Growing Up in a Union Household: Impacts of Adult Union Status on Children's Life Course*

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Abstract

Labor unions might have various effects beyond the workplace. We link data on mothers from the National Longitudinal Survey of Youth (NLSY79) to data on their children from the NLSY79 Child Survey to analyze whether a mother's unionization history while a child is growing up affects two childhood outcomes–cognitive skill and behavior–and two adult outcomes–educational attainment and earnings. We similarly use the Panel Study of Income Dynamics (PSID) to analyze the effect of the unionization history of the household heads on similar childhood and adult outcomes. As these outcomes are likely the product of cumulative childhood experiences, we emphasize the use of unique, cumulative measures of mother or household head union status. We do not find a strong pattern of results indicative of a significant union influence on these measures of the quality of a child's life course.

JEL codes: J51, J13, J62, J31

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1 Introduction

In this paper, we focus within the family to develop evidence on how adults' union status while raising children affects the children's cognitive and behavioral development during childhood and their educational attainment and labor market status as adults.[1] Adult union status could affect child development via many channels, some positive and some negative. We will not test these here but offer them as motivation. First, when parents or household heads are represented by a union, this may bring more resources into the household and, across many settings, more resources for children's households evidently improve children's long-run outcomes (Institute of Medicine and National Research Council, 2000). Evidence points to positive effects of family income, especially among children in more disadvantaged families (Duncan et al., 2010, 2011; Dahl and Lochner, 2012; Løken et al., 2012; Aizer et al., 2016), and of food stamps (Hoynes et al., 2016). Among children in low-income families, increased access to health insurance raises educational attainment, employment, and hourly earnings and reduced disability in adulthood (Brown et al., 2020; Cohodes et al., 2016; Goodman-Bacon, 2021). Increased access to high-quality health care and education services across childhood improve children's short and long-run outcomes (Duncan and Magnuson, 2013; Elango et al., 2015; Hendren and Sprung-Keyser, 2020). Second, most-available evidence in a complementary literature suggests that union membership increases workers' access to higher hourly wages (Card, 1996; Farber et al., 2021) and fringe benefits such as health insurance (Budd, 2007; Knepper, 2020), although some find evidence of non-positive effects (De Chaisemartin and d'Haultfoeuille, 2020; Frandsen, 2021). Union grievance procedures can also reduce quits and terminations (Freeman, 1980), and union advocacy can increase receipt of unemployment insurance and workers' compensation benefits (Budd and McCall, 1997; Hirsch et al., 1997). Collective bargaining can reduce food insecurity (Reeves et al., 2021).

Putting these bodies of evidence together suggest that parental unionization might improve

[1] While the clearest effects of labor unions pertain directly to workplace issues such as wages (Card, 1996; Farber et al., 2021), benefits (Budd, 2007; Knepper, 2020), job queues and job loss (Abowd and Farber, 1982; Kulkarni and Hirsch, 2021), or safety enforcement (Sojourner and Yang, 2022), their impact can go beyond workplace terms and conditions of employment. For example, research finds that labor unions can reduce racial resentment (Frymer and Grumbach, 2021), drug-related deaths (DeFina and Hannon, 2019), and poverty (VanHeuvelen and Brady, 2022) while increasing charitable giving and volunteering (Zullo, 2011; Booth et al., 2017), voting and other political activities (Budd and Lamare, 2021), and political office seeking (Sojourner, 2013).

the long-run outcomes of their children. Speculatively, if at least one parent's unionization brings higher hourly wages, job security, or insurance coverage, the family's choice set expands and this may bring higher income, enable their partner to provide more parental-care hours or the family to afford higher-quality nonparental care, reduce parental stress, improve mental health, and improve parental-care quality. On the other hand, higher wages might induce more work and less parenting time. The child development impacts of shifting from parental to nonparental care depend on the contrast between the quality of marginal parental care and the counterfactual nonparental care that would substitute for it (Bernal and Keane, 2010, 2011; Chaparro et al., 2020). Labor unions might also increase parenting time by facilitating the use of maternity leave (Park et al., 2019) and by negotiating for family-friendly benefits (Budd and Mumford, 2004). Union households may also be happier (Artz et al., 2021), experience more stress due to strikes (Card, 1988), or differ in their pro-social or inclusivity attitudes (Booth et al., 2017; Frymer and Grumbach, 2021), potentially leading to different parenting styles.

