, we compiled 47 variables relating to students' experiences while in middle or high school. We then conducted a series of exploratory and confirmatory factor analyses to reduce these items to an empirically justified and more parsimonious set of variables. Our factor analyses suggest that these items could be reasonably categorized into eleven experiences. For each experience, we create a unique domain score

which we convert into sample-weighted standard-deviation units. These domains are briefly defined here, with more detail in Appendix B:

- Academic Outcomes: grades, advanced coursework, and attendance.
- College Readiness: standardized achievement, taking the courses that put students on track for college-going.
- Behaviors and Expectations: academic behaviors (including suspensions), expectation for the future (e.g., college-going, likelihood of arrest), and high school completion.
- Teachers and School: perceptions that teachers are good, that teachers are interested in their students, and that school is safe.
- Parental Involvement: parental volunteering at school, PTA participation, and awareness of what is happening at school.
- School Culture: the extent to which students report their classmates disrupt learning or cheat on tests and assignments (reverse coded).
- Peer Delinquency: perceptions of the extent to which grade-level peers engage in undesirable behaviors (drug use, cutting school, gang membership; reverse coded).
- Peer Engagement: perceptions of the extent to which grade-level peers: participate in clubs, sports, or other school activities; volunteer; and plan to go to college.
- Work-Based Learning: CTE with on-site or other practice-based experience.
- Occupational Training: CTE that is geared to a specific job or tied to a professional credential (e.g., certificate or licensure).
- Vocational Coursework: vocational specialization in high school or any high school coursework with co-op or work experience.

Economic and Social Mobility

We focus on three related measures of mobility. The first reflects whether the respondent earns a living wage; the second is whether the youth reaches the top quartile on a composite measure of *economic wellbeing* and stability; and the third reflects whether the respondent has reversed their location in the household income distribution—that is, moving from the bottom to the top income quartile. We additionally create a composite measure of health in adulthood, although the measurement properties for this outcome are not ideal and so we consider this measure to be supplementary. For each metric, we define wellbeing at age 30 because: (a) this is an age for which there is broad coverage in the current data; (b) income tends to be relatively stable by age 30; and (c) estimates from earlier in adulthood may downwardly bias estimates of the relationship between educational skills and lifetime earnings (Chetty et al. 2014b; Haider and Solon 2006; Nybom and Stuhler 2017).[v, vi] We briefly describe these measures, with more detail available in Appendix B .

Earning a Living Wage

While economic mobility is often measured distributionally (e.g., Bratberg et al. 2017; Chetty et al., 2014b; and Corak 2013), our *living wage* measure intentionally does not depend on the wellbeing of others and is not sensitive to population-level economic shifts. Specifically, we use MIT's Living Wage Calculator to set thresholds for whether the respondent's household income suffices to cover basic needs.[vii] These thresholds account for household size and composition, including the number of adults contributing incomes. This definition is much broader than typical income-based measures such as the federal poverty level, in that it includes a wide range of the costs individuals and families typically need to cover, including not just food, but also health care, childcare, utilities, and the cost of civic engagement, among other expenses.

Household Income

While affording necessary expenses is important, we are also interested in the extent to which youth reverse their relative economic standing. Therefore, we include among our mobility outcomes an indicator for being in the *top quartile of the household income distribution*, with percentile rankings weighted according to population representation and survey participation.

Economic Wellbeing

Income is not the sole determinant of one's financial wellbeing, and the income necessary to live comfortably varies according to things like household size. Here we pull information from several items consistently captured in adulthood and, using principal component analysis followed by a confirmatory factor analysis, sort them into two broad outcomes. The first relates to *economic wellbeing* and stability, and includes household income, household poverty ratio, net worth, full-time employment, overall satisfaction with one's job(s), and whether the respondent has been arrested (reverse coded). We create the *economic wellbeing* composite by converting all items that load onto that factor to a common scale (see Appendix B), averaging the items together, and converting the average score to standard deviation units. We consider youths mobile on this factor if they reach the top quartile in adulthood.

Physical, Emotional, and Psychological Wellbeing

The second set of outcomes reflects respondents' *physical, emotional, and psychological health*, including impacts of their health on employment. We use the same procedures to define this outcome—that is, we convert all items to a common scale, average across items, and then transform the average score to have mean 0 and unit 1 variance. We likewise define mobility in terms of attaining a top-quartile score on the composite factor. However, unlike *economic wellbeing*, the goodness-of-fit statistics for these items do not meet typical standards for factor

scores (see Appendix B). We therefore consider this a supplementary measure, rather than part of our main analysis.

Analytic Approach

To examine differences in mobility, we first estimate the raw proportion of youth experiencing poverty who meet each adult-age outcome. Then, to assess the role of poverty after accounting for other family characteristics, we regress each ESM outcome (Y_i^{ESM}) on family poverty (Pov_i), which we enter using indicators for quartile of household income, with families in the upper half of the income distribution serving as the reference group.[viii] We estimate naïve models, in addition to adding a vector of controls ($\boldsymbol{X}_i$) for special education needs (whether students or their parents report physical, emotional, or learning problems or conditions that limit the youth's school or work performance), multilingual households, parental education levels and health, residency (i.e., region, urbanicity, and whether they are in an MSA), race and ethnicity, and birth year. While we prefer linear probability models for ease of interpretation, we also estimate logistic models. These models are illustrated by equation 1, where ε_i represents random error:

$$Y_i^{ESM} = Pov_i + \boldsymbol{X}_i + \varepsilon_i \qquad \text{(Eq. 1)}$$

To examine differences in educational experiences, we use both a dichotomized measure of each experience factor and a continuous (standard deviation units) version[ix]. We employ a model similar to equation 1, replacing the left-hand-side variable with an indicator for whether respondent i had a top-quartile score for experience k ($Y_i^{Exp=k}$). We first estimate a naïve version (equation 2).

$$Y_i^{Exp=k} = Pov_i + \varepsilon_{ik} \text{ (Eq. 2)}$$

Next, we test for robustness to controls for the same covariates used in equation 1 ($\boldsymbol{X}_i$), in addition to all other experience factors $\{\boldsymbol{E}_i\}_{k\neq1}^{n-k}$, in standard deviation units (equation 3).

$$\mathrm{Y}_i^{Exp=k} = \{\boldsymbol{E}_{ij}\}_{k\neq1}^{n-k} + Pov_i + \boldsymbol{X}_i + \varepsilon_{ik} \qquad \text{(Eq. 3)}$$

To examine how these experiences relate to mobility, we narrow our analytic sample to students experiencing poverty. We then estimate mobility (Y^{ESM}) for respondent i as a function of the set of n through $k = 11$ experiences, $\{\boldsymbol{E}_i\}_k^n$, and random error (ε_i). We include our vector of controls for baseline student and family characteristics ($\boldsymbol{X}_i$), with one addition. Specifically, here we also condition on the family poverty ratio at baseline, as our interest is the relationship between educational experiences and mobility for all students experiencing poverty, separate from the severity family poverty[x]:

$$Y_i^{ESM} = \{\boldsymbol{E}_i\}_k^n + \boldsymbol{X}_i + \varepsilon_i \qquad \text{(Eq. 4)}$$

In equation 4, each $\boldsymbol{E}_i$ is the student's factor score for the respective experience. We compare non-parametric models that contrast strong and weak (top- versus bottom-quartile) experiences to models where experiences are in standard deviations. In the latter case, the coefficient on each experience ($\boldsymbol{E}_i$) represents the association between a standard deviation change in that experience and mobility in adulthood for students experiencing poverty; in the former, it represents the difference in mobility for a student from poverty who reported high-quality (top quartile) experiences relative to other students from poverty who reported weak (bottom-quartile) experiences. In both cases, the relationship is conditional on all other observed experiences. We prefer linear probability models for interpretability but test for robustness to logistic models. We also test for sensitivity to the inclusion of sample weights, as recommended by Solon et al. (2015), and find that estimates are similar across weighting schemes but slightly

more precise with sample weights. We report weighted results in our tables, with unweighted findings available upon request.

We should note that that these analyses are not causal; we cannot fully isolate educational experiences from the student and family characteristics and earlier life experiences that might drive both the types of educational opportunities students experience and their long-run outcomes. For example, we would ideally estimate equation 3 within household (see, for example, Cellini 2006), given that the NLSY97 brought in siblings whenever a sampled youth had a sibling in the target age range at the start of the survey; however, there is insufficient variation to detect differences within households experiencing poverty. Nevertheless, we believe that our choice of controls substantially mitigates bias from unobserved confounders.

FINDINGS

Youths experiencing poverty have starkly lower mobility than their more affluent peers.

Poverty in youth predicts poverty in adulthood (Table 2; estimates from equation 1). The average youth whose family was in the bottom household-income quartile was less than half as likely as a youth from the upper half of the family-income distribution to earn a living wage at 30 (0.31, compared to 0.64; columns 1 and 2) and only about a third as likely to reach the top quartiles of household income or *economic wellbeing* (0.11 versus 0.35). Youth starting in poverty were also disproportionately likely to remain in poverty; they were three times as likely as their more affluent peers to be in the bottom household-income quartile as adults (0.41 versus 0.13). Even conditional on background characteristics (column 4), the gap remains substantial; youths experiencing poverty are 20 percentage points less likely to earn a living wage, 13 percentage points less likely to reach the top income quartile, and 8 percentage points less likely

to attain high *economic wellbeing* at 30. They are much more likely to still be in the bottom income quartile (16 percentage points).

The scope of differences is sprawling and paints a picture of varying opportunities into adulthood (Appendix D, Table D1). Students from poverty: are less likely to pursue or complete higher education; are less likely to have full-time employment; have lower incomes; when employed, miss work because of their health at higher rates; describe worse general health; are more likely to have been arrested; report lower rates of volunteering; and cite lower satisfaction with their lives as a whole.

There are few observed experiences where respondents from low-income families report better adult outcomes than their more advantaged peers. Interestingly, although they unconditionally have a more negative view of their past and current standing in life (albeit not always to a statistically significant extent) youths experiencing poverty have similar, if not better, expectations for their future "step on the ladder of life". They also demonstrate substantially higher self-reported industriousness (the extent to which they work hard, put forth effort, and have high standards). Despite higher average industriousness, they are substantially worse off as adults than their peers whose families were better resourced.

These differences do not simply reflect point-in-time disparities. Gaps in economic and social wellbeing are at least as large at age 35 (Appendix D Table D2), suggesting that socioeconomic tracks in adulthood are generally fixed and are largely predetermined by one's economic standing in youth.

Youths experiencing poverty have fewer high-quality schooling experiences than their more affluent peers.

Inequities are not limited to adult mobility. In youth, students experiencing poverty were substantially less likely to have high-quality educational experiences. They had strong (top-quartile) *Academic Outcomes* at roughly one third the rate of their non-poverty peers, with just 11 percent attaining this threshold, compared to 34 percent of students not experiencing poverty (Table 3; estimates from equation 2). When we account for youth and household characteristics (equation 3), the gap shrinks substantially but remains significant (columns 4 and 6). The average conditional difference in *Academic Outcomes* across the two groups is more than a quarter of a standard deviation (Appendix D Table D3, column 4). We observe similarly large deviations in access to top-quartile *College Readiness*, *Behaviors and Expectations*, and *Parental Involvement*.

The only area where we observe students from poverty experiencing somewhat greater educational opportunity is for *Occupational Training* (i.e., access to job-specific training or training that includes credentials such as a certificate or licensure). Students experiencing poverty were somewhat more likely to have high (top-quartile) levels of this experience than those not experiencing poverty (Table 3, column 3). However, these differences are not robust to controls for other youth and household characteristics (Table 3, column 4), alternative poverty definitions (Appendix C Figure C2), or the use of a continuous rather than dichotomous experience measure (Appendix D Table D3).

If we look at how experiences, more broadly defined, vary across economic status, we do not see meaningful differences in experiences related to peer networks (*School Culture*, *Peer Delinquency*, and *Peer Engagement*) or CTE (*Work-Based Learning*, *Occupational Training*, and *Vocational Coursework*). Rather, the substantive differences almost universally relate to students' academic experiences—how well they do in school (*Academic Outcomes*), their

standardized achievement scores and completion of the courses recommended for college (*College Readiness*), their academic *Behaviors and Expectations*, and the extent to which their parents engage with and are aware of what is happening at school (*Parental Involvement*).

Figure 1 illustrates some of the ways these differences manifest. Students experiencing poverty have fewer opportunities to excel in school, with only one in four attaining a GPA of 3.0 or higher, compared to half of more affluent students; they have roughly half the share of credits in high school coming from advanced coursework; and they are chronically absent at nearly quadruple the rate of their wealthier peers (Panel A, column 2). Roughly one in 25 students from poverty take the full scope of courses recommended for college, compared to one out of every eight students from relative affluence; students experiencing poverty score in the upper half of the distribution of the math and verbal sections of the ASVAB exam at less than half the rate of their wealthier peers;[xi] and when they take the SAT or ACT, they are 16 percentage points less likely attain a score of 1020 or higher than wealthier students (Panel B, Column 2).[xii] They are also less likely to take the SAT or ACT (fewer than half, compared to more than three-quarters of more-affluent students), they are 25% less likely to be confident they would have a college degree by the time they were 30, and they are suspended at nearly twice the rate (Panel C, column 2). They are also substantially more likely to report low access to safe schools and educationally supportive and engaged adults in their lives, including both teachers and their own parents (Panels D and E, column 2).

Altogether, these differences reflect inequitable access to the resources and opportunities required to do well in school, which may influence students' ability to advance beyond their socioeconomic conditions in childhood. We next explore the extent to which access to these educational experiences predicts long-term mobility.

Among youths experiencing poverty, academic experiences—in particular their Academic Outcomes—*are most predictive of long-term mobility.*

In general, when young people experiencing poverty have high-quality (i.e., top-quartile) academic experiences, they are more likely to earn a living wage, reverse their relative economic standing (i.e., move from the bottom to the top household-income quartile), and attain high *economic wellbeing* than peers from similar socio-economic circumstances who have low-quality (bottom-quartile) experiences (Table 4; estimates from equation 4).

Just as *Academic Outcomes* reflects one of the largest and most consistent socio-economic gaps in access, it is also the experience for which differences in mobility are most pronounced. Students experiencing poverty with strong *Academic Outcomes* are 27 percentage points more likely than those with weak *Academic Outcomes* to earn a living wage, 15 percentage points more likely reach the top household-income quartile and 17 percentage points more likely to fall in the top quartile of *economic wellbeing* (column 1 of Panels A, B, and C, respectively, in Table 4). These unconditional estimates are only slightly larger than estimates from fully conditional models. Once we condition on other aspects of youth circumstances (i.e., their values on other experience domains, household poverty ratio, parental health and education levels, special education needs, race, ethnicity, and birth year), their relative probability of earning a living wage remains substantial (22 percentage points above other students from poverty whose *Academic Outcomes* were in the bottom quartile; Table 4, Panel A, column 2), as does their probability of reaching the top quartiles of household income or *economic wellbeing* (14 and 13 percentage points, respectively, above the conditional rate of students with weak *Academic Outcomes*; Table 5, Panels B and C, column 2).

The extent of these differences is robust to modeling approaches and data decisions, including logistic models (Table 4, columns 3 and 4), linear predictors (Appendix D Table D4), the threshold at which we define poverty (Appendix C Figures C3 and C4), and the age at which we define mobility (Appendix D Table D5). We also observe suggestive evidence that stronger *Academic Outcomes* are associated with better health in adulthood (Appendix D Table D6).

Figure 2 illustrates the predictive power of *Academic Outcomes*. We estimate a within-respondent model regressing household income on the interaction between age and the strength of students' Academic Outcomes, with controls for birth cohort.[xiii] Our estimates illuminate several notable patterns. First, even within youths experiencing poverty, *Academic Outcomes* correlate with family income; those with strong *Academic Outcomes* (green) come from households with slightly higher incomes than those with weak *Academic Outcomes* (gold). Second, while their incomes slowly grow as they enter their twenties, students from poverty with strong *Academic Outcomes* subsequently see their incomes trend rapidly upward, diverging far above their peers with weak *Academic Outcomes*, whose income flatlines. By the time they are in their thirties, they earn more than double their peers with weak *Academic Outcomes*. Finally, although students from poverty with strong *Academic Outcomes* have steep income growth, because they start with substantially lower household incomes than those not coming from poverty, by the time they are in their 30s they on average do not out-earn the typical respondent from relative financial advantage with *any* level of *Academic Outcomes*.[xiv, xv]

We find that other academic-related experiences predict mobility, but to a lesser extent. For example, youths from poverty with high *College Readiness* were 17 percentage points more likely than their bottom-quartile peers to earn a living wage at 30 (Table 4, Panel A, column 2), although this experience confers no advantage in the likelihood of reaching the top income

quartile or high overall *economic wellbeing* (Panels B and C, respectively) and may correlate with worse adult health (Appendix D Table D6).[xvi] Academic *Behaviors and Expectations* more consistently predict mobility; youths from poverty with top-quartile *Behaviors and Expectations* are 17 percentage points more likely than their bottom-quartile peers to earn a living wage, eight percentage points more likely to reach the top household-income quartile, and seven percentage points more likely to attain high *economic wellbeing* (Table 4, column 2 of panels A, B, and C, respectively). Youth experiencing poverty with better academic *Behaviors and Expectations* may also benefit from better health in adulthood (Appendix D Table D6). While the *Teachers and School* factor is generally unrelated related to mobility, having high *Parental Involvement* correlates with somewhat higher mobility. Overall, academic experiences are more predictive of attaining a living wage than of other mobility thresholds, perhaps because the living wage is an easier bar to meet than other mobility metrics.

Across the experience domains related to social and peer networks (*School Culture*, *Peer Delinquency*, and *Peer Engagement*), point estimates (Table 5) are either near zero and statistically insignificant (Panels A and B) or are larger and positive but imprecise (Panel C). That being said, the relationship between these experiences and adult health is generally positive, if not always statistically significant (Appendix D Table D6), suggesting that different experiences may matter differently across mobility outcomes.

Our data also provide little comfort that career-connected-learning experiences facilitate upward mobility after accounting for other experiences. In general, the association between these experiences and mobility is statistically no different from zero. In contrast to academic experiences, our results suggest that: having higher *Occupational Training* experiences is associated with lower economic mobility (Table 4), perhaps reflecting wage ceilings on the types

of professions that are targeted by these experiences; and that *Work-Based Learning* experiences may lead to slightly worse health outcomes (Appendix D Table C6)—again perhaps reflecting the career paths associated with on-site and practical training, which may be more physically demanding.

Academic experiences positively predict mobility even among youth who do not pursue higher education.

To what extent does the predictive power of academic experiences reflect students' post-secondary pathways? Given rich evidence that higher education can weaken the ties between socioeconomic beginnings and earnings in adulthood (Bloome, Dyer, and Zhou 2018; Chetty et al. 2020; Mountjoy 2022; Torche 2011), we examine the extent to which the association between *Academic Outcomes*—as well as other educational experiences—and mobility can be explained by whether the youth attends college. Re-estimating equation 4 with the addition of an interaction between the respective educational experience and an indicator for whether the youth enrolled in a two- or four-year college by age 20, we find that *Academic Outcomes* similarly predict mobility across educational pathways (Appendix D Table D7). [xvii] While we are underpowered to detect statistical differences, results suggest a stronger relationship between academic experiences and mobility for youths who do not enroll in college than for those who do. It may not simply be the opportunities associated with access to higher education that make academic experiences important predictors of adult wellbeing; the benefits and skills associated with high achievement, doing well in school, and taking rigorous coursework accrue across subsequent life paths. While we cannot identify causal mechanisms here, these findings nevertheless point to academic experiences as being potential bridges to mobility even when even when known entry points (i.e., colleges and universities) are not used.

DISCUSSION

Our analysis is descriptive, and we cannot fully disentangle sources of educational opportunity from their causal effects on social and economic mobility. However, we demonstrate that youths experiencing poverty face substantial inequities in educational experiences, and these inequities extend to economic and social mobility in adulthood. Young people whose families are in the bottom quartile of household income are less than half as likely as their wealthier peers to meet key mobility metrics. These individuals have less opportunity in their youth, as well. Only about one in ten students experiencing poverty has strong *Academic Outcomes*, compared to about a third of their more affluent peers. They also have meaningful—if not quite as sizeable—differences in *College Readiness*, academic *Behaviors and Expectations*, *Teachers and School*, and *Parental Involvement* experiences.

When we focus on students experiencing poverty and follow their trajectories into adulthood, the very areas where we see the largest gaps in educational access are also the areas most predictive of socioeconomic opportunity. Students from poverty who excel in school earn roughly double the adult income of their peers who are also experiencing poverty but have weak *Academic Outcomes*, yet students experiencing poverty have too little opportunity to achieve strong *Academic Outcomes*.

The powerfully predictive relationship between educational experiences—especially *Academic Outcomes*—and mobility may to some extent reflect endogeneity with economic opportunity in youth. For example, certain skills or traits may be essential for strong *Academic Outcomes* and these same traits may directly support later labor market outcomes. Similarly, family resources may be independently necessary for both academic success and economic wellbeing in adulthood. However, given that we estimate differences within students who are in

poverty and estimates remain substantial even when accounting for precisely where the youth's family falls in the income distribution, opportunities to do well in school likely help young people improve their economic standing and achieve broader levels of wellbeing later in life. Importantly, while *Academic Outcomes* includes measures of students' academic performance, it remains highly predictive even when controlling for a range of other key education inputs and outputs. In other words, youth with strong *Academic Outcomes* aren't more likely to thrive simply because they are smart; our conditional models explicitly control for academic achievement as part of our *College Readiness* factor, in addition to a multitude of other contemporaneous experiences. Rather, these children benefit from the *opportunity* to get good grades, take advanced courses, and consistently engage in their schooling through high attendance.