We leverage inter-generational data that measures the unionization status of adults raising children and then tracks the offspring children for decades forward from birth, specifically using the National Longitudinal Survey of Youth 1979 (NLSY79) and the Panel Survey of Income Dynamics (PSID). For outcomes across the offspring life course, we look at childhood cognitive and behavioral development and adult educational attainment and labor earnings. While the NLSY79 and PSID provide rich, longitudinal information, it is important to remember that the focus of the NLSY79 analyses is mothers' unionization because we cannot observe fathers' union status, and the focus of the PSID analyses is household unionization because the household head isn't always a parent. Both of these limitations can be seen as forms of measurement error relative to the first-best theoretical construct of parents' union status.

To our knowledge, Freeman et al. (2015) presents the only prior evidence on part of this question. It uses the PSID to look at households with a head working full time in 1985 and with any child under age 13 years. It relates parents' 1985 union status to offsprings' adult educational attainment, health status, and wages conditional on the offspring working in 2011 as an adult. Its cross-sectional analysis finds a positive association of father's union membership on education, health, and wages among working offspring, but an insignificant association with mother's membership status.

We generalize this evidence in many dimensions. First, we measure parental union status across an offspring's entire childhood and outcomes using all available years, rather than focusing on a single calendar year for the predictor and outcomes. This reduces measurement error in the predictor and outcomes and, further, it allows us to estimate heterogeneous effects of parental union status in different phases of childhood. This also allows child outcomes to be the cumulative result of multiple years of child-rearing rather than a single year. Second, we look at a broader range of outcomes, occurring at different offspring ages, tracing the path of effects across the offspring life course. Also, the analysis of labor market effects in Freeman et al. (2015) looks only at effects on hourly wages among the employed offspring. We look at a annual labor earnings which is a broader measure of labor market outcomes that embeds employment probability and avoids issues that can arise from selecting on a dependent variable. Third, for identification, we use designs based in a conditional independence assumption in the cross-section, as Freeman et al. (2015) does, and add a between-siblings design that exploits variation in the timing of parental or household head union status with family fixed effects in the non-singleton offspring subsample. Fourth, we study heterogeneous effects in different subsamples defined by parental and child characteristics, such as among the offspring of parents with and without a bachelor's degree.

To preview the results, we find little evidence of effects, suggesting that the Freeman et al. (2015) result was sensitive to including additional years of predictor and outcome data. Some models show evidence of a significant predictors, but these are generally not robust. Analysis also allows effects to differ in contexts where theory would suggest possible heterogeneous impacts. For instance, two bodies of evidence would suggest that impacts of parental union membership on offspring outcomes would be larger among more-disadvantaged families; union membership generates bigger compensation impacts among those with lower non-union wages (Card, 1996; Frandsen, 2021) and additional resources have bigger impacts on kids' development in more-disadvantaged families (Dahl and Lochner, 2012; Løken et al., 2012; Elango et al., 2015). Surprisingly, analysis finds similar estimated effects overall and in more-disadvantaged families.

This work contributes to the literature on economic mobility by generating evidence on how parents' union membership directly affects their offspring's probability of economic mobility. Chetty et al. (2014) measure community-level inter-generational economic mobility in the U.S. and some of its correlates, including well-funded public schools. Freeman et al. (2015) add a com-

munity's unionization rate as a correlate and found higher mobility in more unionized communities. In theory, unions could raise mobility through an individual and an aggregate channel. The individual channel would be, by bringing more economic resources into the household during childhood, individual parent's union membership could increase their own offsprings' prospects for upward mobility. The evidence found here does not support this individual-level channel. Via an aggregate channel, unions might affect the political and policy environment and may create conditions that promote economic mobility, such as well-funded public schools. Our study suggests more investigation of this channel is warranted.