At the same time—although students experiencing poverty who have strong *Academic Outcomes* on average attain drastically higher mobility than their fellow students experiencing poverty who do not do as well academically—they still do not manage to exceed the average income of the typical student not coming from poverty. Even when academically exceptional, the mobility boost they may get from their educational experiences is insufficient to bring them above the level of the typical student who is not from poverty but does just average academically. For example, our analysis suggests that the typical student experiencing poverty with the academic record of the average student not experiencing poverty would earn roughly $50,000 when they are 30 years old, about 45% below their more affluent peers

These patterns confirm that educational experiences are important for mobility. They also highlight the extent to which educational opportunities are insufficient—at least as available to youth born in the early 1980s and as captured by the NLSY97—to overcome the yoke of youth

poverty. Finally, we also see that many experiences which should enable mobility—namely those relating to career-connected learning—do not provide much predictive power for long-term wellbeing. This may reflect the inadequate nature of these experiences as they existed in the late 1990s, but recent research suggests that even when done well some CTE opportunities may exacerbate inequities (i.e., by conferring the greatest benefits to white males; see, for example, Brunner et al. 2023).

Altogether, our findings point to both the importance and inadequacy of academic experiences for breaking the cycle of intergenerational poverty. Solutions require schooling at their core, but the educational sector cannot solve this problem alone. Policymakers and researchers should collaborate to build and share data systems that link youth experiences and opportunities to adult outcomes. These data systems should include both academic and nonacademic experiences and enable researchers to piece together how students' trajectories into adulthood shape and are shaped by circumstances and opportunities. The field is just beginning to shift toward the longer view here, with a new interest in building and exploring such data systems; for example, the Urban Institute's Student Upward Mobility Initiative (SUMI) seeks to expand the evidence base on PK-12 competencies that drive upward mobility. These data and research endeavors are crucial for understanding factors that contribute to mobility and how they interact with educational experiences. If we think of youth experiences as doorways to adult wellbeing, recent generations have faced such a narrow doorway that only a handful of youth from poverty can squeeze through at a time. As we build our knowledge and construct policy accordingly, we may be able to widen the opening so that every student stands a chance, regardless of family circumstances.

NOTES

[i] Course grades may reflect multiple factors, including achievement and engagement in academic environments (Brookhart 2016).

[ii] For most respondents (n = 6,561), the data include poverty ratios, but some respondents preferred reporting income ranges: (a) $1 – $5,000; (b) $5,001 – $10,000; (c) $10,001 – $25,000; (d) $25,001 – $50,000; (e) $50,001 – $100,000; (f) $100,001 – $250,000; or (g) more than $250,000. For these respondents, we set income to the median value of the range and $250,000 for those in the top band. For respondents without baseline income information, we extrapolate from the closest adjacent year. We then use imputed family income to convert missing income to poverty ratios using 1997 federal poverty thresholds.

[iii] Note that NLSY97 changed how they asked about income over time. Through round 7, income was defined at the household level (anyone living in household). From round 8 onward, income was defined at the family level (the respondent, any spouse or partner, and any other relative living in the household that year). For more detail, see https://www.nlsinfo.org/content/cohorts/nlsy97/topical-guide/income/income). We use both terms interchangeably throughout this article.

[iv] We test robustness to different poverty definitions, including: whether the respondent's family was at 100% of the federal poverty level (FPL); whether the family was at 200% of the FPL; and poverty percentile conditional on geography (region, urbanicity, and MSA residency). While the most restrictive measure (100% FPL, n=2,368) indicates slightly larger gaps in mobility and experiences and the least restrictive measure (200% FPL, n=4,196) indicates slightly smaller gaps, each yields similar conclusions to those from the bottom-quartile definition. When we define poverty rankings within geography, differences in mobility and educational experiences are slightly smaller than with our preferred definition, but estimates of the association between educational experiences and mobility tend to be similar. Results using these alternative definitions are available upon request. In addition, we acknowledge that our quantile thresholds are somewhat subjective and so we explore the sensitivity of our analyses to different percentile thresholds for defining students experiencing poverty and their more affluent peers; these estimates are qualitatively comparable to those from our preferred definition (see Appendix C).

[v] While we prefer age 30 for defining adult outcomes, we also examine outcomes at 35 to assess risks from attenuation and bias (see, e.g., Nybom & Stuhler, 2017). Our results are consistent with relative income stabilizing around or before age 30. Results for mobility outcomes at age 35 are in Appendix D (Tables D2 and D5).

[vi] Because the mobility source data are reported and analyzed longitudinally, we impute the respective outcome via interpolation within respondent. Specifically, we linearly interpolate from all non-missing lead and lag outcomes; to avoid over-extrapolating, we bound imputed values by the minimum and maximum ages for which a respondent has non-missing responses. For any ages beyond this, we set the outcome to missing.

[vii] For more detail, see https://livingwage.mit.edu/pages/methodology.

[viii] While we include students from households in the second quartile of the poverty distribution in these models, we are primarily interested in differences for students experiencing poverty (quartile 1) relative to those not experiencing poverty (quartiles 3 and 4).

[ix] We preference the dichotomized measure, as scatterplots suggest that the relationship is not necessarily linear (see Appendix D Figures D1 and D2).

[x] When we estimate this model without family poverty ratio, our findings are qualitatively the same, albeit with somewhat larger standard errors. This is consistent with the tests described in footnote 4, where lower poverty thresholds produce comparable estimates.

[xi] In 1997 through 1998, the NLSY97 included the Armed Services Vocational Aptitude Battery (ASVAB), with Math and Verbal ASVAB scores reported as percentile rankings within three-month age groups. See https://www.nlsinfo.org/content/cohorts/nlsy97/other-documentation/codebook-supplement/appendix-10-cat-asvab-scores.

[xii] We use 1020 because it is roughly the equivalent of the average Math (514) and Verbal (505) scores nationally on the SAT for contemporaneous examinees (in 1999-2000; see Table 133 on page 149 of the Digest of Education Statistics 2000: https://nces.ed.gov/pubs2001/2001034.pdf).

[xiii] To avoid the age-period-cohort problem, we include a more detailed set of ages, capping our panel at 35, (after which many respondents do not yet have responses) and binning ages using the following groupings: 18-19, 20-21, 22-23, 24-25, 26-27, 28-29, and 30-35. For each student i, poverty/achievement group g, and age span a we estimate a within-student regression of log income on age-span-by-group indicators $f(age * group)_{igat}$ with year fixed effects (θ_t). We omit students 17 and younger so that point estimates reflect differences in income relative to high school. Specifically, our model takes the form $\ln(Income)_{igat} = f(age * group)_{igt} + \sigma_i + \theta_t + \varepsilon_{igt}$. To

plot trajectories, we first estimate baseline average income (our intercepts) for each poverty/achievement group by regressing log household income on group status and year for youths 17 and under. The reference group is students not experiencing poverty, with year effects centered on 1998. We apply sample weights and cluster standard errors within sampling strata. For ease of interpretation, we exponentiate all log income estimates and convert values back to dollars.

[xiv] We also observe that youths from the upper half of the income distribution do not attain the same inflation-adjusted income levels as their parents. There are several plausible explanations, including that they may be younger than their parents were at the survey baseline; however, we observe the same pattern when we estimate the trajectories only on individuals we can track to at least age 35. There may also be some regression to the mean, but this pattern is consistent with national evidence of declining mobility for this generation, especially for higher-income households (Chetty et al., 2017).

[xv] We find that these trends are robust to attrition bias; see Appendix C Figure C5.

[xvi] On the other hand, parametric estimates (i.e., where the educational experience is in standard deviation units) are consistently positive and statistically significant across outcomes (Appendix D Table D4). Point estimates remain roughly twice as large for the living wage outcome (9 percentage points, Panel A, column 2) as for the other mobility outcomes (Panels B and C). Meanwhile, better *College Readiness* may be associated with slightly worse health in adulthood (Appendix D Table D5).

[xvii] Ideally, we would assess completion rather than enrollment, but there are insufficient students who: are experiencing poverty; are in the top *Academic Outcomes* quartile; and completed higher education in early adulthood. More generous enrollment-age thresholds do not meaningfully increase the analytic sample.

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TABLES & FIGURES

Table 1. Sample summary by family poverty

	All	Students experiencing poverty	Students not experiencing poverty
Median Household Income (2023 Dollars)	$83,803	$20,341	$132,847
Median Household-Adjusted Poverty Ratio	2.63	0.63	4.10
Parental Health			
General health (SD units)	0.00	-0.53	0.29
At least one parent with chronic condition	0.21	0.34	0.14
Not reported	0.08	0.12	0.06
Parental education: highest grade completed			
Less than High School	0.12	0.31	0.03
High School	0.33	0.42	0.25
Less than Four Years of College	0.25	0.17	0.26
Four Years of College	0.15	0.07	0.22
More than Four Years of Higher Education	0.15	0.03	0.25
Race			
Black	0.16	0.29	0.09
Asian / Pacific Islander	0.02	0.02	0.02
American Indian / Alaska Native	0.01	0.01	0.00
White	0.73	0.55	0.83
Other	0.08	0.12	0.05
Hispanic	0.13	0.23	0.08
Geographic Region			
Northeast	0.17	0.19	0.18
North Central	0.28	0.19	0.31
South	0.34	0.41	0.30
West	0.20	0.21	0.20
Urbanicity			
Urban	0.69	0.71	0.70
Rural	0.27	0.24	0.27
Unknown	0.04	0.05	0.03
MSA			
In an MSA, central city	0.26	0.38	0.20
In an MSA, not central city	0.53	0.40	0.62
In an MSA, unknown	0.01	0.01	0.00
Not in an MSA	0.21	0.21	0.17
Multilingual household	0.16	0.25	0.12
Special education needs	0.13	0.16	0.12
N respondents	8,984	2,920	3,821
N respondents with non-zero weights	4,219	1,342	1,842

Notes: all characteristics are from the first (1997) survey round. Data are weighted according to NLSY97 full-participation weights. Students experiencing poverty are those with bottom-quartile 1997 family incomes. Students not experiencing poverty come from households in the top two quartiles.

Table 2. Economic mobility by baseline poverty

Outcome	Students experiencing poverty	Students not experiencing poverty	Linear difference (poverty – not)		Odds ratio of difference	
	(1)	(2)	(3)	(4)	(5)	(6)
Earn a Living Wage	0.308	0.637	-0.329***	-0.196***	0.25***	0.42***
			(0.024)	(0.024)	(0.110)	(0.110)
Household Income: Top Quartile	0.114	0.351	-0.237***	-0.131***	0.24***	0.42***
			(0.020)	(0.019)	(0.131)	(0.132)
Household Income: Bottom Quartile	0.408	0.134	0.274***	0.164***	4.44***	2.54***
			(0.023)	(0.022)	(0.113)	(0.117)
Economic Wellbeing: Top Quartile	0.132	0.325	-0.193***	-0.084***	0.32***	0.57***
			(0.020)	(0.022)	(0.129)	(0.145)
Youth and household controls				x		x

Notes: Columns 3 and 5 show naïve mobility differences by youth poverty (whether their family was in the bottom household-income quartile [column 1]; the reference group is the top half of the income distribution [column 2]). Youth and household controls are from characteristics reported in the first wave of the NLSY97: parental education (years completed); parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency; race/ethnicity, and birth year. Columns 3 and 4 present linear estimates, while columns 5 and 6 present odds ratios from logistic models; all correspond to equation 1. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. Each row represents a separate regression. Observations are weighted according to full-survey participation (through round 20). $*** \ p < 0.001$.

Table 3. Access to high-quality school experiences by baseline poverty

Educational Experiences (Top Quartile)	Students experiencing poverty (1)	Students not experiencing poverty (2)	Linear difference (Poverty – Not) (3)	(4)	Odds ratio of difference (5)	(6)
Academic Outcomes	0.111	0.343	-0.232***	-0.067***	0.24***	0.59***
			(0.016)	(0.018)	(0.116)	(0.132)
College Readiness	0.136	0.320	-0.184***	-0.068***	0.33***	0.62***
			(0.020)	(0.022)	(0.144)	(0.165)
Behaviors and Expectations	0.202	0.278	-0.075***	-0.094***	0.66***	0.55***
			(0.015)	(0.017)	(0.083)	(0.113)
Teachers and School	0.213	0.272	-0.059**	-0.031	0.73***	0.84
			(0.019)	(0.024)	(0.107)	(0.137)
Parental Involvement	0.201	0.293	-0.093***	-0.081***	0.61***	0.62***
			(0.018)	(0.020)	(0.099)	(0.133)
School Culture	0.243	0.266	-0.023	0.045*	0.89	1.28*
			(0.016)	(0.020)	(0.086)	(0.108)
Peer Delinquency (reverse coded)	0.260	0.239	0.021	0.003	1.12	1.04
			(0.016)	(0.019)	(0.084)	(0.133)
Peer Engagement	0.273	0.248	0.025	0.010	1.14	1.05
			(0.017)	(0.020)	(0.087)	(0.108)
Work-Based Learning	0.242	0.249	-0.007	-0.042+	0.96	0.79+
			(0.019)	(0.022)	(0.102)	(0.121)
Occupational Training	0.291	0.229	0.062***	0.039+	1.38***	1.23+
			(0.018)	(0.023)	(0.090)	(0.118)
Vocational Coursework	0.239	0.228	0.011	-0.023	1.06	0.88
			(0.019)	(0.024)	(0.107)	(0.138s)
Youth, household, and experience controls				x		x

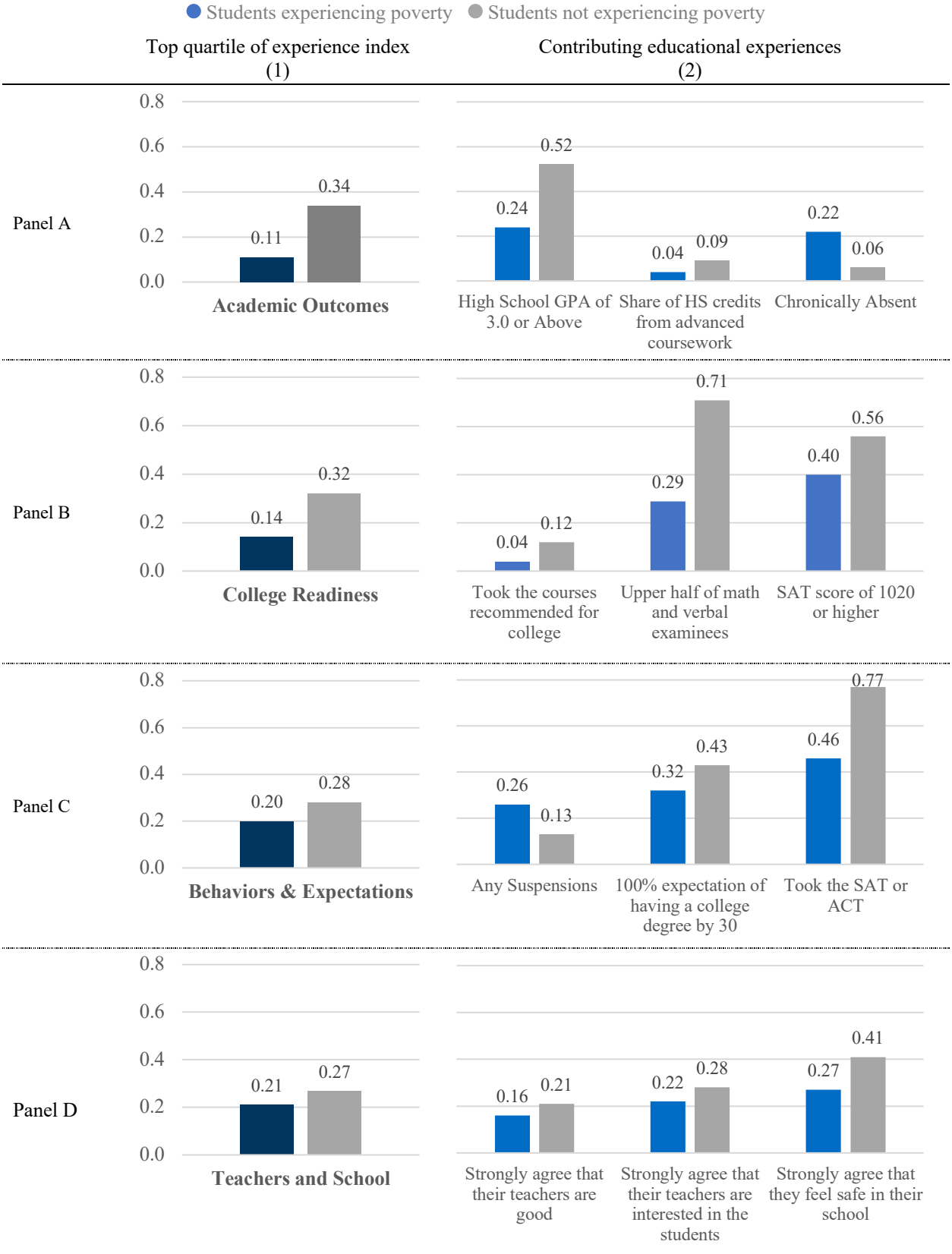
Notes: Column 3 differences are from naïve regressions of experiences on youth poverty (whether their family was in the bottom household-income quartile [column 1]; the reference group is the top half of the income distribution [column 2]). Each row represents a separate regression. Columns 4 and 6 include controls for all other observed experiences (in standard deviations), in addition to baseline youth and household characteristics (see Table 2 notes) and other educational experiences. Columns 3 and 4 present linear probability coefficients, while columns 5 and 6 present odds ratios from logistic models; odd and even estimates columns correspond to equations 2 and 3, respectively. Observations are weighted according to full-survey participation (through round 20). Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. $*** \ p < 0.001, \ ** p < 0.01, \ * p < 0.05, \ + p < 0.10$.

Table 4. The relationship between educational experiences and economic mobility for youths experiencing poverty

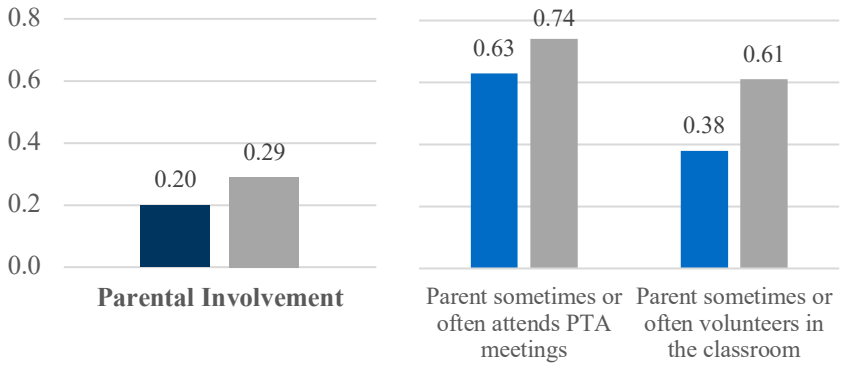
	Panel A. Household earns a living wage				Panel B. Top quartile of household income				Panel C. Top quartile of economic wellbeing			
School Experiences (Top Quartile)	OLS		Odds ratio		OLS		Odds ratio		OLS		Odds ratio	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Academic Outcomes	0.269***	0.224***	3.21***	3.01***	0.148***	0.136**	3.67***	3.99***	0.169***	0.127**	3.64***	3.00**
	(0.050)	(0.050)	(0.214)	(0.257)	(0.036)	(0.040)	(0.261)	(0.331)	(0.042)	(0.042)	(0.271)	(0.338)
College Readiness	0.229***	0.168**	2.98***	2.47**	0.046	0.032	1.71+	1.26	0.064+	0.032	1.82+	1.31
	(0.057)	(0.050)	(0.254)	(0.285)	(0.031)	(0.037)	(0.225)	(0.414)	(0.038)	(0.037)	(0.308)	(0.361)
Behaviors and Expectations	0.195***	0.173***	2.75***	2.81***	0.098**	0.077*	2.88**	2.54*	0.101**	0.070*	2.67**	2.25*
	(0.046)	(0.045)	(0.243)	(0.292)	(0.031)	(0.030)	(0.321)	(0.356)	(0.030)	(0.030)	(0.298)	(0.346)
Teachers and School	0.021	0.001	1.100	1.000	-0.035	-0.049+	0.70	0.53+	0.008	-0.015	1.08	0.92
	(0.045)	(0.041)	(0.213)	(0.246)	(0.029)	(0.026)	(0.310)	(0.336)	(0.028)	(0.026)	(0.288)	(0.322)
Parental Involvement	0.101*	0.137***	1.59*	2.06**	0.052	0.066*	1.75+	2.10*	0.057+	0.073**	1.71*	2.10*
	(0.049)	(0.039)	(0.220)	(0.224)	(0.032)	(0.029)	(0.324)	(0.345)	(0.030)	(0.027)	(0.268)	(0.279)
School Culture	0.088+	0.044	1.49+	1.21	-0.034	-0.049	0.72	0.52+	-0.023	-0.050	0.82	0.54+
	(0.050)	(0.048)	(0.226)	(0.263)	(0.034)	(0.033)	(0.333)	(0.393)	(0.034)	(0.032)	(0.300)	(0.348)
Peer Delinquency (reverse coded)	0.011	-0.014	1.05	0.87	-0.005	-0.013	0.95	0.88	0.039	0.038	1.41	1.46
	(0.044)	(0.042)	(0.211)	(0.259)	(0.034)	(0.034)	(0.336)	(0.409)	(0.031)	(0.028)	(0.279)	(0.298)
Peer Engagement	0.010	0.023	1.05	1.09	0.037	0.048+	1.43	1.54	-0.007	0.004	0.94	0.92
	(0.045)	(0.041)	(0.213)	(0.249)	(0.029)	(0.028)	(0.278)	(0.330)	(0.028)	(0.026)	(0.258)	(0.287)
Work-Based Learning	0.011	0.054	1.05	1.45	-0.043	-0.021	0.68	0.94	-0.004	0.020	0.97	1.32
	(0.051)	(0.047)	(0.231)	(0.263)	(0.034)	(0.029)	(0.303)	(0.309)	(0.032)	(0.029)	(0.259)	(0.274)
Occupational Training	-0.023	-0.051	0.89	0.79	-0.053+	-0.071**	0.59+	0.50*	-0.014	-0.026	0.88	0.94
	(0.040)	(0.034)	(0.206)	(0.218)	(0.030)	(0.025)	(0.302)	(0.324)	(0.030)	(0.027)	(0.270)	(0.298)
Vocational Coursework	0.009	-0.007	1.04	0.96	-0.018	-0.048+	0.83	0.53+	-0.015	-0.041	0.88	0.72
	(0.040)	(0.040)	(0.187)	(0.237)	(0.032)	(0.028)	(0.342)	(0.359)	(0.036)	(0.035)	(0.308)	(0.378)
Youth, household, and experience controls		x		x		x		x		x		x

Notes: This analysis is limited to students in the bottom quartile of the family income distribution. For each outcome panel, column 1 estimates are from separate linear regressions of mobility on whether the individual was in the top quartile of the respective educational experience. Column 2 includes controls for all other observed school experiences, in standard deviations, in addition to baseline youth and household characteristics (see Table 2 notes), with the addition of household poverty ratio (see equation 4). Column 3 is the logistic equivalent of column 1; column 4 is the logistic equivalent of column 2. Column 3 and 4 estimates are reported as odds ratios. Observations are weighted according to full-survey participation (through round 20). Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. $***\ p < 0.001,\ **\ p < 0.01,\ *\ p < 0.05, +p < 0.10$.

Figure 1. Differences in academic experiences by family poverty

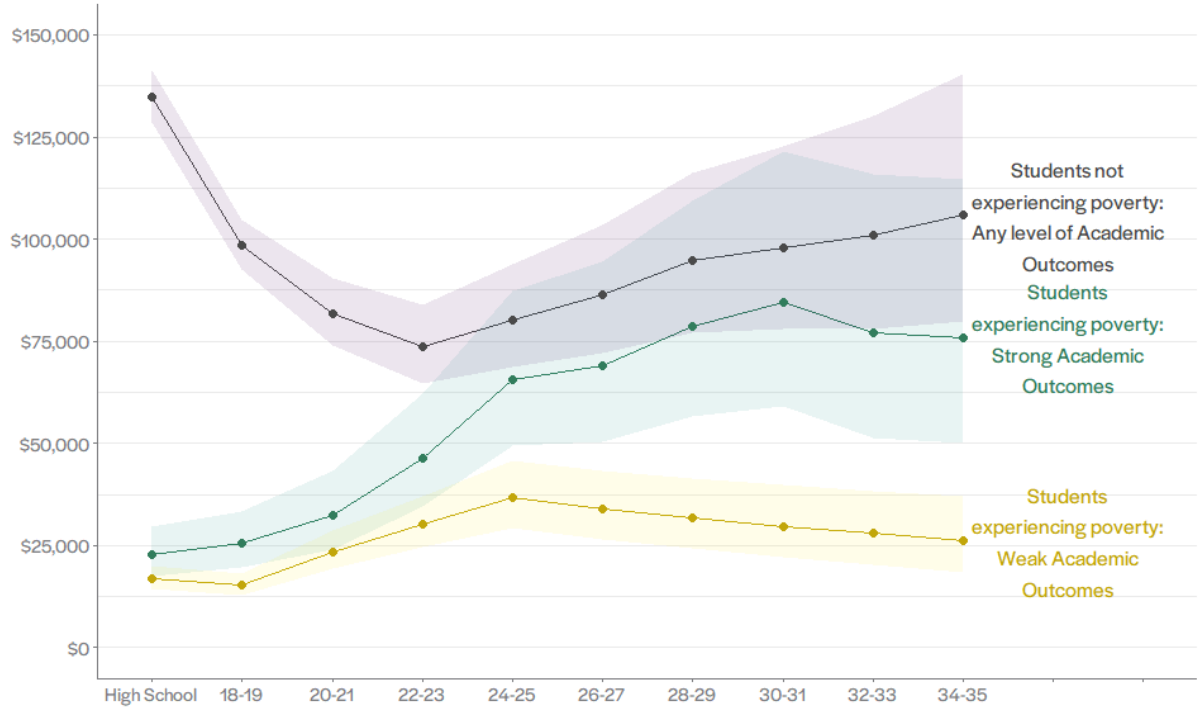


Panel E



Notes: Values are raw proportions. Column 1 values represent students in each group (students experiencing poverty in dark blue, and students not experiencing poverty in gray) who were in the top quartile of the respective experience. Column 2 provides dichotomized data on the share of youths with a given schooling experience that contributes to the respective factor. Column 2 data use only non-missing observations so sample sizes vary (e.g., SAT-equivalent scores are only available for students who took the SAT or ACT). We chose the 1020 threshold for SAT-equivalent scores because it represents approximately the national average math and average verbal SAT scores for contemporaneous students. Parental involvement measures come from parent questionnaires administered in the first survey wave. Appendix B provides additional details about these measures. Observations are weighted according to full-survey participation (through round 20).

Figure 2. Income trends by baseline poverty and level of Academic Outcomes



Notes: Students have strong *Academic Outcomes* when they fall in the top quartile of that experience; students with weak *Academic Outcomes* are in the bottom quartile. High-school incomes are estimated from a sample-weighted within-year regression of log income on poverty-by-academic-outcomes group: students experiencing poverty with strong academic outcomes, students experiencing poverty with poor academic outcomes, and all students not experiencing poverty (reference group). To convert estimates to dollars, we first exponentiate the reference value to estimate the average household income for students not experiencing poverty, and then multiply that by the exponentiated coefficients for the remaining groups. A second linear regression of log income on an interaction between age span and poverty-by-academic-outcomes group, with year and student fixed effects, provides income growth trajectories. To convert point estimates from the second set of models to dollars, we exponentiate them and multiply the exponentiated values by the baseline income estimates from the previously described model. Income is in 2023 dollars.

APPENDIX A: ANALYTIC SAMPLE

Analytic Sample

The NLSY97 includes two subsamples: (1) a representative cross-section of youths born between 1980 and 1984; and (2) a supplemental oversample of Black and Hispanic youths born during the same period. We pool these samples for our analyses, applying sampling weights to allow for nationally representative estimates. The NLS97 provides sampling weights by survey round, as well as for complete cases (i.e., whether the respondent has responses for each wave of the survey through round 20). Because the information regarding a particular experience may come from different survey waves, depending on the respondent's age and response patterns, we rely primarily on the complete-cases weights. However, whenever we standardize item-specific responses, we use within-round sampling weights to define by-year means and standard deviations.

We use the full, pooled sample to define distributions of high school experiences (e.g., strong versus poor Academic Outcomes) and social and economic mobility. However, the heart of our analysis is the subsample of students experiencing poverty—students whose family income in 1997 placed them in the bottom quartile of the income distribution. As described in Table 1, students coming from poverty have substantially different life circumstances. The median student whose family is in the upper half of the income distribution has a household income six and a half times that of the median student from a family experiencing poverty ($132,847, compared to $20,341 in 2023 dollars). Roughly three quarters of students from poverty have parents who have not completed any post-secondary education, the reverse of students not experiencing poverty. Their parents are in worse health, reporting a general level of health approximately 80 percent of a standard deviation below that of students who are not

experiencing poverty, and they are substantially more likely to have at least one parental figure reporting a long-term health problem or condition that limits the type or amount of employment the parent can accept. Students experiencing poverty are also demographically different from their more affluent peers; they are approximately three times as likely to identify as Black or Hispanic, and are somewhat more likely to come from multi-lingual households or have special education needs.

Missing Values

For variables are collected from different sources (e.g., students self-report attendance, but these data are also collected from school transcripts), we privilege the source that provides more granular information. In the case of attendance, for example, we rely first on school transcripts, then impute missing data by regressing transcript values on self-reported values. For any observations where data remain missing, we rely on a second imputation that sets the value to the mean or median of that variable among the non-missing sample. We test the sensitivity of our findings to imputation by replicating analyses from imputation-inclusive data with the subset of respondents for whom all data are available (not shown). We find that both approaches yield comparable results.

APPENDIX B: DEFINING EXPERIENCE AND SCHOOLING FACTORS

Educational Experiences

Scanning the data available in the NLS97, we identified or constructed 47 variables relating to students' experiences while in middle or high school (see Appendix Table B1). To reduce the dimensionality of these items, we conduct both exploratory and confirmatory factor analyses. Because our experience data include a mix of numeric (all standardized to mean 0 and unit 1) and dichotomous variables, we conduct our exploratory factor analysis using a mixed principal component analysis (PCA), also known as a factor analysis of mixed data (FAMD).[1]

Before running the mixed PCA, we randomly assign observations to one of two datasets: 10% of observations (n = 898) are assigned to a test dataset and the remaining 90% are used as a training dataset. We then run a mixed PCA on the training data, which results in 14 factors with eigenvalues greater than 1, and which cumulatively explain 58 percent of the variance. Given that 14 dimensions still represent a large number of factors for analysis, we examine factor structures with fewer loadings as well.

To evaluate which factor structure best fits our data, we then run confirmatory factor analyses (CFA) on the loading patterns associated with our mixed PCA results using the randomly selected 10% of observations we set aside for testing. The goodness of fit statistics from these tests are provided in panel A of Appendix Table B2. These statistics suggest that an 11-factor structure best fits our data (varimax rotated factor loadings from the mixed PCA are provided in Appendix Table B1). As a second check, and given we rely on imputation for missing data for many of these values, we run additional goodness of fit tests against the sample of students for whom no observations are imputed and for whom we do not rely on secondary

[1] For our factor analysis of mixed data, we use Chavent et al.'s (2022) *PCAmix* package in R. We then conduct confirmatory factor analyses using the cfa function from the *lavaan* package (Rosseel, 2012).

data sources (i.e., self-reports of attendance in lieu of transcript-reported data). This secondary goodness of fit data source is not ideal, as it comprises a non-representative portion of the sample and the number of eligible observations is low (n=191). However, the test statistics for this sample are consistent with that of the representative sample, suggesting that our factor loadings are not being driven by missing data and imputation patterns (see panel B of Appendix Table B2).

Economic and Social Mobility

We define several outcome measures to represent students' attainment of economic and social mobility. The first is a simple threshold-based outcome for whether the student has a household income at or above the living wage when they are in adulthood (i.e., at age 30 or age 35); our approach for constructing this measure is described in more detail below. We also estimate whether the respondent is in poverty (the bottom quartile of household income) as adults or has reached the top quartile. In addition to these income-based thresholds, we create two composite measures reflecting health (physical, psychological, and emotional) and economic wellbeing in adulthood. These measures are distributionally defined and based on composites of survey responses regarding the youths' health, financial resources, and other outcomes adults. Unlike the schooling experiences, we do not rely on PCA estimates for defining these mobility factors, as we do not want to remove correlations between economic wellbeing and health.

Rather, we categorize a set of outcomes (see Appendix Table B3) that are measured across survey waves into two groups. The first grouping relates to economic wellbeing and stability, including household income, household poverty ratio, net worth, full-time employment, overall satisfaction with one's job(s), and whether the respondent has been arrested (reverse coded). The second reflects the respondents' physical, emotional, and psychological health,

including impacts on employment. To create these composite measures, we first rescale the logical items so that "True" values equal 0.50 and "False" takes on the value of -0.50. For each respondent, we then take the average of their corresponding items for the respective factor and convert those average scores to standard deviation units (taking into account sampling weights).

To assess the appropriateness of the procedures we have used to assign these outcomes to the economic and health-based factors, we run separate confirmatory factor analyses on each set of items. These CFAs suggest strong fits for the economic factor structure: the comparative fit index (CFI) is 0.982; the Tucker-Lewis index (TLI) is 0.969; the root mean square error of approximation (RMSEA) is 0.40, (90% CI = [-.026, 0.55]); and the standardized root mean square residual (SRMR) is 0.027. However, we observe weak fit for the health-related factor (CFI = 0.80, TLI = 0.60, RMSEA = 0.12, and SRMR = 0.06); for this reason, we do not rely on the health-related factor for our primary analyses. CFAs that are estimated using the same outcomes at age 35 and on the share of the sample for whom complete data on outcomes are available (i.e., data without imputation; n = 4,045 at age 30 and 3,197 at age 35) produce similar goodness of fit statistics.

Earning a Living Wage

We create our living-wage-attainment outcome using thresholds from MIT's Living Wage Calculator (see https://livingwage.mit.edu/). This living wage definition takes into account a broad set of typical expenses required for families to maintain their households—including, but not limited to, the typical costs of healthcare, childcare, housing, food, and utilities. The Living Wage Calculator includes living wage estimates at the state, county, and metropolitan-statistical-area levels. However, while the restricted-access NLS data contain information about where the respondent lives and earns an income, the public-access version of the data—which we use for

our analyses—omits geographic details. Due to this data constraint, in combination with a desire to set transparent thresholds, we define living wages nationally rather than at a local level, our approach for which is discussed below.[2] We do, however, allow living-wage thresholds to vary across household composition. To determine whether the individual has earned a living wage, we combine information on the respondent's household income—adjusted to July 2023 dollars—and household composition for each year.

Household composition

The NLS provides household rosters, which allow us to individual identify household members affiliated with the respondents by year, including age and employment status. To make a household-adjusted living wage measure, we first must define the household composition (i.e., the number of children and working/not adults). Within respondent, we analyze their household composition to: (1) identify when an adult is employed (age 18+ and employment is full OR part time); (2) sum the number of total and employed adults; (3) subtract employed adults from the total number of adults to determine the number of non-employed adults; and (4) sum the number of children (n under 18).

Because the household rosters only include the respondent in round 1, we filter out the respondent from TNTP's household file for that round. Depending on the respondent's age and work status in a given survey year, the respondent is then added to the respected summations defined above: total household *n*, total adults (18+), total children (under 18), or total working

[2] While this may under- or over-estimate the extent to which respondents have a secure income status at the state or community level, we expect that our national-threshold estimates of living wage will be accurate, on average. Given that our research pertains to high school students nationally, rather than by locality, this approach will not materially bias estimates of living wage attainment. To test whether this is the case, we run supplementary analyses (not shown) that include controls for the respondents' geographic region of residency, whether the respondent resides in a metropolitan statistical area, and whether the respondent resides in an urban area. These controls do not meaningfully alter the point estimates, suggesting that the use of a single threshold for each household structure does not materially bias results.

adults (note that, to align with MIT's Living Wage definitions, employment includes any work for pay, e.g., part-time employment).

Defining National Thresholds

Once we have defined the household structure in a given survey wave, we use data from the MIT Living Wage Calculator to approximate living wage cutoffs by household size and composition (https://livingwage.mit.edu/). At the time of our analysis, the current data were released in January 2023 and reflected living wages for the year 2022.[3]

Because we lack precise geographic data in the public NLS data, we estimate national averages, averaging by household type across states. Specifically, we take the values from the "Required annual income before taxes" row in the second table for the respective state's Living Wage Calculator page. We then create a state-population-weighted average for each Calculator-reported household type by multiplying the respective living wage value by the state population as of July 2019, according to US Census estimates, and dividing by the sum of state populations. We then adjust the thresholds from July 2022 dollars to July 2023 dollars to be consistent with other dollar amounts reported in the analysis (all income values are converted to July 2023 equivalents using the BLS's CPI Inflation Calculator.) These thresholds are as displayed in Appendix Table B4.

Because the Living Wage Calculator does not report living wage estimates beyond the household structures defined above, we must extrapolate to different household structures. To do

[3] Note that, even after accounting for rapid inflation in recent years, living wage thresholds have risen substantially over the past decade. This reflects many factors, including changes to MIT's methodology from one year to the next. MIT does not advise making historical comparisons, so we rely on the current data and adjust for inflation; we compare these estimates to respondents' household incomes at age 30, also converted to 2023 dollars. See the calculator's FAQ page for more on this.

so, we create a crude estimate of the cost of each additional household member, according to the following assumptions and procedures:

- Each additional non-working adult requires a living wage share equal to the population-weighted, state-level average of the difference between: (a) the living wage for a household with 1 working adult, 1 not-working adult, and no children and (b) the living wage for a household with just 1 (working) adult and no children: $21,162.42 in July 2023 dollars.

- Each additional working adult requires a living wage share equal to the population-weighted, state-level average of the difference between (a) the living wage for a household with 2 working adults and no children and (b) the living wage with just 1 (working) adult and no children: $21,786.88 in July 2023 dollars.

- Each additional child in a household with any non-working adults (like with MIT's thresholds, this assumes that the non-working adult can assist with childcare, offsetting those costs) requires a living wage share equal to the average difference in wages, for a household with 1 working and 1 non-working adult between: (a) 1 child and no children; (b) 2 children and 1 child; and (c) 3 children and 2 children: $11,696.22.

- Each additional child in a household with only working adults requires a living wage share equal to the average difference in wages, for a household with 2 working adults, between: (a) 1 child and no children; (b) 2 children and 1 child; and (c) 3 children and 2 children: $24,799.66.

- Finally, there are a handful of cases where there are no adults in the household. Here we assume the cost for a child living independently is the same as 1 adult with 0 children (see Table A1 above), and each additional child beyond 3 we expect to cost $21,162.42, as in the scenario where there is one adult.

Once a living wage threshold is defined for each household structure, we use that threshold to determine whether the respondent is in a household that earns at least the living wage for the given year and household composition. For individuals who were 30 (or 35) in a year when the survey was not fielded or for whom responses were missing at that age, we impute income by linearly interpolating from all non-missing lead and lag incomes; to avoid over-extrapolating, we restrict imputation to a range aligning to the minimum and maximum ages for which a given respondent has non-missing household income responses.