2 Design and Data

We begin by describing our research design in theoretical terms, then describe the data we use to measure variables and to generate estimates.

For the purpose of describing our approach, consider offspring i in family f where "family" is defined flexibly because the data sometime only allow us to observe mothers or household heads and spouses who are not necessarily parents. Offspring develop through childhood and into adulthood and a indexes years of a child's age. Offspring have parents. At age $a = 0, 1, ...17$, e_{fia} indicates whether any parent in the family is employed and u_{fia} indicates whether any employed parent in the family is represented by a labor union (equivalently, covered by a union contract or collective bargaining agreement).

Consider an offspring outcome measured age a, Y_{fia}. Recalling again that sometimes we are limited to mothers or to household heads and spouses, conceptually our primary treatment variable is the family union coverage share during all the years of i's childhood up to age a,

$$U_{fia} \equiv \frac{1}{\min\{a, 17\})} \times \sum_{a'=0}^{\min\{a,17\}} u_{fia'}.$$

This measure aggregates available information on parents' union coverage across the offspring's childhood life experience that is hypothesized to influence the outcome being measured. For outcomes measured during childhood, U_{fia} is measured up to the outcome age. For example, if the outcome is an assessment measured at offspring age 6, U_{fi6} expresses the share of the years

between birth and the assessment that a parent was covered by a union. For outcomes that are measured when the offspring is an adult, U_{fia} is measured up to age 17 and indicates the share of the years between the offspring's entire childhood–that is, birth through age 17–that a parent was unionized.

Ideally, parent unionization status would be randomly assigned but this is not the case. We take two common econometric approaches to try to deal with potential confounders. First, we use a control function for observed covariates (X_{fia}) assuming conditional mean independence of unobservable influences on outcomes (ϵ_{fia}), $E[\epsilon|U, X] \equiv E[\epsilon|X] \equiv 0$.

$$Y_{fia} = \beta U_{fia} + \alpha X_{fia} + \epsilon_{fia}$$

To try to avoid over-controlling for variables that might be affected by parent union coverage early in an offspring's life, we favor covariates that are fixed at the time of the offspring's birth, such as mother's education level at the time of the child's birth, rather than at the time the outcome is measured. The specific variables depend on data availability, but we generally are able to control for mother's or parent's age, education, and marital status at the offspring's birth, number of children in the household at the time of the offspring's birth or offspring birth order, and mother's or household head's race. We also include the child's gender, and in some analyses, race. Because some outcomes were measured at different ages for different offspring, we also condition on offspring age and the year of outcome. We also start by omitting income as a control variable which allows resource differentials to be reflected in the overall union estimate, and then we explicitly address the inclusion of income in later analyses.

In order for a parent to be unionized, they have to be employed. A tight comparison contrasts union versus nonunion working parents, rather than union working parents versus non-working parents. However, parents that are continuously employed throughout an offspring's childhood might be of a particular, non-random type. Therefore, a key conditioning variable is the offspring's share of cumulative childhood years that any parent is employed, which is constructed following a logic analogous to that of U_{fia}. In our primary analysis sample, we will restrict attention to offspring with a parent-employed share of at least 50 percent of years such that the mother (NLSY79) or the household head or spouse (PSID) was employed at least half of the years up to the relevant

age-a outcome (maximum age 17 for adult outcomes) and control for this variable. We will relax and also tighten this selection criterion in robustness analyses.

Second, we also use a more-credible, between-sibling design to contrast outcomes for siblings from the same family or household who experience different exposure to U_{fia} based on the timing of their parents' union membership in relation to the siblings' different birth years and assessment ages. This dispenses with comparisons between offspring from different families and controls for family of origin using additive fixed effects: $\epsilon_{fia} \equiv \gamma_f + \upsilon_{fia}$.

$$Y_{fia} = \beta U_{fia} + \alpha X_{fia} + \gamma_f + \upsilon_{fia}.$$

Other analysis compares children's outcomes across families but, in that analysis, there could be unobservable productivity differences across parents that both affect a parent's probability of unionization and an offspring's outcome. In contrast, focusing on within-parent, across-sibling comparisons using a family fixed effect conditions out differences across families, adding credibility to the analysis.