Appendix B References

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Appendix B Tables

Appendix Table B1. Factor loadings from mixed principal components analysis of educational experiences

	Academic Outcomes	College Readiness	Behaviors and Expectations	Teachers and School	Parental Involvement	School Culture	Peer Delinquency	Peer Engagement	Vocational Coursework	Work-Based Learning	Occupational Training
High school GPA	**0.75**	0.02	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Grade 9 on-track: GPA overall	**0.77**	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Grade 9 3.0 GPA or higher	**0.47**	0.04	0.07	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00
Grade 9 on-track: no Ds or Fs in math or ELA	**0.51**	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% of credits from advanced coursework (honors, AP, IB, etc.)	0.34	0.13	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
Attendance	0.15	0.03	0.05	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.02
PIAT exam score	0.13	0.33	0.01	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.00
ASVAB exam score	0.23	0.37	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
SAT/ACT score	0.11	0.25	0.10	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Grade 9 on-track: took algebra 1 by grade 9	0.00	0.17	0.04	0.01	0.00	0.01	0.00	0.04	0.02	0.00	0.00
Took college prep coursework	0.08	0.12	0.00	0.01	0.00	0.00	0.00	0.04	0.00	0.00	0.00
What is the % chance that you will be working for pay more than 20 hours per week when you turn 30?	0.00	0.11	0.06	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01
What is the % chance you will be a student in a regular school one year from now?	0.03	0.01	0.29	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00
What is the % chance you will have a four-year college degree by the time you turn 30?	0.04	0.02	0.29	0.01	0.00	0.01	0.04	0.01	0.00	0.00	0.00
What is the % chance you will be arrested, whether rightly, or wrongly, at least once in the next year?*	0.03	0.01	0.12	0.00	0.01	0.00	0.03	0.01	0.00	0.00	0.01
Extent to which the child cheats* or gets along with others	0.05	0.00	0.22	0.03	0.00	0.04	0.02	0.00	0.01	0.00	0.00
Suspensions	0.04	0.02	0.12	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.00
Graduated from high school	0.05	0.00	0.08	0.00	0.01	0.02	0.01	0.00	0.01	0.00	0.00
Took the SAT or ACT	0.14	0.03	0.21	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00
The teachers good (level of agreement)	0.02	0.00	0.00	**0.61**	0.00	0.00	0.02	0.00	0.00	0.00	0.00
The teachers are interested in the students (level of agreement)	0.01	0.00	0.00	**0.60**	0.00	0.00	0.04	0.02	0.00	0.00	0.00
I feel safe at this school (level of agreement)	0.01	0.03	0.02	0.33	0.00	0.07	0.03	0.01	0.00	0.00	0.00
Frequency of parent volunteering to help at the school or in the classroom	0.02	0.01	0.00	0.00	**0.57**	0.00	0.01	0.00	0.00	0.00	0.00

	Academic Outcomes	College Readiness	Behaviors and Expectations	Teachers and School	Parental Involvement	School Culture	Peer Delinquency	Peer Engagement	Vocational Coursework	Work-Based Learning	Occupational Training
Frequency of parent attendance at school PTO meetings	0.00	0.00	0.00	0.00	**0.65**	0.00	0.00	0.00	0.00	0.00	0.00
How much parent knows about who the teachers are and what the student is doing in school	0.02	0.04	0.05	0.02	0.05	0.05	0.00	0.02	0.00	0.00	0.00
Took dual enrollment course	0.01	0.00	0.01	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00
[At my school] disruptions by other students get in the way of my learning (level of agreement)	0.00	0.00	0.00	0.00	0.00	**0.60**	0.00	0.00	0.00	0.00	0.00
[At my school] there is a lot of cheating on tests and assignments (level of agreement)	0.00	0.00	0.00	0.02	0.00	0.24	0.13	0.01	0.00	0.00	0.00
What % of kids in your grade smoke cigarettes?*	0.01	0.00	0.00	0.01	0.00	0.00	**0.63**	0.00	0.00	0.00	0.00
What % of kids in your grade get drunk at least once a month?*	0.00	0.00	0.00	0.00	0.00	0.00	**0.69**	0.00	0.00	0.00	0.00
What % of kids in your grade belong to a gang that does illegal activities?*	0.01	0.06	0.05	0.01	0.00	0.03	0.25	0.00	0.00	0.00	0.00
What % of kids in your grade have ever used marijuana, inhalants or other drugs?*	0.01	0.00	0.00	0.01	0.00	0.00	**0.70**	0.01	0.00	0.00	0.00
What % of kids in your grade cut classes or skip school?*	0.01	0.01	0.00	0.02	0.00	0.01	**0.55**	0.00	0.00	0.00	0.00
What % of kids in your grade participated in organized sports, clubs, or school activities?	0.01	0.00	0.00	0.01	0.00	0.00	0.00	**0.44**	0.00	0.00	0.00
What % of kids in your grade plan to go to college?	0.01	0.03	0.04	0.02	0.00	0.01	0.03	0.37	0.00	0.00	0.00
What % of kids in your grade do volunteer work?	0.00	0.04	0.00	0.01	0.00	0.00	0.01	**0.50**	0.00	0.00	0.00
Vocational specialist	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.90**	0.01	0.00
Any high school coursework that included co-op or work experience.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.89**	0.01	0.00
Participation in mentoring program through school (matched with an individual in an occupation)	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.01	0.13	0.00
Participation in a career-major program (a defined sequence of courses based upon an occupational goal)	0.00	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.02	0.20	0.03
Participated in a job training program that included any time spent at a work site, including coursework or practical experience	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.81**	0.00
Participated in a job training program where the training was based at a work site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	**0.81**	0.00
Participating in a training program with any practice-based experience	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	**0.58**	0.00

	Academic Outcomes	College Readiness	Behaviors and Expectations	Teachers and School	Parental Involvement	School Culture	Peer Delinquency	Peer Engagement	Vocational Coursework	Work-Based Learning	Occupational Training
Participation in a training program occurring on the job, including at a worksite or as part of a government apprenticeship program	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.83**	0.00
Attendance in schooling, courses, or training program designed to help people find a job, improve their job skills, or learn a new job	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	**0.58**
Enrolled in a high school vocational-technical program, business and career program, or combination of academic and vocational program, or a government training at a vocational school, technical school, trade school, or area vocational school.	0.02	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.05	0.05	0.08
Training included vocational certificate or state licensure	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.59**

Notes: Results are from a mixed principal-component analysis with varimax rotation on 11 factors. These factors explain 51% of the total variance. Loadings of 0.40 or higher are in bold. Items with an asterisk are reverse coded so that higher values represent more desirable experiences. All numeric variables are converted to standard deviation units before inclusion in the factor analyses (and normalized, where highly skewed). Several of these variable definitions and inclusion decisions were inspired by the Education to Workforce Indicator Framework created by Mathematica, the Bill & Melinda Gates Foundation, and Mirror Group (see https://educationtoworkforce.org), including indicators for whether the respondent was on track in 9th grade, and whether the respondent took the courses typically required for admission to a four-year college. The "vocational specialist" is an NLS-created variable and represents whether the respondent took at least four credits in a single labor-market-prep vocational area at least two of which included coop or work experience coursework (see https://nlsinfo.org/content/cohorts/nlsy97/other-documentation/codebook-supplement/appendix-11-collection-transcript/page/0/2) .

Appendix Table B2. Fit statistics for different schooling experience factor structures

	13 Factors	11 Factors	9 Factors
	Panel A. Test Data		
χ^2	*2435*	*2634*	*2683*
degrees of freedom	*847*	*979*	*989*
CFI	0.866	0.879	0.876
TLI	0.850	0.867	0.865
RMSEA	0.046	0.043	8.000
90% CI	[0.044, 0.048]	[0.041, 0.045]	[0.042, 0.046]
SRMSR	0.051	0.050	0.050
AIC	68510	70016	70044
	Panel B. Complete Cases		
χ^2	*1190*	*1363*	*1390*
degrees of freedom	*764*	*990*	*900*
CFI	0.852	0.858	0.853
TLI	0.833	0.842	0.838
RMSEA	0.054	0.053	0.053
90% CI	[0.048, 0.060]	[0.047, 0.058]	[0.048, 0.059]
SRMSR	0.070	0.071	0.072
AIC	12918	13134	13141

Notes: The test data comprise a random sample of 10 percent of the full NLS sample (n = 898) that were excluded from the training data used for the exploratory factor analysis. The complete cases data includes only the observations with no missing data, excluding any observations where attendance and suspensions are determined from self-reports rather than from school transcripts (n = 191); because this is a restrictive sampling requirement, we consider the complete-cases sample to be secondary to the random selection of the full sample used to create the test data. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error approximation; SRMSR = standardized root mean square residual; AIC = Aikake information criterion. We follow Hu & Bentler (1999) and Schermelleh-Engel et al. (2003) by setting the following thresholds for acceptable fit: CFI and TLI values of 0.90 or above are close to adequate, RMSEA values below 1 (and ideally less than 0.05); SRMSR values below 0.12 (and ideally less than 0.08); and minimized AIC values.

Appendix Table B3. Adulthood outcomes used to define distributional mobility measures

Outcome in adulthood	Description
Income	Household income in 2023 dollars, normalized (by taking the natural log of household income, plus 1 to make all values non-zero) and conveted to standard deviation units.
Poverty Rank	Sample-weighted percentile rank of household poverty ratio. Values are converted to a scale with mean 0 and unit variance, although we retain the uniform distribution of the poverty ranking.
Net worth	Household net worth, normalized (by taking the natural log of net worth, plus the minmimu net worth plus one to make all values positive and non-zero) and converted to standard deviation units.
Full-time employment	Indicator for whether the respondent reported full-time employment (including active military service) for at least one week in each of the 12 months when they were 30 (or 35).
Never arrested	The respondent reports no instances of arrest before the age of 30 (35).
Job satisfaction	*Which of the following best describes how you [feel/felt] about your job with [this employer]?* Response options range from 1 (like it very much) to 5 (dislike it very much). We reverse code responses so that higher values are more desirable, average across employers (where the respondent has reported multiple employers in a given year), and then standardize responses to mean 0 and unit variance.
General health	*In general, how is your health?* Response options range from 1 (excellent) to 5 (poor). We reverse code so that higher values represent better health, and standardize values to mean 0 and unit variance.
Frequency of sickness or injury	Through 2011, this value is the sum of the responses to the following two items: • *During the past 12 months, how many times were you injured or ill and had to be treated by a doctor or nurse?* • *Some injuries are not treated by a doctor or nurse. During the past 12 months, how many times were you injured or ill so that you missed at least one full day of usual activities such as work or school, but were not treated by a doctor or nurse?* Beginning in 2013, these were asked as a single item: *During the past 12 months, how many times were you physically injured or ill so that you missed at least one full day of usual activities such as work or school?* Values range from 1 (none) to 5 (4 or more times). Responses are reverse coded so that higher values are optimal and converted to standard deviation units.
Work is limited because of health	[Are you] limited in the kind of work you do on a job for pay because of your health? (reverse coded)
Psychological wellness influencing work	*How many times did you miss work because you were just not feeling right—for example, you were "too blue" to get up in the morning, or feeling too anxious to conduct your usual activities?* Responses range from 1 (never) to 5 (4 or more times). We reverse code responses and then dichotomize so that the variable takes on a value of TRUE if the respondent reported this occurring zero times.
Untreated mental health	*Some conditions are not treated by a professional. During the past 12 months, how many times did you have an emotional, mental or psychiatric problem so that you missed at least one full day of usual activities such as work or school, but were not treated by a professional?* Responses range from 1 (never) to 5 (4 or more times). We reverse code responses and then dichotomize so that the variable takes on a value of TRUE if the respondent reported this occurring zero times

Appendix Table B4. Nationally averaged thresholds for living wage attainment by household size

	0 Children	1 Child	2 Children	3 Children
One Adult	$37,293.72	$78,771.39	$101,737.82	$134,570.29
Two adults (1 working)	$60,313.74	$74,457.78	$84,998.32	$95,402.41
Two working adults	$60,265.70	$87,593.16	$110,747.53	$134,664.67

APPENDIX C: ADDITIONAL ROBUSTNESS CHECKS

Alternative Poverty Thresholds

While it is common in the literature to make comparisons across percentile thresholds (for a discussion of this transition-matrix-style approach, along with other mobility estimation methods, see Nybom and Stuhler, 2017), the decision about how to define and contrast percentile boundaries is somewhat arbitrary and will influence the magnitude of differences and effects being estimated. Here we explore the implications for our threshold definition by demonstrating how our findings might have differed had we: (a) defined poverty according to a higher (or lower) bound than the 25th percentile; and (b) defined the comparison group (those not experiencing poverty) according to higher (or lower) bounds than the median. When we explore the implications of these decisions for each of our primary analyses, we find little evidence that our decision points about how to define poverty and the non-poverty comparison group are driving our conclusions about (a) there being large gaps in access to high-quality educational experiences according to students' socio-economi status or (b) that academic experiences are important predictors of mobility for youth experiencing poverty. Below, we present and summarize these robustness checks for each of our primary research questions.

Access to Economic Mobility

Figure C1 of this appendix shows the sensitivity of our estimates in Table 2 to our poverty and reference (non-poverty) thresholds. Panel A displays estimates representing the difference in likelihood of attaining mobility (Eq. 1), according to different thresholds for poverty ranging from the bottom five percent of household-adjusted family income to the bottom half of the distribution, holding constant the reference group definition of being in the upper half of the household income distribution. Panel B, in contrast, retains the definition we use for

students experiencing poverty (i.e., their family is in the bottom quartile), but plots estimates from the same model (Eq. 1) where the reference group definition ranges from the top three quarters of the household distribution through the top decile. The estimates in each panel generally support the idea that larger contrasts between the population of interest (those from families experiencing poverty) and their more affluent peers is associated with likewise larger contrasts in the probability of meeting mobility benchmarks. For example, youths from the bottom quartile of the household-adjusted income distribution are conditionally 15 percentage points (-0.148) less likely to earn a living wage at 30 than the remaining 75 percent of their peers (the left-most estimate in the first row of Panel B; 95% CI = [-0.188, -0.108]), but nearly 30 percentage points (-0.284) less likely to earn a living wage than those in the top five percent (the right-most estimate; (95% CI = [-0.360, -0.208]). The conditional in the probability of earning a living wage between those in the top and bottom quartiles is about 25 percentage points (-0.247, 95% CI = [-0.299, -0.196]). These results are consistent with a substantial prior literature demonstrating the extent to which income in adulthood is determine by one's socio-economic background (see, for example, Chetty et al. 2024; Corak 2013; Duncan et al. 2010; Lee and Solon 2009; Mitnik et al. 2024).

Access to Educational Experiences

We follow a similar process to explore the sensitivity of our estimates regarding disparities in educational opportunity (i.e., those reported in Table 4); estimates across threshold definitions are illustrated in Figure C2. These figures show that, in general, our conclusions about estimated differences in educational experiences are not highly sensitive to decisions about how we define students experiencing poverty or the comparison group. We still observe substantive and statistically significant differences in the nature of students' experiences related

to *Academic Outcomes*, *College Readiness*, *Behaviors and Expectations*, and *Parental Involvement*. Across poverty and comparison-group definitions, we continue to conclude that students from poverty are substantially less likely to have a top-quartile experience on these four domains. While the magnitude of these gaps varies across definitions, in nearly all cases the alternative definitions produce confidence intervals that contain our preferred estimates (in red).

The Relationship Between Educational Experiences and Economic Mobility

Our primary estimates, in the body of our paper, indicate that academic experiences are important predictors of long-term economic mobility for youth experiencing poverty, and that this relationship is particularly strong for education experiences related to students' *Academic Outcomes*. Our sensitivity tests, which replicate the estimates in column 2 of each panel in Table 4 (and which correspond to Eq. 4) across different poverty quantile definitions produce results consistent with this conclusion, as illustrated in Figure C3 of this appendix. Our preferred definition (plotted in red) yields point estimates that fall within the 95 percent confidence interval for every threshold definition when mobility is measured in terms of earning a living wage or earning a top-quartile income (the first row of Columns 1 and 2); only the smallest poverty definitions produce estimates that are statistically indistinguishable from zero, although the point estimates are of comparable magnitude for all but the narrowest poverty definitions for top-quartile incomes (Column 2). Point estimates are a bit more variable when we look at attainment of a high (top-quartile) level of *Economic Wellbeing and Stability* (Column 3), but each estimate is statistically different from zero at conventional levels of significance and our preferred estimate is a bit more conservative than what other definitions would suggest. Replicating these tests with continuous outcomes provides further affirmative evidence (Figure C4 of this appendix), with strong *Academic Outcomes* being similarly predictive of household

income (in natural log units; Column 1), percentile rank of household-adjusted income (Column 2), and standard deviations of *Economic Wellbeing and Stability* (Column 3) across poverty definitions. Only the most conservative band tested (i.e., the bottom five percent) ever produces estimates near zero, but these are based on extraordinarily small samples and have very wide confidence intervals.

Our findings regarding the *College Readiness*, *Behaviors and Expectations*, and *Parental Involvement* factors are similarly robust to alternative definitions of our sample of interest. *P*oint estimates for each educational experience are nearly always positive (with the exception of a negative, but near-zero, point estimate at the strictest poverty definitions for *College Readiness* in Column 2 and for *Parental Involvement* in Column 3).

Economic Returns to *Academic Outcomes*

We might be concerned that the trajectories reported in Figure 2 are biased if household income growth is correlated with the respondent's birth year (as not all respondents would have reached the age of 35 before the last available survey administration) or with attrition from the survey. The primary specification for Figure 2 compares within-respondent changes in household income for each age bin relative to their household income when they were in high school; while our approach of interpolating income during non-response years (either because it is a year when the survey was not fielded, or because the respondent temporarily refrained from participating) will limit bias from missing income within a respondent's total response range, the sample of respondents will necessarily be different at each age comparison due to attrition from the survey entirely. We therefore also estimate trajectories by reproducing the analysis on restricted samples based on age ranges through which we observe the respondents (i.e., sample 1 includes all those observed through age 30, sample 2 includes all those observed through age 28, etc.). Dollar-

converted trajectories for each age span of survey retention are included as dashed lines in Appendix C Figure C5; we also re-estimate baseline salaries for these subsamples to compare differences in their initial family poverty status, although there is only marginal variation in baseline income across samples.

These alternative models suggest somewhat different predicted income growth across attrition-based samples.[xviii] However, the general trend is consistent with that from the primary sample: in spite of large initial income gaps, students experiencing poverty who have strong academic outcomes on average make substantial income gains as they progress through adulthood, but are unable to reach parity with their average peer not experiencing poverty who have any level of Academic Outcomes, as they enter their 30s.

Appendix C References

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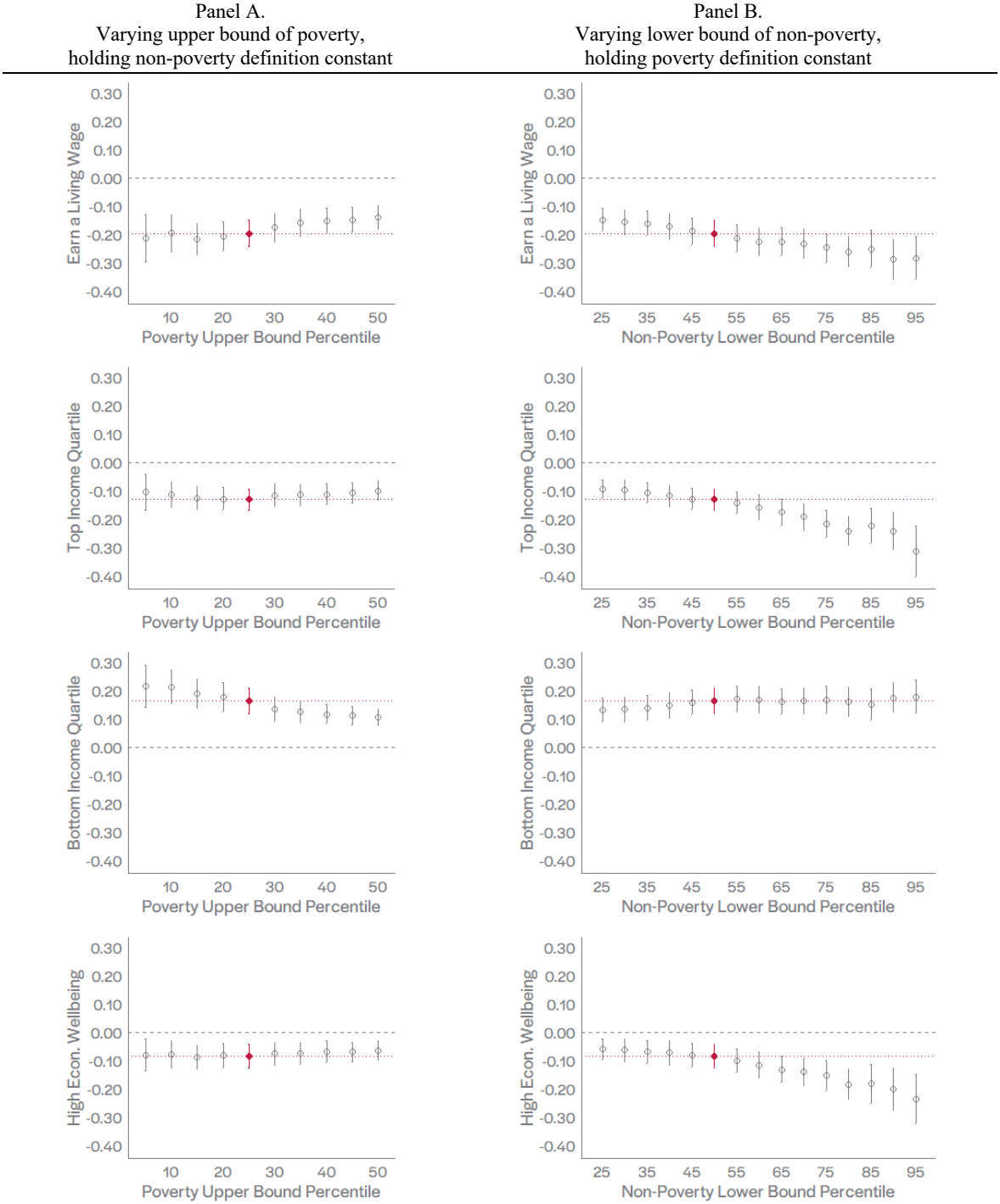
Appendix C Figures

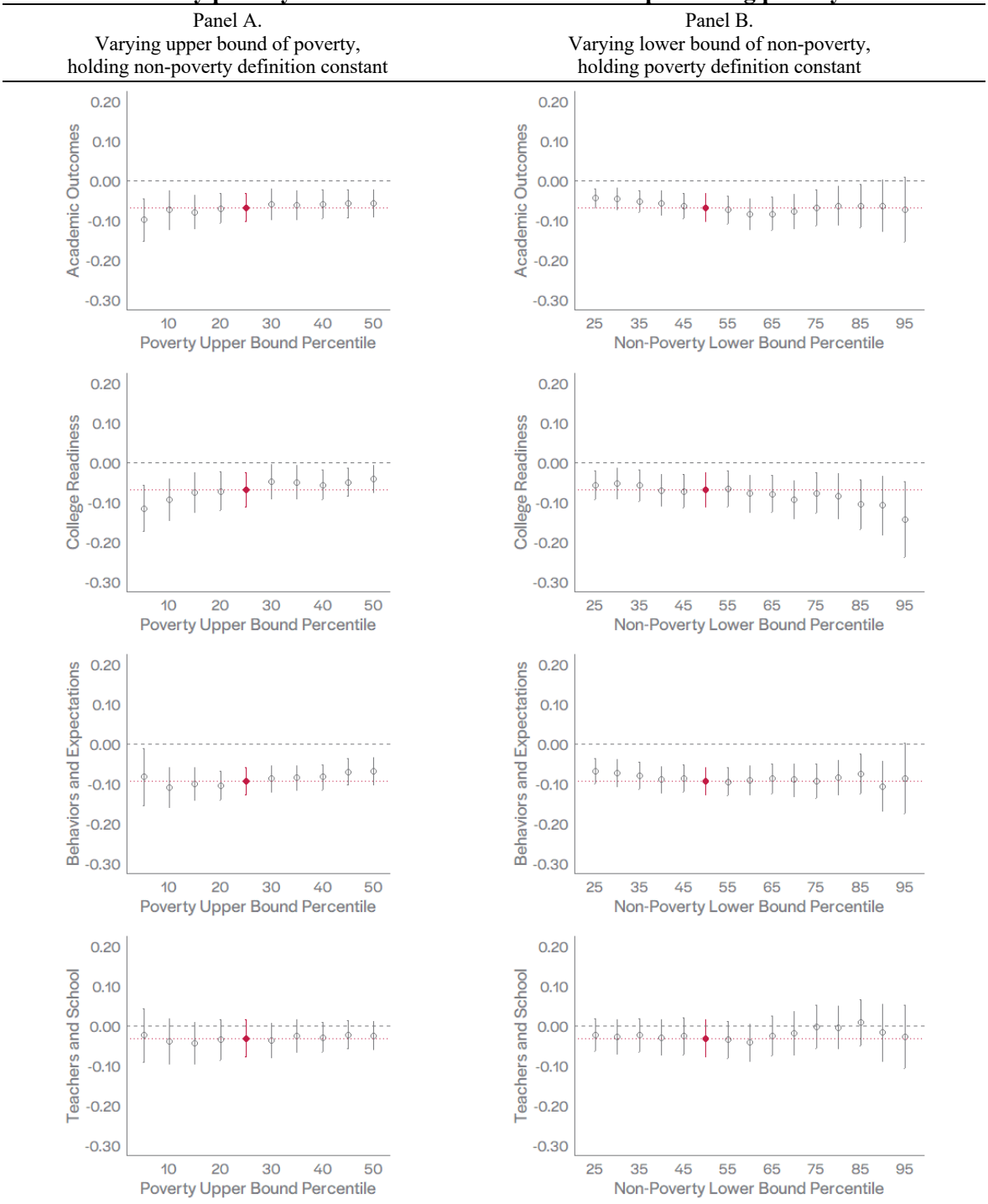
Appendix Figure C1. Robustness of estimates of the association between economic mobility and baseline family poverty across different thresholds for experiencing poverty



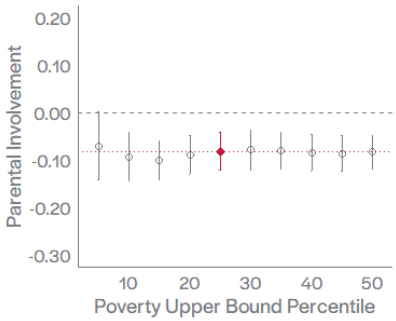
Notes: The plotted point estimates in each panel represent linear differences in mobility (y-axis) by youth poverty conditional on youth and family characteristics reported in the first wave of the NLSY97: highest level of parental education (years completed); parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency; race/ethnicity, and birth year (see Eq. 1). Each plotted point estimate in the figure comes from varying the definition of our poverty (Panel A) or reference group (Panel B). In panel A, the x-

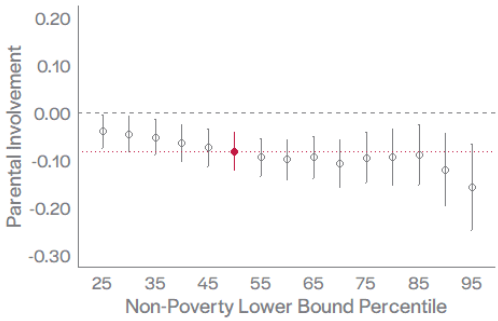
axis represents an upper threshold for the household-adjusted poverty percentile used to define our population of interest—youth from families experiencing poverty—while maintaining the reference group definition (those from families not experiencing poverty) at the upper half of the household income distribution. In Panel B, the x-axis represents a lower threshold above which we consider students not to be experiencing poverty, while holding our poverty definition steady at the bottom quartile of the distribution. Figures in each cell include 95% confidence intervals from heteroskedasticity-robust standard errors, clustered within sampling strata. The main estimates, from Table 2 column 4, are plotted in red. Observations are weighted according to full-survey participation (through round 20).

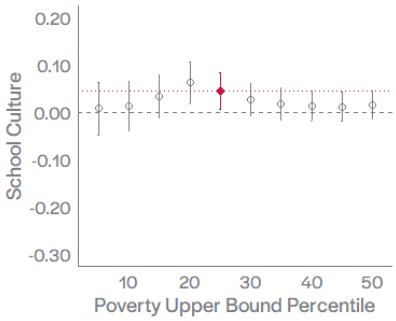
Appendix Figure C2. Robustness of estimates of the association between educational experiences and baseline family poverty across different thresholds for experiencing poverty

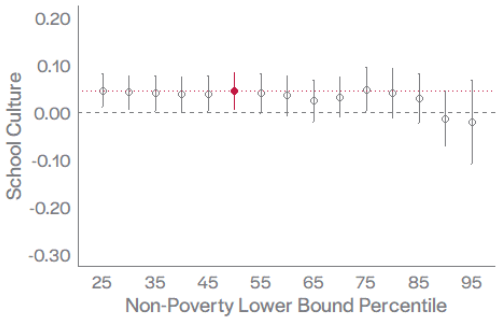


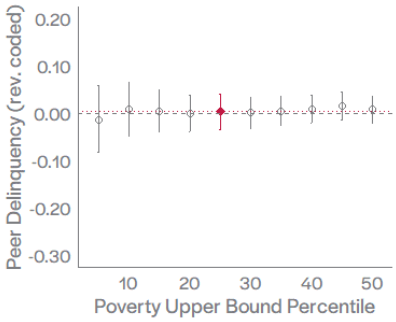
Panel A. Varying upper bound of poverty, holding non-poverty definition constant	Panel B. Varying lower bound of non-poverty, holding poverty definition constant

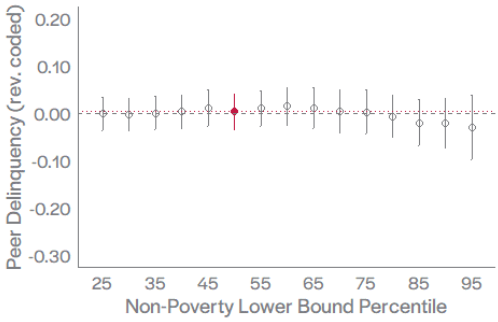


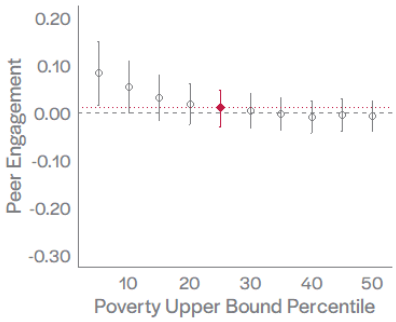


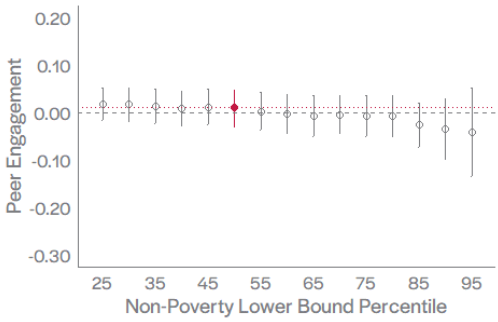




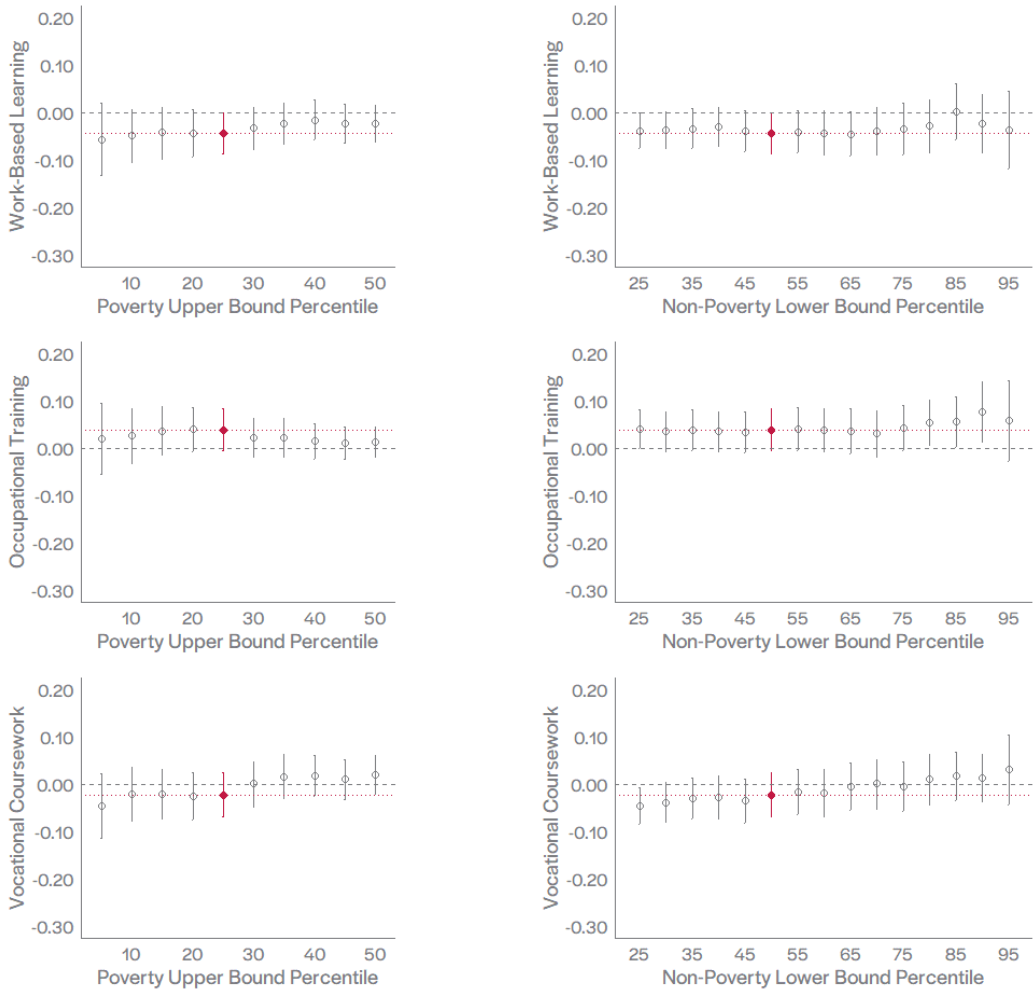






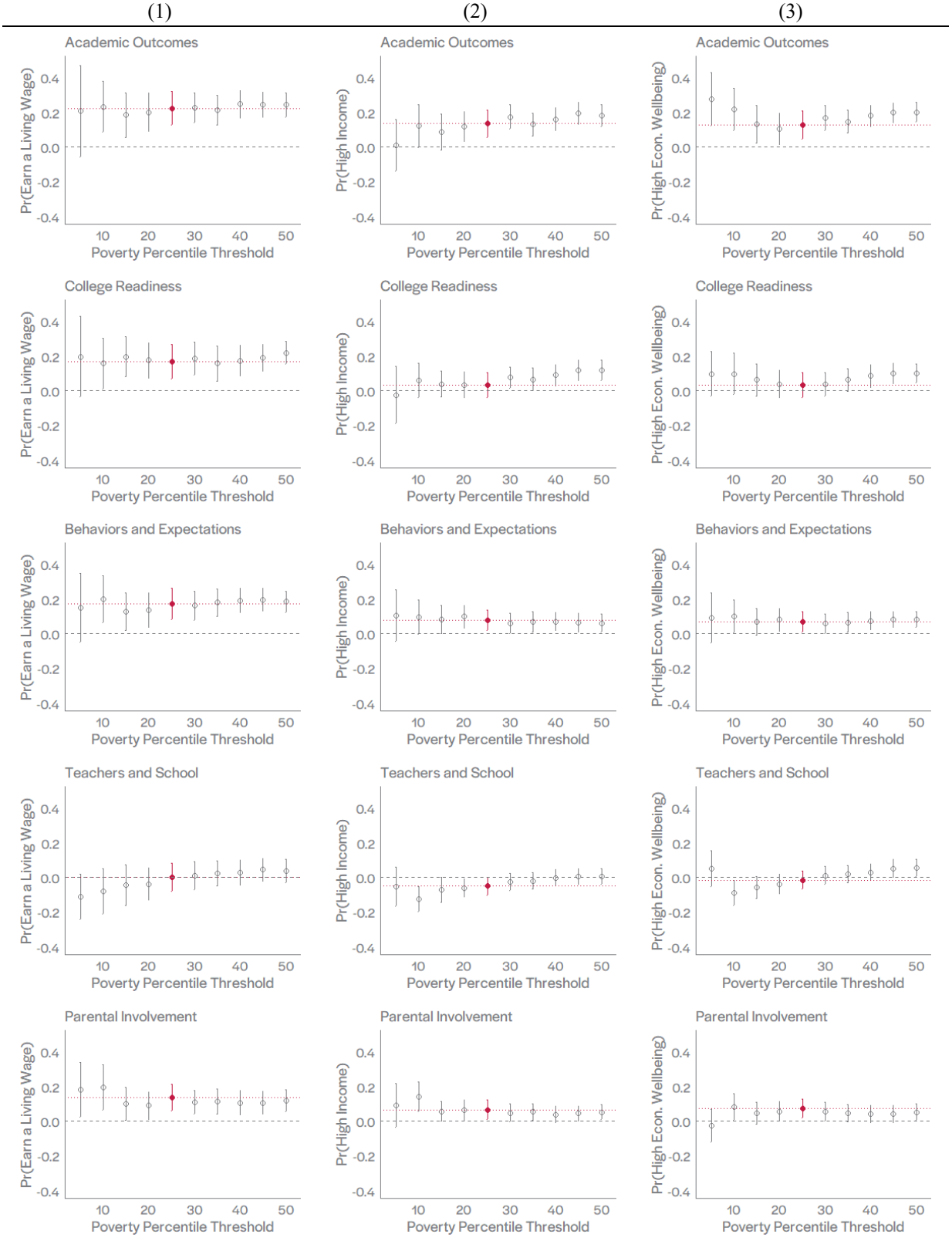


Panel A. Varying upper bound of poverty, holding non-poverty definition constant	Panel B. Varying lower bound of non-poverty, holding poverty definition constant



Notes: The plotted point estimates in each panel represent linear differences in attainment of a top- (versus bottom-)quartile value (y-axis) for the respective educational experience by youth poverty, conditional on youth and family characteristics reported in the first wave of the NLSY97: highest level of parental education (years completed); parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency; race/ethnicity, and birth year (see Eq. 3). Each plotted point estimate in the figure comes from varying the definition of our poverty (Panel A) or reference group (Panel B). In panel A, the x-axis represents an upper threshold for the household-adjusted poverty percentile used to define our population of interest—youth from families experiencing poverty—while maintaining the reference group definition (those from families not experiencing poverty) at the upper half of the household income distribution. In Panel B, the x-axis represents a lower threshold above which we consider students not to be experiencing poverty, while holding our poverty definition steady at the bottom quartile of the distribution. Figures in each cell include 95% confidence intervals from heteroskedasticity-robust standard errors, clustered within sampling strata. The main estimates, from Table 3 column 4, are plotted in red. Observations are weighted according to full-survey participation (through round 20).

Appendix Figure C3. Robustness of estimates of the association between educational experiences and mobility on different thresholds for experiencing poverty



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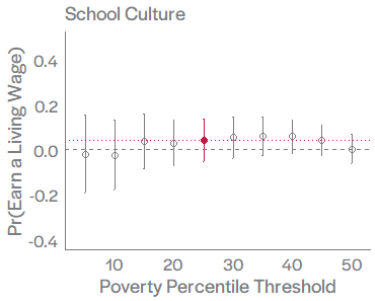	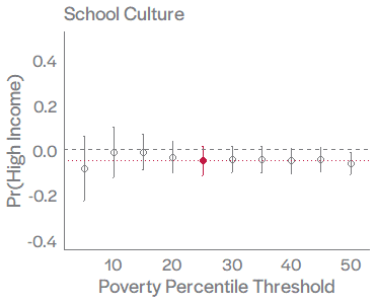	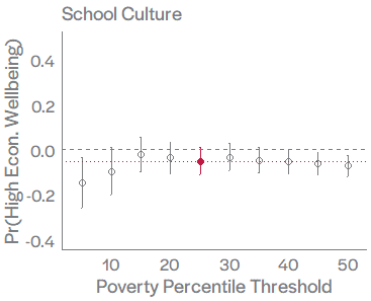
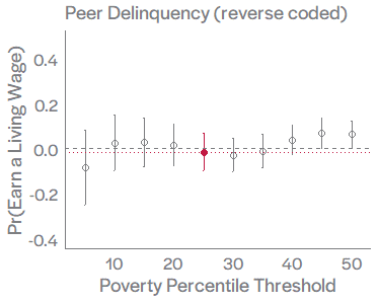	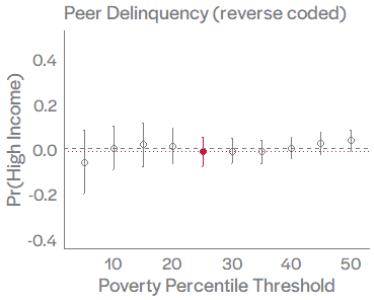	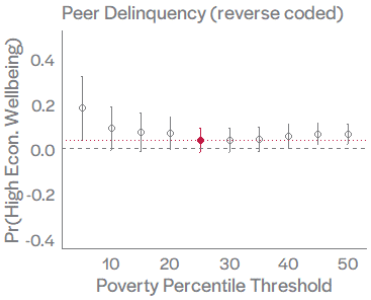
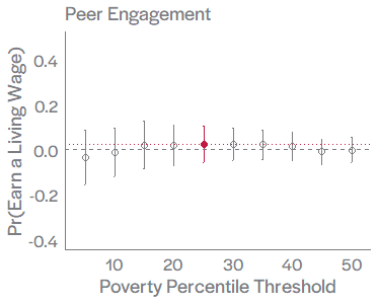	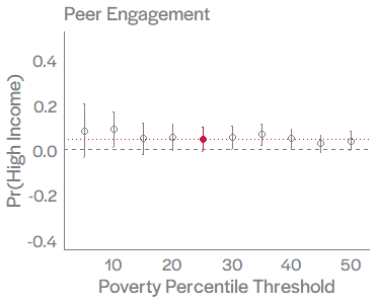	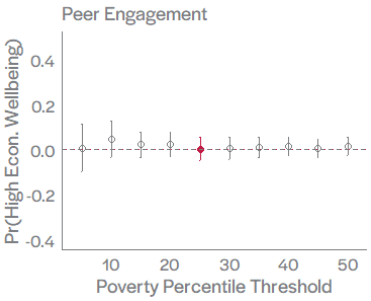
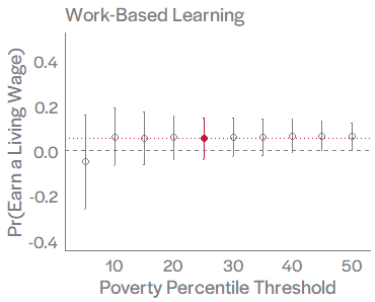	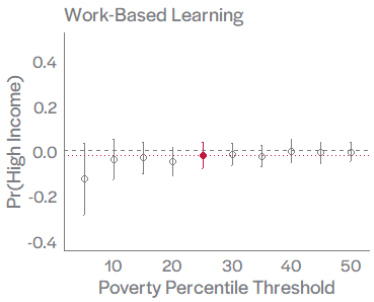	
		