This design improves over the prior literature (Freeman et al., 2015) by using: (1) more than one point in time to measure exposure to unionization as a child, (2) more than one point in time to measure outcomes Y_{fia} that include both childhood and adult outcomes, (3) the full offspring sample not just those endogenously working full time as adults, (4) a between-siblings design in addition to the prior cross-sectional, control function approach, and (5) multiple data sets with different strengths and weaknesses.[2] We now describe these data sets.

The NLSY79 and its Child Survey

We use data from the National Longitudinal Survey of Youth (NLSY79) (Bureau of Labor Statistics, 2019) and Children of the NLSY79 survey (Baker et al., 1993; Cooksey, 2018) between 1979 and 2018. These surveys are sponsored and directed by the U.S. Bureau of Labor Statistics and the National Institute for Child Health and Human Development. The NLSY79 began with a cohort of over 12,000 individuals aged 14 to 22 in 1979, and includes annual or biennial (starting in 1994)

[2] For rich descriptions of using the NLSY and PSID for life course analyses, see Cooksey (2018) and Sastry et al. (2018), respectively.

re-interviews that are still ongoing. Launched in 1986, the NLSY79 Child Survey collects data on the biological children of the women in the NLSY79. Starting in 1994, a young adult component was added in which the standard NLSY79 questions on education, employment, and other items are also asked of children who are at least 15 years old. By matching children in the NLSY79 Child-Young Adults data to their mothers from the NLSY79, we use the mother's employment and unionization history for every year between the child's birth and age 17 to construct longitudinal data in which for every child age up to age 17, we know the mother's cumulative employment and unionization history spanning birth to that age. For example, if a child was administered a cognitive skill or behavioral assessment at age 10, we know the fraction of time that the child's mother was covered by a union contract and employed between birth and age 10. For a child's adult outcomes, we track the mother's unionization and employment history for when the child is 0-17 years old.

We focus on two child-aged assessments–cognitive skill and behavior–and two adult outcomes–educational attainment and annual earnings. For cognitive skill, we combine two Peabody Individual Achievement Test (PIAT) scores: math and reading recognition. These are widely-used, validated measures of cognitive achievement, and are administered to NLSY79 children age five and older (Baker et al., 1993). These are scored on a scale with mean 100 and standard deviation 15. To make a single measure, we standardize the reported scores by subtracting 100 and dividing by 15, average them, and standardize that average by age so that the averaged measure has mean 0 and standard deviation 1 at each age. For the behavior dimension, the NLSY79 Child survey reports the Behavioral Problems Index in which the mother is asked about the frequency, range, and type of childhood behavior problems for children age four and over (Peterson and Zill, 1986). We standardize the normed reported scale by subtracting 100 and dividing by 15, and to be consistent with the PSID, we reverse-code the values so that a positive value indicates more desirable behaviors. The oldest age for either of the childhood assessments in the NLSY is 14 years old. For each child we also calculate their adult educational attainment–specifically, whether they have a college degree–at the maximum observed age, which varies from age 25 to 38. As a final measure, we also include each offspring's total annual labor earnings for each year they are observed starting at age 25. This includes true zeros and is modeled as a Poisson process.

For the mothers, we construct three weekly employment indicators from 1979 through 2018:

whether the mother in that week was employed, was not employed, or had missing information (due to noninterviews or refusals to answer). We then take the mother-specific annual mean of these indicators to calculate the shares of time each mother worked or did not work in a given calendar year. The unionization status of mothers is collected for up to five jobs at every interview. By merging unionization to weekly job numbers we create a weekly indicator for whether each mother was represented by a union. We again aggregate these to mother-specific annual means, representing the share of a calendar year a mother is in a union job. When not in a union job, the mother could be employed, not employed, or having missing employment information.

We merge this constructed annual mother information to their children in the NLSY79 Child-Young Adults data and for each child in a given year, we create cumulative shares of time during which their mother was employed, not employed, and unionized. Because there is limited employment and unionization information on mothers prior to their 1979 interviews, we drop children born before 1979. From the linked child and mother data, we define the following controls at the birth of the child: mother marital status, mother education, mother Census region, mother age, child birth order, and child gender. We interpolate the Census region and education level of the mother at the child's birth between biennial NLSY79 survey years.

Our estimation samples vary across specifications. For the childhood assessment and earnings outcomes, the regression samples consist of as many observations per child as there are for a given outcome, and we cluster the standard errors at the child level. For children's college degree attainment, we limit the sample to young adults who have at least one interview at age 25 or later, and use the reported educational attainment at the oldest age they are in the data. For regressions with this outcome we cluster standard errors at the mother level. Because our data include observations across multiple survey years, we scale the sampling weights in the original NLSY79 Child-Young Adults data so that the sum of weights in each year is constant. All regressions use child-young adult sample weights.

Figure 1 illustrates a simplified version of the key aspects of our approach to constructing data sets from the NLSY79 to analyze the childhood cognitive and behavioral assessments. Start at the bottom of the figure which portrays an initial calculation of whether each mother is employed in a year, and also whether they are represented by a union in that year. Looking across successive NLSY79 waves, this results in a series of indicators for being employed and also for being union-

ized that span a child's childhood, at least up to an assessment age. In actuality, we calculate the fraction of each year a mother is employed and unionized. For the period from a child's birth up to the age of any assessment, we then calculate the overall fraction of time that their mother was employed and that they were represented by a union. Figure 1 further illustrates how the union treatment can vary within a child across assessments as well as between siblings due to variability in a mother's unionization history. Figure 2 similarly illustrates the general format of the data constructed for the analyses of the adult outcomes. Using a mother's unionization history, we calculate the fraction of time she was unionized when a child was 0-5, 6-11, and 12-17 years old. These are then used as the key treatments for analyzing that child's earnings beginning at age 25, and also for analyzing that child's educational attainment at the oldest age observed in the data. Not shown on the figures is that the controls are generally observed at the birth of each child.

Unweighted descriptive statistics are presented in Table 1. Column 1 includes the observations that are included in either of the childhood assessments baseline regressions, and column 2 includes observations that are in either of the adult outcomes baseline regressions. When the offspring are adults, 26.5 percent have completed a college degree, the unconditional average real earnings is $29,377, and 88 percent of the real earnings sample has non-zero earnings.[3] In the childhood assessments data, the mother's cumulative unionization rate is 11.7 percent–that is, at the time of a childhood assessment, the child's mother had been represented by a union for 11.7 percent of a child's life to that point, on average. Column 2 show that this unionization exposure increases as children age such that the rate is 8.7 percent for ages 0-5 compared to 15.6 percent for ages 12-17. For the childhood assessments, the average age is 9.2, and in the adult models the average age is 28.7. Children with older mothers are less likely to be in the adult data because the children will not yet be old enough to be included in that data. On average, each child appears 3.7 times in the childhood assessments analyses, and 2.8 times in the adult earnings analyses.

The lighter shaded bars in Figures 3 and 4 show the age distributions in the NLSY79 childhood assessments and adults outcomes data, respectively. In the childhood assessments data, there are

[3] The cognitive assessment does not have mean 0 and standard deviation 1 in the primary regression sample because it was standardized across the entire sample, including those who do not meet the employment criteria for inclusion in the primary regression sample. Since the behavioral assessment is a single measure, it is still normed relative to national benchmarks–that is, the scale mean is zero but not necessarily the sample mean.

fewer children at ages 4 and 5, but a fairly even distribution across the other ages up to age 14. Figure 3 clearly shows that the PSID samples (described below) span a broader range of ages, but have fewer observations. In the samples used to analyze NLSY adult outcomes (Figure 4), ages range from 25 to 38, which the younger ages represented more frequently. There are no observations at age 31, 32, 35, or 36 because starting in 2010, individuals in the Young Adults sample over age 30 are only interviewed every four years. Note the scale differences for the number of observations between the left and right panels. This reflects our use of the oldest observation for the college degree analyses and our use of all observations for the annual earnings observations.