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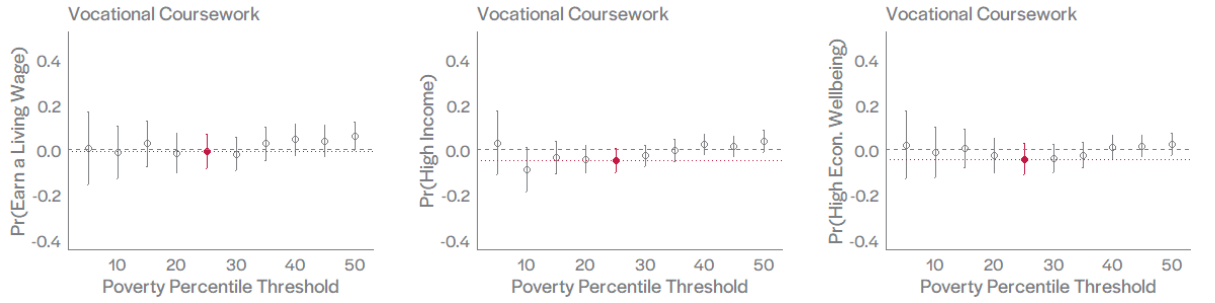
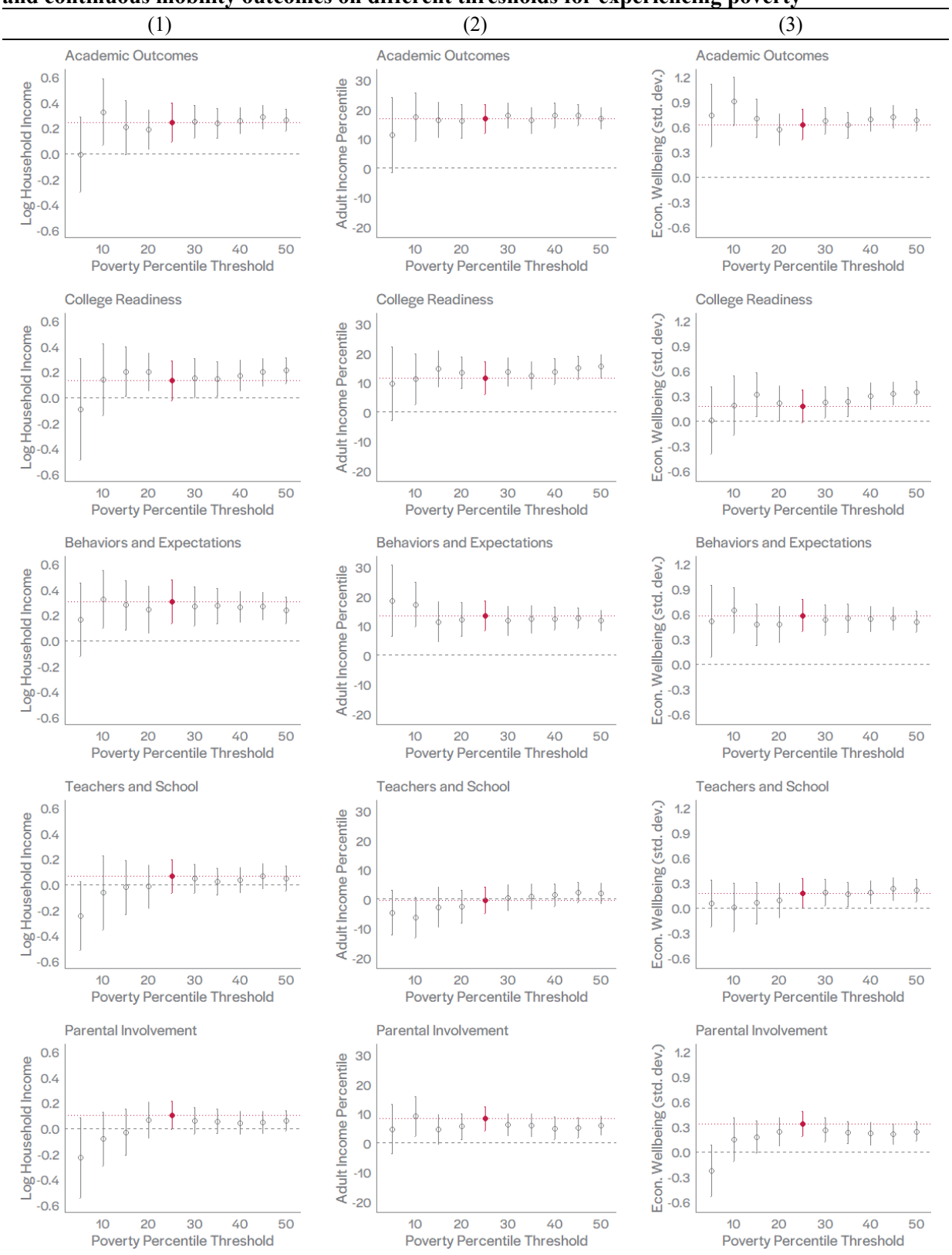


Notes: This analysis is limited to students whose families were at or below the respective percentile, portrayed along the X-axis, of the household-adjusted poverty distribution. For each mobility outcome panel and experience domain, estimates are from separate linear regressions of the respective mobility outcome on whether the individual was in the top quartile of the respective educational experience, conditional on baseline youth and household characteristics (see Table 2 notes), with the addition of household poverty ratio and other educational experiences (see Eq. 4). Each point represents the estimated association (y-axis) between poverty in youth and a given threshold (x-axis) below which we define families as experiencing poverty. X-axis values are percentiles of family poverty, adjusted for household size. Observations are weighted according to full-survey participation (through round 20). Point estimates are plotted with 95% confidence intervals based on heteroskedasticity-robust standard errors, clustered within sampling strata. The main estimates, from column 2 in each panel of Table 4, are plotted in red.

Appendix Figure C4. Robustness of estimates of the association between educational experiences and continuous mobility outcomes on different thresholds for experiencing poverty



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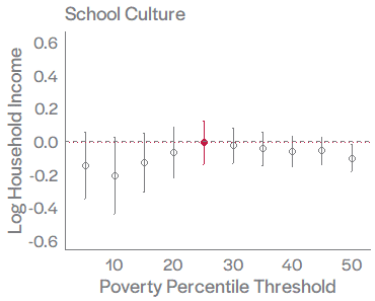
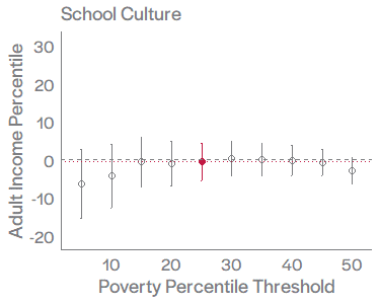
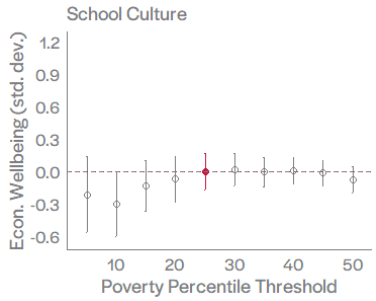
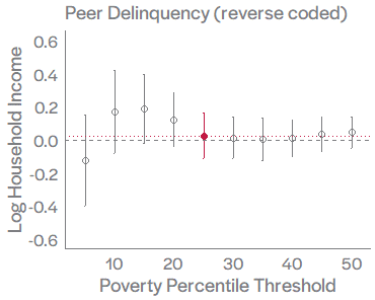
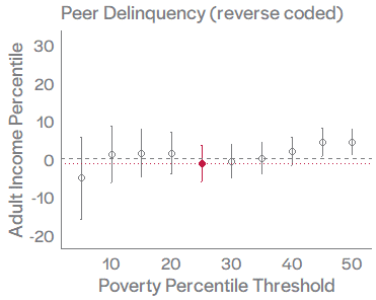
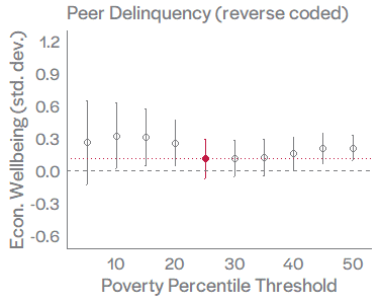
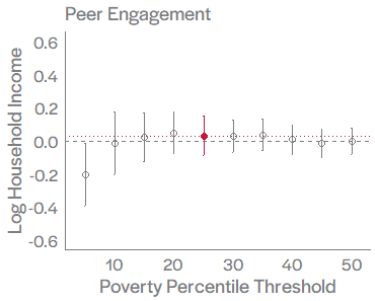
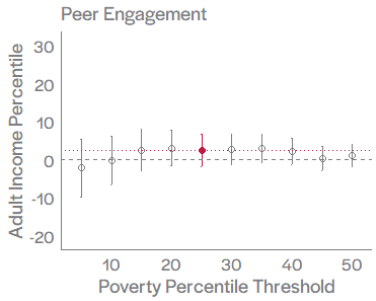
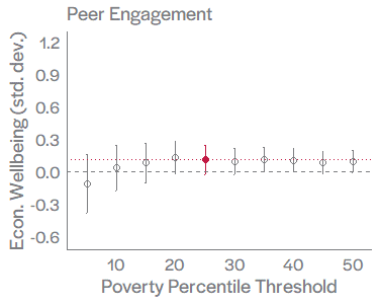
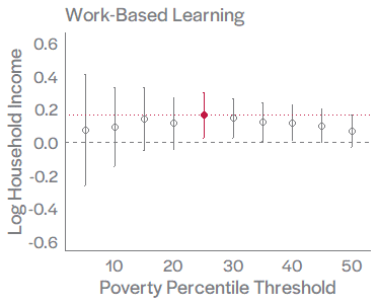
 School Culture Log Household Income 0.6 0.4 0.2 0.0 -0.2 -0.4 -0.6 10 20 30 40 50 Poverty Percentile Threshold	 School Culture Adult Income Percentile 30 20 10 0 -10 -20 10 20 30 40 50 Poverty Percentile Threshold	 School Culture Econ. Wellbeing (std. dev.) 1.2 0.9 0.6 0.3 0.0 -0.3 -0.6 10 20 30 40 50 Poverty Percentile Threshold
 Peer Delinquency (reverse coded) Log Household Income 0.6 0.4 0.2 0.0 -0.2 -0.4 -0.6 10 20 30 40 50 Poverty Percentile Threshold	 Peer Delinquency (reverse coded) Adult Income Percentile 30 20 10 0 -10 -20 10 20 30 40 50 Poverty Percentile Threshold	 Peer Delinquency (reverse coded) Econ. Wellbeing (std. dev.) 1.2 0.9 0.6 0.3 0.0 -0.3 -0.6 10 20 30 40 50 Poverty Percentile Threshold
 Peer Engagement Log Household Income 0.6 0.4 0.2 0.0 -0.2 -0.4 -0.6 10 20 30 40 50 Poverty Percentile Threshold	 Peer Engagement Adult Income Percentile 30 20 10 0 -10 -20 10 20 30 40 50 Poverty Percentile Threshold	 Peer Engagement Econ. Wellbeing (std. dev.) 1.2 0.9 0.6 0.3 0.0 -0.3 -0.6 10 20 30 40 50 Poverty Percentile Threshold
 Work-Based Learning Log Household Income 0.6 0.4 0.2 0.0 -0.2 -0.4 -0.6 10 20 30 40 50 Poverty Percentile Threshold	 Work-Based Learning Adult Income Percentile 30 20 10 0 -10 -20 10 20 30 40 50 Poverty Percentile Threshold	 Work-Based Learning Econ. Wellbeing (std. dev.) 1.2 0.9 0.6 0.3 0.0 -0.3 -0.6 10 20 30 40 50 Poverty Percentile Threshold
 Occupational Training Log Household Income 0.6 0.4 0.2 0.0 -0.2 -0.4 -0.6 10 20 30 40 50 Poverty Percentile Threshold	 Occupational Training Adult Income Percentile 30 20 10 0 -10 -20 10 20 30 40 50 Poverty Percentile Threshold	 Occupational Training Econ. Wellbeing (std. dev.) 1.2 0.9 0.6 0.3 0.0 -0.3 -0.6 10 20 30 40 50 Poverty Percentile Threshold

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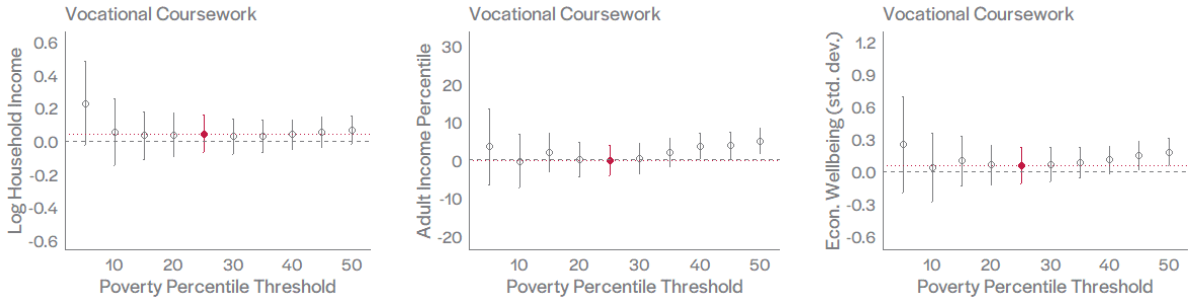
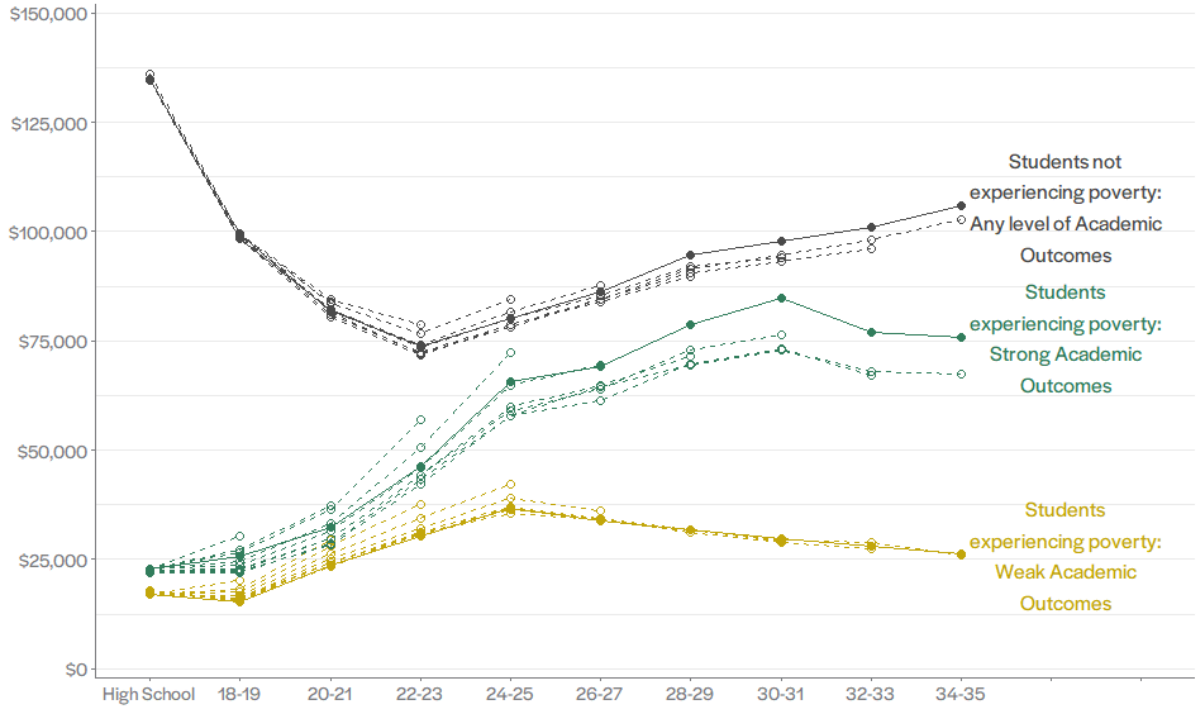


Notes: This analysis is limited to students whose families were at or below the respective percentile, portrayed along the X-axis, of the household-adjusted poverty distribution. For each mobility outcome panel and experience domain, estimates are from separate linear regressions of the respective mobility outcome on whether the individual was in the top quartile of the respective educational experience, conditional on baseline youth and household characteristics (see Table 2 notes), with the addition of household poverty ratio and other educational experiences (see Eq. 4). Each point represents the estimated association (y-axis) between poverty in youth and a given threshold (x-axis) below which we define families as experiencing poverty. X-axis values are percentiles of family poverty, adjusted for household size. Observations are weighted according to full-survey participation (through round 20). Point estimates are plotted with 95% confidence intervals based on heteroskedasticity-robust standard errors, clustered within sampling strata. Estimates from our preferred definitions (where those in the bottom quartile of the household-adjusted income distribution are considered to be experiencing poverty and the comparison group is those in the upper half of the distribution) are plotted in red.

Appendix Figure C5. Income trends by baseline poverty, level of academic outcomes, and age at survey attrition



Notes: The strength of academic outcomes is determined by the respondent's sample-weighted quartile of that factor score. High school incomes are estimated from a sample-weighted linear regression of log income on income-by-academic-outcomes group: all students not experiencing poverty (the reference group), students experiencing poverty with strong academic outcomes, and students experiencing poverty with poor academic outcomes. The model is estimated within year, with 1998 as the reference year. To convert estimates to dollar units, we first exponentiate the reference group value to arrive at the predicted average household income for students not experiencing poverty, and then we multiply that by the exponentiated coefficients for the remaining groups to arrive at their average baseline income. A second linear regression of log income on an interaction between age span and income-by-academic-outcomes group, with year and student fixed effects, provides income growth trajectories. To convert the point estimates from the second set of models to dollar units, we exponentiate them and multiply the exponentiated values by the baseline income estimates from the previously mentioned model. The trajectories for the full sample (capped at age 35) are plotted by the solid lines. We repeat the process with subsequent samples that are restricted to the latest age span for which individuals are observed (e.g., only those who responded to surveys through at least age 34-35, at least 32-33, at least 30-31, at least 28-29, etc.). Trajectories from models estimated on these attrition-defined samples are shown in the dashed lines. All income is reported in 2023 dollars to allow for comparisons over time.

[xviii] Point estimates and standard errors are not shown; these data are available upon request.

APPENDIX D: ADDITIONAL TABLES AND FIGURES

Table D1. Life outcomes by baseline poverty

Outcome	Students experiencing poverty (1)	Students not experiencing poverty (2)	Linear difference (Poverty – Not) (3)	(4)	Odds ratio of difference (5)	(6)
Health Composite: Top Quartile	0.222	0.267	-0.046**	-0.011	0.78*	0.94
			(0.017)	(0.019)	(0.095)	(0.110)
Education						
Enrolled in 2- or 4-year college by 20	0.375	0.757	-0.382***	-0.195***	0.19***	0.39***
			(0.022)	(0.027)	(0.107)	(0.133)
Completed a 2-year degree by 23 (regardless of enrollment)	0.025	0.024	-0.027***	-0.025**	0.46***	0.46**
			(0.007)	(0.009)	(0.213)	(0.276)
Completed a 4-year degree by 26 (regardless of enrollment)	0.133	0.465	-0.332***	-0.121***	0.18***	0.46***
			(0.020)	(0.021)	(0.118)	(0.129)
Employment						
Employed full time at 30	0.571	0.716	-0.145***	-0.085***	0.53***	0.68***
			(0.021)	(0.023)	(0.091)	(0.105)
Level of job satisfaction at 30 (SD units)	-0.091	0.024	-0.115*	-0.049	--	--
			(0.048)	(0.056)		
Economic Health						
Net worth at 30 (normalized, in SD units)	-0.225	0.059	-0.284***	-0.106***	--	--
			(0.031)	(0.036)		
Household income at 30 (normalized, in SD units)	-0.349	0.183	-0.531***	-0.341***	--	--
			(0.050)	(0.048)		
Household poverty ratio percentile ranking at 30	37.3	60.0	-22.7***	-13.53***	--	--
			(1.5)	(1.4)		
Physical, Emotional, Social, and Psychological Health						
Rating of general health at 30 (SD units)	-0.249	0.138	-0.387***	-0.124**	--	--
			(0.044)	(0.050)		
Frequency of sickness or injury at 30 (SD units; reverse coded)	0.145	-0.074	0.219***	0.154***	--	--
			(0.041)	(0.048)		
Did not miss work due to depression or psychological wellbeing at 30	0.715	0.788	-0.073***	-0.047*	0.67***	0.77*
			(0.018)	(0.022)	(0.096)	(0.120)
Did not have untreated mental health problems at 30	0.854	0.849	0.005	0.024	1.04	1.22
			(0.015)	(0.018)	(0.116)	(0.149)
Ability to work not limited by health at 30	0.933	0.963	-0.030**	-0.003	0.54**	0.94
			(0.010)	(0.010)	(0.193)	(0.214)
Grit score (SD units)	-0.032	-0.057	0.024	-0.021	--	--
			(0.057)	(0.059)		
Industriousness score (SD units; asked when approximately 26-29)	0.142	-0.089	0.230***	0.089*	--	--
			(0.037)	(0.035)		
Civic Engagement						
No arrests by age 30	0.682	0.799	-0.116***	-0.080**	0.54***	0.65***
			(0.022)	(0.025)	(0.113)	(0.130)
Any volunteer work (when approximately 24-27)	0.370	0.532	-0.162***	-0.102***	0.52***	0.65***
			(0.022)	(0.027)	(0.093)	(0.114)
Attended at least one community meeting (when approx. 23 to 27)	0.229	0.325	-0.097***	-0.036	0.61***	0.82
			(0.020)	(0.023)	(0.105)	(0.125)
Life Satisfaction						
Expected step on ladder of life in five years (asked at approx. 26-29)	0.050	-0.069	0.119*	-0.040	--	--
			(0.048)	(0.056)		

Current step on ladder of life (asked at approx. 26-29)	-0.058	0.103	-0.161*** (0.045)	-0.026 (0.048)	--	--
Step on ladder of life five years ago (asked at approx. 26-29)	-0.032	0.090	-0.122** (0.038)	-0.027 (0.048)	--	--
Satisfaction with life as a whole (asked at approx. 25-28)	-0.088	0.077	-0.165*** (0.040)	-0.106* (0.046)	--	--
Youth and household controls				x		x

Notes: Column 3 and 5 differences are from naïve regressions of mobility on youth poverty (whether their family was in the sample-weighted bottom quartile of household income [column 1]; the reference group is the top half of the household income distribution [column 2]). Youth and household controls are based on characteristics reported in the first survey wave (see Table 2 notes). Columns 3 and 4 represent linear models, while columns 5 and 6 present odds ratios from logistic models. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. Each row represents a separate regression. Observations are weighted according to full-survey participation (through round 20). $***\ p < 0.001,\ **\ p < 0.01,$ $*\ p < 0.05$.

Appendix Table D2. Differences in mobility and outcomes at age 35 by baseline poverty

Outcome	Students experiencing poverty (1)	Students not experiencing poverty (2)	Linear difference (Poverty – not) (3)	(4)	Odds ratio of difference (5)	(6)
Earn a Living Wage	0.344	0.677	-0.332***	-0.184***	0.25***	0.45***
			(0.024)	(0.024)	(0.108)	(0.109)
Household Income: Top Quartile	0.102	0.351	-0.249***	-0.249***	0.21***	0.36***
			(0.019)	(0.019)	(0.122)	(0.137)
Household Income: Bottom Quartile	0.427	0.135	0.292***	0.175***	4.77***	2.62***
			(0.020)	(0.020)	(0.105)	(0.111)
Economic Wellbeing & Stability Composite: Top Quartile	0.117	0.338	-0.221***	-0.108***	0.26***	0.48***
			(0.021)	(0.022)	(0.143)	(0.154)
Health Composite: Top Quartile	0.221	0.271	-0.051**	-0.008	0.76**	0.95
			(0.017)	(0.021)	(0.092)	(0.113)
Employment						
Employed full time at age 35	0.592	0.717	-0.125***	-0.096***	0.57***	0.65***
			(0.019)	(0.022)	(0.084)	(0.098)
Level of job satisfaction at age 35 (SD units)	-0.022	0.024	-0.045	0.066	--	--
			(0.047)	(0.050)		
Economic Health						
Net worth at age 35 (normalized and in SD units	-0.134	0.163	-0.296***	-0.128***	--	--
			(0.020)	(0.022)		
Household income at age 35 (normalized and in SD units)	-0.427	0.209	-0.636***	-0.415***	--	--
			(0.057)	(0.061)		
Household poverty ratio percentile ranking at age 35	36.4	60.1	-23.7***	-13.5***	--	--
			(1.4)	(1.3)		
Physical, Emotional, Social, and Psychological Health						
Rating of general health at age 35 (SD units)	-0.198	0.110	-0.309***	-0.102*	--	--
			(0.046)	(0.051)		
Frequency of sickness or injury at age 35 (reverse coded; SD units)	0.153	-0.079	0.232***	0.160***	--	--
			(0.041)	(0.046)		
Did not miss work due to depression or psychological wellbeing at age 35	0.647	0.717	-0.070***	-0.020	0.72***	0.91
			(0.020)	(0.025)	(0.091)	(0.119)
Did not have untreated mental health problems at age 35	0.767	0.765	0.001	0.034	1.01	1.22
			(0.018)	(0.023)	(0.100)	(0.134)
Ability to work was not limited because of health at age 35	0.906	0.953	-0.047***	-0.021	0.47***	0.71
			(0.012)	(0.014)	(0.185)	(0.222)
Civic Engagement						
No arrests by age 35	0.666	0.787	-0.121***	-0.086***	0.54***	0.64***
			(0.022)	(0.024)	(0.109)	(0.125)
Youth and household controls				x		x

Notes: Difference estimates in columns 3 and 5 are from naïve regressions of the respective outcomes on poverty status in youth (whether their family was in the sample-weighted bottom quartile of household income [column 1]; the reference group is all youths in the top half of the 1997 household income distribution [column 2]). Youth and household controls are based on characteristics reported in the first wave of the NLSY97: highest level of parental education in years completed; parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; region, urbanicity, and MSA residency type; and birth year fixed effects. Columns 3 and 4 present estimates from linear models, while columns 5 and 6 present odds ratios from logistic models. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. Each row represents a separate regression. Observations in linear models are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. $*** \ p < 0.001$; $** \ p < 0.01$,$* \ p < 0.05$, $+p < 0.10$.

Appendix Table D3. Differences in School Experiences, in Standard Deviations, by Baseline Poverty

School Experiences (Standard Deviations)	Students experiencing poverty	Students not experiencing poverty	Linear difference (Poverty – Not)	
Academic Outcomes	-0.371	0.250	-0.621***	-0.265***
			(0.047)	(0.054)
College Readiness	-0.385	0.235	-0.620***	-0.284***
			(0.050)	(0.045)
Behaviors and Expectations	-0.219	0.131	-0.350***	-0.325***
			(0.041)	(0.046)
Teachers and School	-0.130	0.078	-0.208***	-0.118*
			(0.047)	(0.057)
Parental Involvement	-0.172	0.133	-0.305***	-0.273***
			(0.043)	(0.048)
School Culture	-0.005	0.033	-0.038	0.141**
			(0.037)	(0.043)
Peer Delinquency (reverse coded)	0.021	-0.002	0.023	0.047
			(0.037)	(0.041)
Peer Engagement	-0.016	0.050	-0.066	-0.018
			(0.041)	(0.045)
Work-Based Learning	-0.059	0.027	-0.086+	-0.172**
			(0.050)	(0.051)
Occupational Training	0.015	-0.008	0.023	-0.022
			(0.041)	(0.053)
Vocational Coursework	-0.068	-0.039	-0.029	-0.100+
			(0.048)	(0.056)
Conditional on other experiences				x
Youth and household controls				x

Notes: Difference estimates in column 3 are from naïve linear regressions of the respective experience (in standard deviations) on respondents' poverty status in youth (whether their family was in the sample-weighted bottom quartile of household income [column 1]; the reference group is all youths in the top half of the 1997 household income distribution [column 2]). Each row represents a separate regression. Each row represents a separate regression. The conditional difference in column 4 includes controls for all other observed experience factors, in addition to youth and household characteristics reported in the first wave of the NLSY97: highest level of parental education; parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency type; and birth year fixed effects. Observations are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. $***\ p < 0.001$; $**\ p < 0.01$,$*\ p < 0.05$, $+p < 0.10$.

Table D4. The relationship between educational experiences, in standard deviations, and economic and social mobility in adulthood for youths experiencing poverty

	Panel A. Household earns a living wage				Panel B. Top quartile of household income				Panel C. Top quartile of economic wellbeing and stability			
School Experiences	OLS		Odds ratio		OLS		Odds ratio		OLS		Odds ratio	
(Standard Deviations)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Academic Outcomes	0.093***	0.090***	1.56***	1.57***	0.059***	0.056***	1.82***	1.69***	0.059***	0.050**	1.69***	1.53***
	(0.017)	(0.017)	(0.080)	(0.091)	(0.013)	(0.014)	(0.113)	(0.124)	(0.014)	(0.015)	(0.117)	(0.121)
College Readiness	0.093***	0.069***	1.56***	1.45***	0.036***	0.028*	1.43***	1.23+	0.038***	0.026*	1.39***	1.22*
	(0.016)	(0.016)	(0.079)	(0.092)	(0.009)	(0.013)	(0.089)	(0.120)	(0.011)	(0.012)	(0.088)	(0.099)
Behaviors and Expectations	0.075***	0.066***	1.47***	1.46***	0.035***	0.033***	1.46***	1.45**	0.035***	0.026**	1.40***	1.35**
	(0.015)	(0.015)	(0.084)	(0.099)	(0.009)	(0.008)	(0.102)	(0.120)	(0.009)	(0.008)	(0.090)	(0.111)
Teachers and School	0.005	-0.001	1.02	1.00	-0.014	-0.016+	0.88	0.84+	0.015	0.010	1.14	1.14
	(0.015)	(0.014)	(0.072)	(0.082)	(0.010)	(0.009)	(0.097)	(0.104)	(0.009)	(0.009)	(0.084)	(0.095)
Parental Involvement	0.030	0.049**	1.15	1.28**	0.019	0.032**	1.20+	1.41**	0.021+	0.031**	1.19+	1.34**
	(0.019)	(0.016)	(0.087)	(0.089)	(0.012)	(0.010)	(0.104)	(0.112)	(0.011)	(0.011)	(0.087)	(0.103)
School Culture	0.008	-0.004	1.04	0.97	-0.022+	-0.027*	0.81+	0.71**	-0.020+	-0.027*	0.84+	0.73**
	(0.017)	(0.016)	(0.080)	(0.090)	(0.011)	(0.011)	(0.110)	(0.124)	(0.010)	(0.010)	(0.091)	(0.110)
Peer Delinquency (reverse coded)	0.021	0.014	1.11	1.06	-0.003	-0.003	0.97	0.93	0.012	0.015	1.11	1.12
	(0.015)	(0.016)	(0.072)	(0.095)	(0.011)	(0.012)	(0.109)	(0.140)	(0.010)	(0.010)	(0.092)	(0.111)
Peer Engagement	-0.003	0.005	0.98	1.01	0.010	0.018+	1.10	1.18	-0.002	0.004	0.98	0.99
	(0.014)	(0.012)	(0.065)	(0.072)	(0.009)	(0.009)	(0.090)	(0.104)	(0.010)	(0.009)	(0.084)	(0.102)
Work-Based Learning	0.019	0.024	1.09	1.17+	-0.004	0.000	0.96	1.03	0.005	0.008	1.04	1.13
	(0.017)	(0.016)	(0.078)	(0.087)	(0.011)	(0.010)	(0.109)	(0.107)	(0.010)	(0.009)	(0.087)	(0.091)
Occupational Training	-0.028*	-0.031*	0.87+	0.84*	-0.014	-0.015	0.85	0.85	0.000	0.001	1.00	1.09
	(0.013)	(0.012)	(0.075)	(0.085)	(0.012)	(0.011)	(0.158)	(0.161)	(0.012)	(0.011)	(0.102)	(0.111)
Vocational Coursework	0.012	0.008	1.06	1.05	-0.007	-0.009	0.93	0.91	0.000	-0.002	1.00	1.03
	(0.021)	(0.017)	(0.095)	(0.088)	(0.013)	(0.011)	(0.147)	(0.143)	(0.014)	(0.013)	(0.120)	(0.127)
Youth, experience, & household controls (see notes)		x		x		x		x		x		x

Notes: This analysis is limited to the sample of students whose families were in the bottom quartile of the sample-weighted income distribution at the start of the NLSY97. For each mobility outcome panel, estimates in column 1 are from separate linear regressions (one per row) of economic and social mobility at age 30 on whether the respective educational experience (in standard deviation units). In column 2, estimates include controls for all other observed school experience factors, in standard deviations, in addition to youth and household characteristics reported in the first wave of the NLSY97: highest level of parental education in years completed; parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency type; household poverty ratio; and birth year fixed effects. Colum 3 reflects a similar model to that in column 1, except as a logistic regression, and column 4 is the logistic equivalent of column 2. Column 3 and 4 estimates are reported as odds ratios. Observations are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. $^{***}\ p < 0.001,\ ^{**}\ p < 0.01,^{*}\ p < 0.05, +p < 0.10$.

Appendix Table D5. The relationship between educational experiences and mobility at 35

	Panel A. Household earns a living wage				Panel B. Top quartile of household income				Panel C. Top quartile of economic wellbeing			
School Experiences (Top Quartile)	OLS		Odds ratio		OLS		Odds ratio		OLS		Odds ratio	
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Academic Outcomes	0.322***	0.281***	3.87***	3.65***	0.163***	0.143***	4.03***	3.39***	0.204***	0.168***	4.88***	3.85**
	(0.058)	(0.056)	(0.251)	(0.272)	(0.039)	(0.036)	(0.289)	(0.306)	(0.044)	(0.044)	(0.306)	(0.403)
College Readiness	0.181**	0.159*	2.22**	2.14*	0.098**	0.075*	3.21***	2.84**	0.074*	0.050	2.30*	1.58
	(0.058)	(0.062)	(0.249)	(0.310)	(0.034)	(0.034)	(0.333)	(0.393)	(0.035)	(0.032)	(0.337)	(0.391)
Behaviors and Expectations	0.195***	0.153***	2.52***	2.25***	0.137***	0.126***	4.40***	4.78***	0.119**	0.090**	3.34**	2.87**
	(0.046)	(0.043)	(0.222)	(0.234)	(0.034)	(0.034)	(0.330)	(0.444)	(0.036)	(0.031)	(0.361)	(0.385)
Teachers and School	0.035	0.035	1.16	1.20	0.000	0.004	1.01	1.11	-0.009	-0.009	0.91	1.00
	(0.045)	(0.041)	(0.198)	(0.216)	(0.024)	(0.024)	(0.276)	(0.338)	(0.031)	(0.029)	(0.325)	(0.374)
Parental Involvement	0.054	0.091*	1.27	1.55*	0.068*	0.083*	2.14*	2.61*	0.088*	0.114***	2.31**	3.01**
	(0.043)	(0.040)	(0.188)	(0.209)	(0.033)	(0.032)	(0.354)	(0.374)	(0.036)	(0.032)	(0.313)	(0.344)
School Culture	0.045	0.015	1.22	1.07	0.033	0.020	1.50	1.17	0.015	0.002	1.18	0.98
	(0.036)	(0.038)	(0.158)	(0.196)	(0.023)	(0.025)	(0.280)	(0.362)	(0.034)	(0.034)	(0.372)	(0.426)
Peer Delinquency (reverse coded)	-0.025	-0.025	0.90	0.85	0.017	0.001	1.20	0.80	0.024	0.040	1.28	1.37
	(0.039)	(0.038)	(0.175)	(0.203)	(0.027)	(0.026)	(0.298)	(0.351)	(0.031)	(0.031)	(0.332)	(0.373)
Peer Engagement	-0.094*	-0.080+	0.65*	0.61+	-0.035	-0.040+	0.70	0.53*	-0.033	-0.019	0.71	0.66
	(0.043)	(0.045)	(0.200)	(0.251)	(0.026)	(0.024)	(0.276)	(0.310)	(0.030)	(0.027)	(0.328)	(0.357)
Work-Based Learning	-0.012	0.025	0.95	1.16	-0.029	-0.027	0.74	0.88	-0.049	-0.011	0.64	1.02
	(0.046)	(0.042)	(0.196)	(0.217)	(0.029)	(0.028)	(0.296)	(0.371)	(0.036)	(0.032)	(0.311)	(0.346)
Occupational Training	-0.024	-0.042	0.89	0.83	-0.015	-0.032	0.84	0.81	-0.017	-0.035	0.84	0.83
	(0.046)	(0.040)	(0.217)	(0.220)	(0.031)	(0.028)	(0.344)	(0.369)	(0.030)	(0.027)	(0.313)	(0.324)
Vocational Coursework	0.022	0.013	1.11	1.09	-0.013	-0.024	0.87	0.82	-0.009	-0.046	0.91	0.66
	(0.037)	(0.042)	(0.167)	(0.220)	(0.022)	(0.026)	(0.244)	(0.380)	(0.034)	(0.038)	(0.341)	(0.466)
Youth, experience, & household controls (see notes)		x		x		x		x		x		x

Notes: This analysis is limited to the sample of students whose families were in the bottom quartile of the sample-weighted income distribution at the start of the NLSY97. For each mobility outcome panel, estimates in column 1 are from separate linear regressions (one per row) of economic and social mobility at age 30 on whether the individual was in the top quartile of the respective educational experience. In column 2, estimates include controls for all other observed school experience factors, in standard deviations, in addition to youth and household characteristics reported in the first wave of the NLSY97: highest level of parental education in years completed; parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency type; household poverty ratio; and birth year fixed effects. Colum 3 reflects a similar model to that in column 1, except as a logistic regression, and column 4 is the logistic equivalent of column 2. Column 3 and 4 estimates are reported as odds ratios. Observations are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. *** p<0.001,**p<0.01,*p<0.05,+p<0.10.

Table D6. The relationship between educational experiences and attaining high physical, emotional, and psychological wellbeing for youths experiencing poverty

	Panel A. Top quartile of health at 30				Panel B. Top quartile of health at 35			
	OLS		Odds ratio		OLS		Odds ratio	
Educational Experience (Top Quartile)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Academic Outcomes	0.043	0.051	1.30	1.43	0.092+	0.101+	1.73*	1.90+
	(0.056)	(0.054)	(0.323)	(0.325)	(0.048)	(0.056)	(0.264)	(0.328)
College Readiness	-0.077*	-0.046	0.63+	0.76	-0.040	-0.005	0.80	1.00
	(0.038)	(0.042)	(0.254)	(0.292)	(0.036)	(0.044)	(0.202)	(0.273)
Behaviors and Expectations	0.074+	0.090*	1.52*	1.74*	0.047	0.057	1.31	1.45
	(0.038)	(0.036)	(0.209)	(0.219)	(0.035)	(0.038)	(0.199)	(0.230)
Teachers and School	0.040	0.062+	1.26	1.49+	0.011	0.020	1.07	1.15
	(0.041)	(0.036)	(0.229)	(0.227)	(0.041)	(0.039)	(0.228)	(0.241)
Parental Involvement	0.027	0.025	1.18	1.17	0.075*	0.072+	1.60*	1.67*
	(0.031)	(0.034)	(0.188)	(0.214)	(0.036)	(0.037)	(0.229)	(0.252)
School Culture	0.020	0.028	1.13	1.18	0.081*	0.095*	1.59*	1.79*
	(0.038)	(0.037)	(0.227)	(0.241)	(0.040)	(0.038)	(0.229)	(0.236)
Peer Delinquency (reverse coded)	0.034	0.047	1.25	1.38	0.032	0.037	1.22	1.26
	(0.038)	(0.038)	(0.253)	(0.261)	(0.036)	(0.043)	(0.218)	(0.279)
Peer Engagement	0.053	0.063	1.36	1.48	0.040	0.049	1.26	1.33
	(0.039)	(0.041)	(0.230)	(0.256)	(0.035)	(0.038)	(0.204)	(0.235)
Work-Based Learning	-0.092*	-0.085*	0.62*	0.61*	-0.008	-0.006	0.96	0.95
	(0.036)	(0.038)	(0.191)	(0.223)	(0.040)	(0.041)	(0.207)	(0.234)
Occupational Training	-0.013	-0.024	0.92	0.87	-0.016	-0.019	0.90	0.91
	(0.032)	(0.033)	(0.205)	(0.226)	(0.034)	(0.034)	(0.212)	(0.229)
Vocational Coursework	0.036	0.009	1.23	1.08	0.007	-0.004	1.04	0.99
	(0.038)	(0.037)	(0.219)	(0.232)	(0.034)	(0.035)	(0.190)	(0.214)
Youth, experience, & household controls (see notes)		x		x		x		x

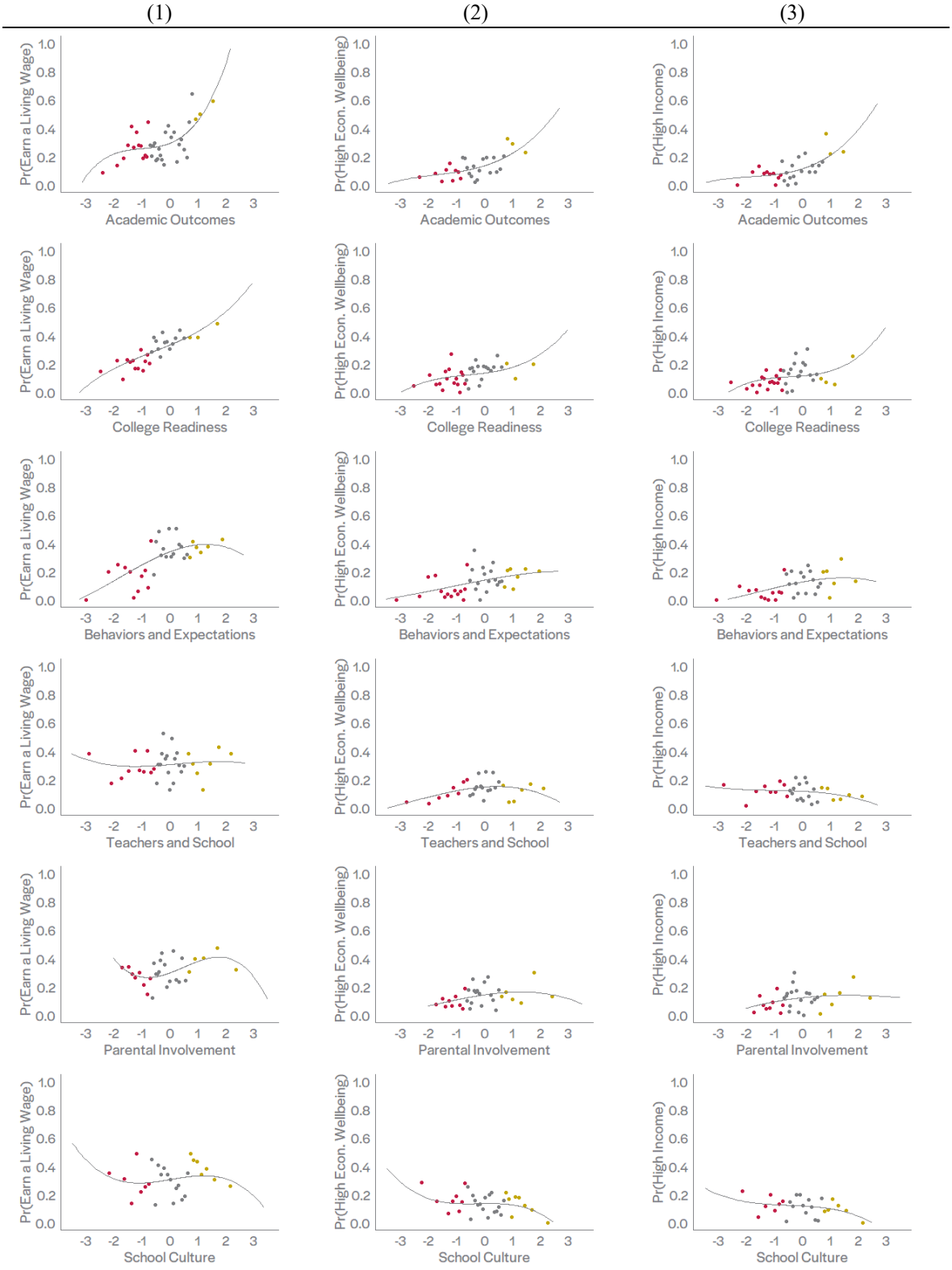
Notes: This analysis is limited to the sample of students whose families were in the bottom quartile of the sample-weighted income distribution at the start of the NLSY97. For each mobility outcome panel, estimates in column 1 of panels A and B are from separate linear regressions (one per row) of economic and social mobility—specifically, reaching the top quartile of physical, emotional, and psychological wellbeing at age 30 or age 35—on whether the individual was in the top quartile of the respective educational experience. In column 2 of panels A and B, estimates are conditional on all other observed school experience factors, in standard deviations, in addition to youth and household characteristics reported in the first wave of the NLSY97: highest level of parental education in years completed; parental health; whether the youth lives in a multilingual household; whether the student has physical, emotional, or learning problems; geographic region, urbanicity, and MSA residency type; household poverty ratio; and birth year fixed effects. Colum 3 of panels A and B reflects a similar model to that in column 1, except as a logistic regression, and column 4 is the logistic equivalent of column 2. Column 3 and 4 estimates are reported as odds ratios. The columns of panels C and D report estimates from models identical to those from panels A and B, except that the independent variable (i.e., the experience of interest) is entered as a continuous variable, in standard deviation units. Observations are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. $***\ p < 0.001$, $**\ p < 0.01$,$*\ p < 0.05$, $+p < 0.10$.

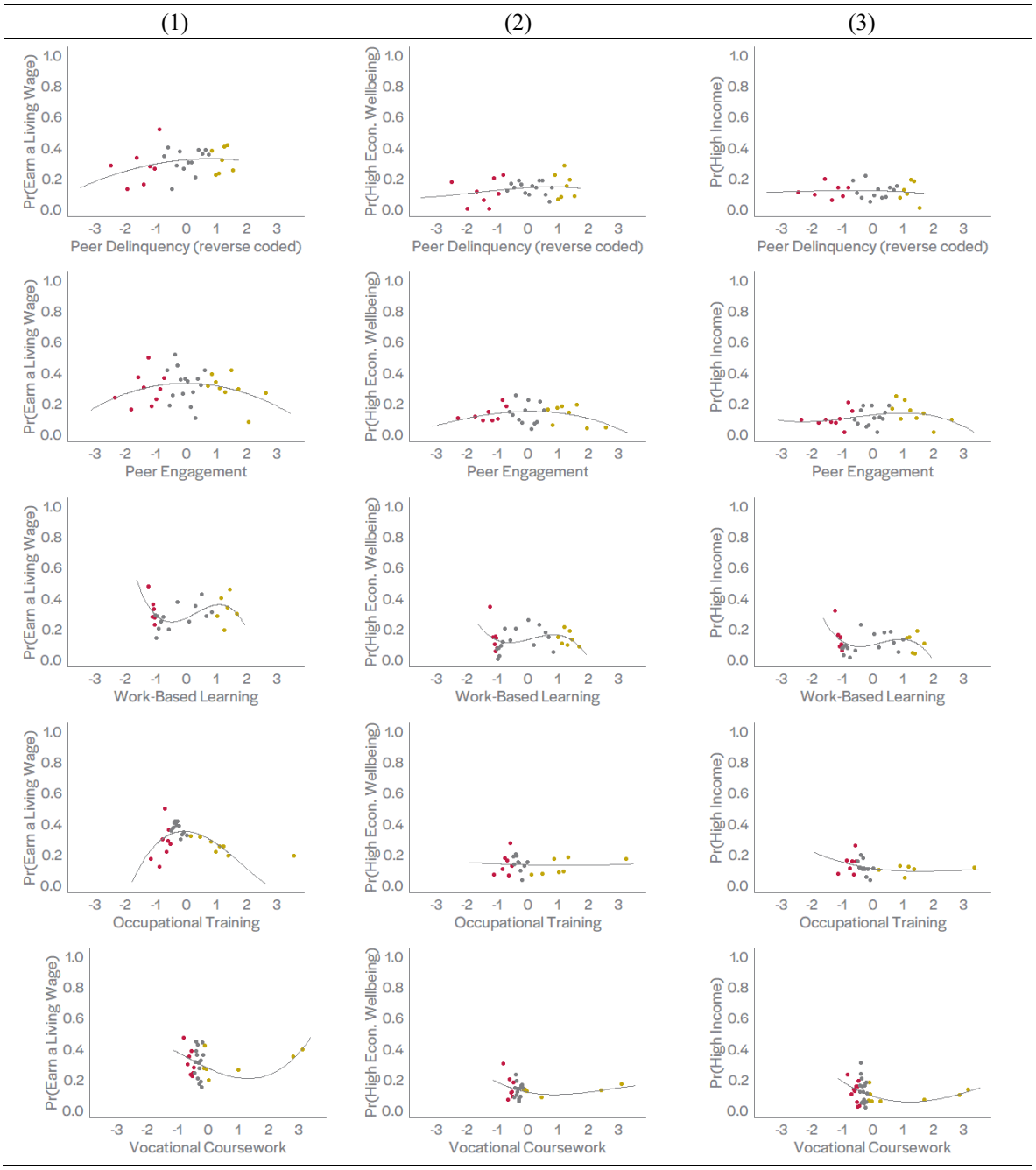
Table D7. Educational experiences and economic mobility for youths experiencing poverty, by higher-education enrollment

	Panel A. Household earns a living wage				Panel B. Top quartile of household income				Panel C. Top quartile of economic wellbeing			
	OLS		Odds ratio		OLS		Odds ratio		OLS		Odds ratio	
School Experiences (Top Quartile	Enrolled (1)	Not enrolled (2)	Enrolled (3)	Not enrolled (4)	Enrolled (1)	Not enrolled (2)	Enrolled (3)	Not enrolled (4)	Enrolled (1)	Not enrolled (2)	Enrolled (3)	Not enrolled (4)
Academic Outcomes	0.192*	0.223*	2.39*	3.44*	0.119*	0.173*	2.92*	7.39*	0.116*	0.161+	2.29+	5.37*
	(0.076)	(0.099)	(0.368)	(0.558)	(0.053)	(0.085)	(0.466)	(0.823)	(0.059)	(0.088)	(0.486)	(0.746)
College Readiness	0.102	0.186**	1.54	3.57**	-0.007	0.050	0.78	2.41	0.054	-0.002	1.45	0.78
	(0.073)	(0.069)	(0.356)	(0.459)	(0.057)	(0.042)	(0.495)	(0.766)	(0.056)	(0.050)	(0.391)	(0.813)
Behaviors and Expectations	0.177*	0.128*	2.59*	2.26+	0.086	0.066	2.49	2.61	0.107+	0.090*	2.91+	2.93*
	(0.089)	(0.064)	(0.472)	(0.440)	(0.065)	(0.041)	(0.632)	(0.591)	(0.059)	(0.041)	(0.596)	(0.445)
Teachers and School	0.037	-0.036	1.19	0.76	-0.052	-0.048	0.60	0.38	-0.012	-0.019	0.93	0.86
	(0.062)	(0.045)	(0.293)	(0.343)	(0.046)	(0.032)	(0.365)	(0.817)	(0.047)	(0.035)	(0.393)	(0.635)
Parental Involvement	0.110	0.119**	1.70	2.00*	0.093+	0.033	2.32+	1.26	0.114*	0.041	2.53*	1.51
	(0.076)	(0.043)	(0.367)	(0.289)	(0.055)	(0.026)	(0.472)	(0.588)	(0.047)	(0.031)	(0.390)	(0.480)
School Culture	0.092	0.034	1.38	1.20	-0.082	-0.020	0.46	0.70	-0.102	-0.016	0.39+	0.77
	(0.073)	(0.052)	(0.355)	(0.325)	(0.069)	(0.033)	(0.535)	(0.559)	(0.068)	(0.029)	(0.534)	(0.382)
Peer Delinquency (reverse coded)	-0.068	0.014	0.66	1.06	-0.008	-0.017	0.93	0.81	0.122*	-0.008	2.54*	0.88
	(0.075)	(0.047)	(0.372)	(0.316)	(0.060)	(0.040)	(0.492)	(0.623)	(0.055)	(0.034)	(0.421)	(0.442)
Peer Engagement	-0.009	0.039	0.94	1.23	0.089	0.021	1.77	1.13	-0.023	0.019	0.83	1.02
	(0.057)	(0.052)	(0.284)	(0.383)	(0.055)	(0.028)	(0.427)	(0.579)	(0.050)	(0.029)	(0.361)	(0.482)
Work-Based Learning	0.064	0.033	1.50	1.3	-0.031	-0.019	0.99	0.75	0.037	0.004	1.6	0.99
	(0.062)	(0.058)	(0.298)	(0.363)	(0.048)	(0.028)	(0.371)	(0.521)	(0.050)	(0.029)	(0.349)	(0.432)
Occupational Training	-0.033	-0.047	0.9	0.8	-0.047	-0.076**	0.90	0.31*	0.038	-0.058+	1.67	0.57
	(0.065)	(0.044)	(0.331)	(0.344)	(0.062)	(0.027)	(0.479)	(0.538)	(0.056)	(0.032)	(0.455)	(0.428)
Vocational Coursework	-0.051	0.022	0.78	1.13	-0.084	-0.026	0.41+	0.70	-0.058	-0.030	0.67	0.76
	(0.064)	(0.050)	(0.332)	(0.305)	(0.054)	(0.034)	(0.461)	(0.568)	(0.053)	(0.040)	(0.433)	(0.496)
Youth, experience, & household controls (see notes)	x		x		x		x		x		x	

Notes: This analysis is limited to students experiencing poverty (i.e., in the bottom household-income quartile). For each outcome, columns 1 and 2 present estimates from separate linear regressions of mobility on an interaction between whether the youth was in the top (versus bottom) quartile of the given educational experience and whether they enrolled in higher education by age 20. In the "Not enrolled" columns, estimates are the coefficients on the interaction between having a top-quartile experience and not enrolling in college, where the reference group is low (bottom-quartile) experiences among fellow non-enrollees; estimates in the "Enrolled" columns represent a linear combination of coefficients for top- and bottom-quartile experiences among college enrollees. Models include controls for all other observed school experiences, in standard deviations, in addition to youth and household characteristics (see Table 2 notes). Columns 3 and 4 present odds rations from the logistic equivalent of the models in columns 1 and 2. Observations are weighted according to full-survey participation (rounds 1 through 20). Heteroskedasticity-robust standard errors, clustered within sampling strata, are in parentheses. $***\ p < 0.001,\ **\ p < 0.01,* p < 0.05, +p < 0.10$. None of the estimates in the enrolled versus not-enrolled columns differ at conventional levels ($p > 0.05$ for all experiences and outcomes).

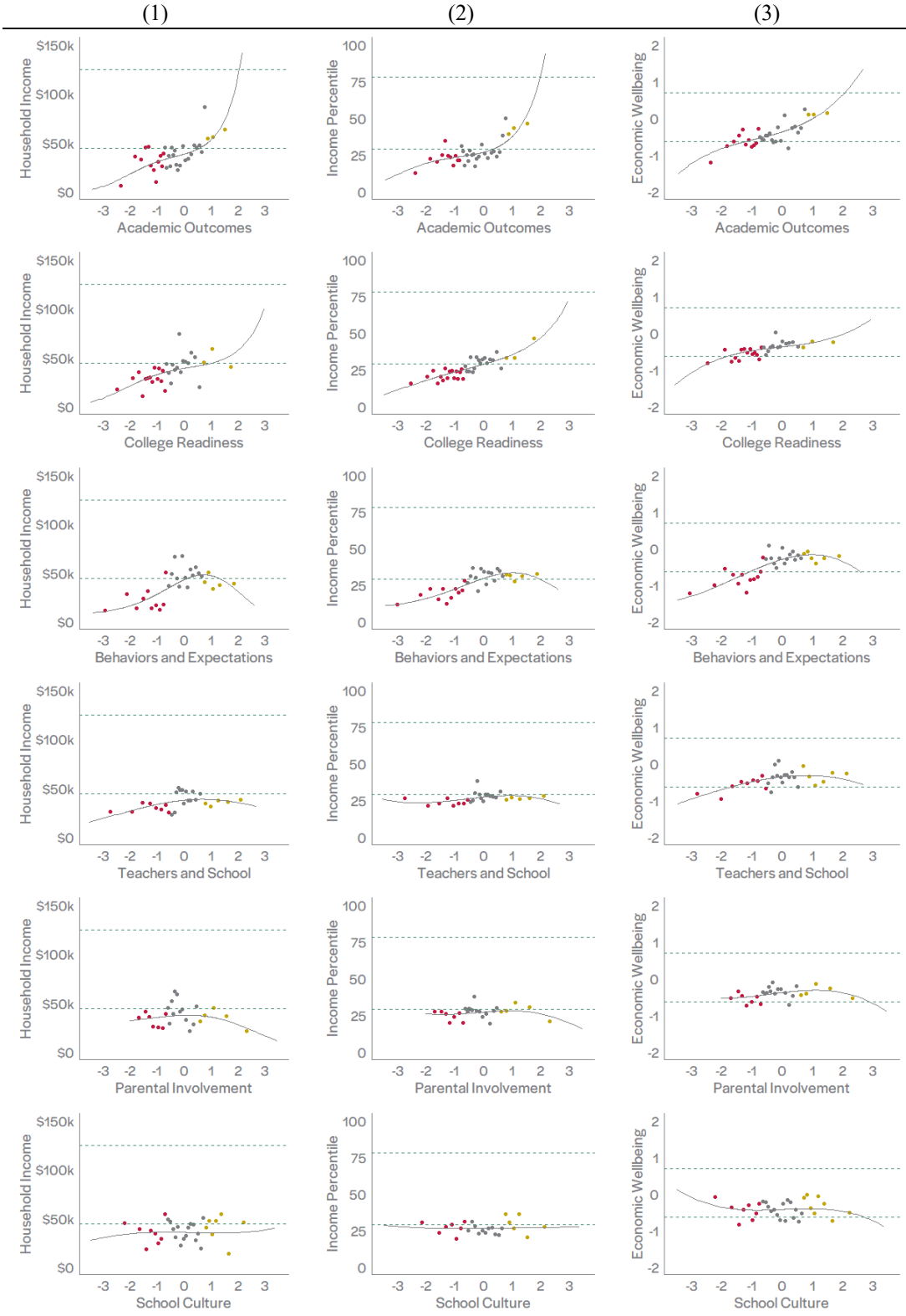
Appendix Figure D1. The relationship between educational experiences and mobility at age 30

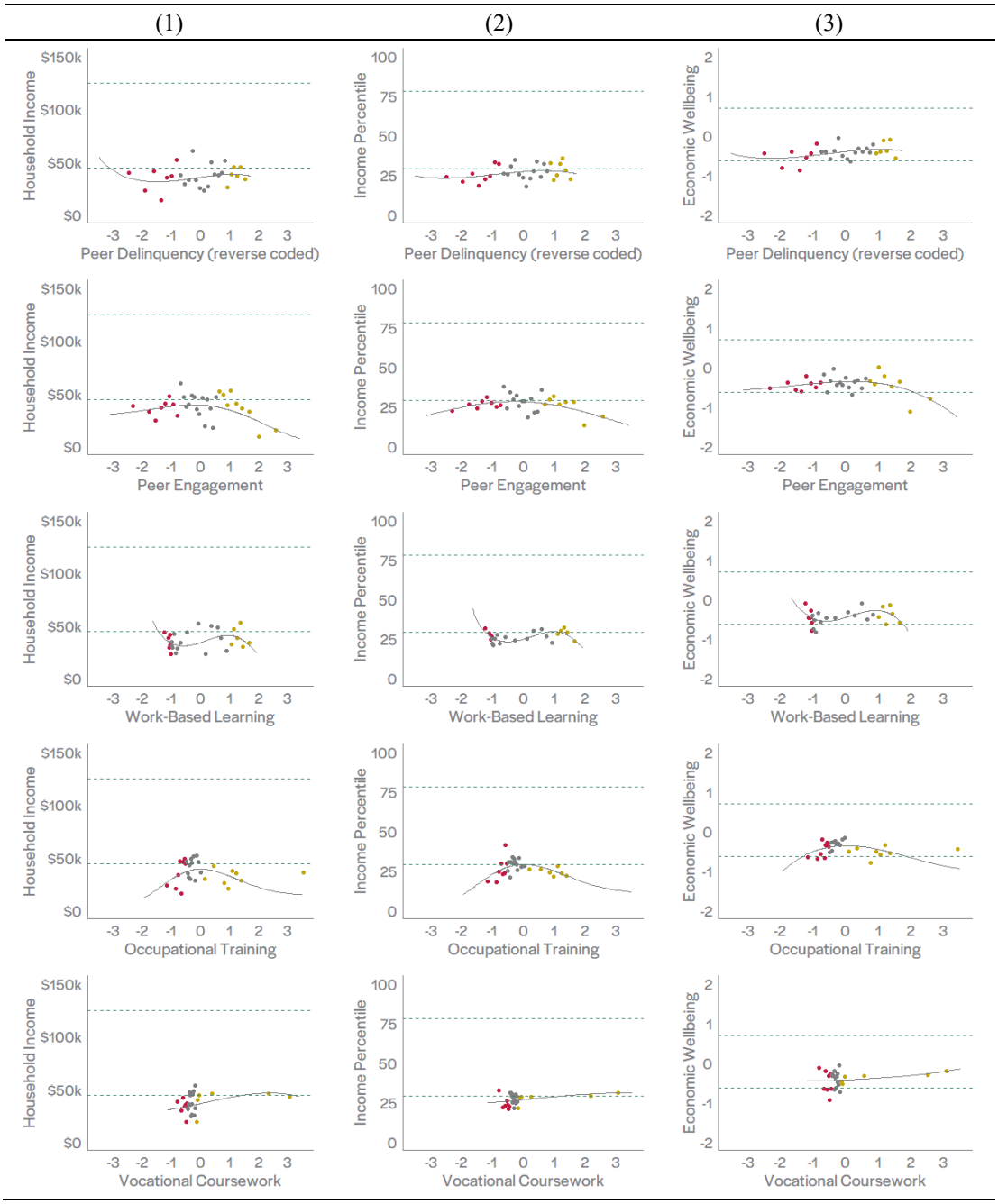




Notes: Figures are binned scatterplots, with bins and model fit defined using the binsglm function from the binsreg R package. These scatterplots are based on data filtered to include only youths experiencing poverty. X-axis values are in standard deviation units. Points plotted in gold represent youths from the top quartile of the respective experience distribution and red points represent the bottom quartile; gray points reflect experiences in the middle fifty percent of the experience distribution. The gray fitted line is from an unconditional regression of the respective mobility outcome on a cubic polynomial of the given experience score on the full (i.e., not-binned) set of observations. Data are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. For more detail on the binning and scatterplot creation, see: Cattaneo, M. D., Crump, R. K., Ferrell, M. H., & Feng, Y. (2024, forthcoming). On Binscatter. *American Economic Review*. https://doi.org/10.1257/aer.20221576

Appendix Figure D2. The relationship between educational experiences and outcomes at age 30





Notes: Figures are binned scatterplots, with bins and model fit defined using the binsreg R package. These scatterplots are based on data filtered to include only youths experiencing poverty. X-axis values are in standard deviation units, as are Y-axis values for the "Economic Wellbeing" outcome (column 3). Y-axis values in the second column (Household Income) are converted to the natural log before bin values are estimated (with $1 added so that zero-income observations are not converted to NA values), and then scaled back to dollar units for plotting; note that this column does not adjust for household size, while column 1 (income percentile) is calculated within household size. Points plotted in gold represent youths from the top quartile of the respective experience distribution and red points represent the bottom quartile; gray points reflect experiences in the middle fifty percent of the respective educational experience (x-axis) distribution. The gray fitted line is from a regression of the respective mobility outcome on a cubic polynomial of the given experience score on the full (i.e., not-binned) set of observations. The dashed horizontal lines represent the sample-weighted top and bottom quartile thresholds for the given economic outcome. Data are weighted according to full-survey participation (rounds 1 through 20) to be representative of the 1980 through 1984 birth cohorts nationally. For more detail on the binning and scatterplot creation, see Cattaneo, M. D., Crump, R. K., Ferrell, M. H., & Feng, Y. (2024, forthcoming). On Binscatter. *American Economic Review*. https://doi.org/10.1257/aer.20221576.