The left sides of Figures 5 and 6 present the distribution of union treatment values in the various NLSY79 analysis samples. In all cases, the dominant union exposure is zero years, ranging from between approximately 55 and 70 percent. The remainder of the union treatment distributions spans from brief exposure to 100 percent exposure. Recall that all of these samples are conditioned upon mothers working at least half of the child's life up to the age of assessment or age 17, but do not require employment at every age.

The linked NLSY79 data has the advantage of clearly identifying each child's biological mother. But there is not any information on fathers so we cannot observe, for example, whether a child is in a union household due to a unionized father or step-father. We therefore also analyze data from the household-based PSID, although this has drawbacks of its own because what's recorded there is a child's relationship to the household head and spouse rather than a direct identifier of parents.

The PSID and its Child Development Supplements

The Panel Study of Income Dynamics (PSID) is a household-based panel survey dating back to an initial set of households in 1968, and includes annual or biennial (starting in 1999) re-interviews that are still ongoing (Institute for Social Research, 2022). Basic information is gathered for all members of the household, with the most detailed information collected on the household head and, if present, spouse. Family members who split-off of a PSID household–e.g., when a child becomes an adult and forms their own independent household–become a new household in the PSID with a new head (Sastry et al., 2018). In this way, it is possible to have information on individuals both as children and as adults. Moreover, children up the age of 12 in 1997 were

administered the Child Development Supplement (CDS) in 1997, 2001, and 2007, and the CDS was then administered to a new set of children up to age 18 in 2014 (Sastry et al., 2018).

We use CDS data to create a cognitive skill and a behavioral developmental indicator similar to the NLSY79 measures. For cognitive skill, we combine two Woodcock-Johnson Revised Tests of Achievement (WJ-R): the letter-word (reading) and applied problems (math) tests. These are widely-used, psychometrically-sound measures of children's cognitive skills and achievement (Ysseldyke, 1990), and are administered to CDS children age three and older.[4] These are scored on a scale with mean 100 and standard deviation 15. To make a single measure, we standardize the reported scores by subtracting 100 and dividing by 15, average them, and standardize that average by age so that the averaged measure has mean 0 and standard deviation 1 at each age. For the behavior dimension, the CDS includes the same Behavioral Problems Index as in the NLSY79 (Peterson and Zill, 1986) along with a Positive Behavior Scale which is a reliable scale of positive social behavior (Epps et al., 2005). The questions in these measures are answered by the primary caregiver, usually the child's mother. We standardize each reported index to have mean 0 and standard deviation 1 for each age, reverse-code the Behavioral Problems score so that a positive value indicates more desirable behaviors, and then average the two standardized scores. This average is re-standardized so that it has mean 0 and standard deviation 1 at each age.

To construct two adult outcomes similar to those in the NLSY79, we use the main interview waves starting in 1976, which is when spousal unionization status is first reported, up through 2019. We identify adults starting at age 25 who can be linked back to a PSID household for their entire childhood up to age 17. From their interviews as an adult–most of whom have detailed information in the PSID because they are now the head of a new split-off household–we calculate two outcomes. One, we observe their adult educational attainment at the maximum observed age, which varies from age 25 to 40, and if this is at least 16 years of completed education we designate them as a college graduate. Two, we also analyze each child's total annual labor earnings for each year they are observed starting at age 25 up through age 40.

For each child, we use the unionization and employment status of the household head and, if

[4] The 1997 CDS only goes up to age 12, but we observe assessment scores at older ages when these children are re-surveyed in 2001 and 2007. Additionally, the 2014 CDS included children up to age 18.

present, spouse for every age of the child up to age of assessment, or age 17 for the adult outcomes. Many of the PSID waves in our data are when the PSID is administered biennially, so for the missing ages, we interpolate union and employment status based on the previous and next round. Then, for each age of the child, if either the head or spouse (or both) is represented by a union in that year, we designate this as a union household. Similarly, if either the head or spouse (or both) is employed, we designate this as an employed household. We then take the mean of these annual household indicators to calculate the fraction of years each child was in a unionized household and was in an employed household, up to the assessment age, or age 17 for the adult outcomes. If you substitute combined household heads and spouses for mothers, the figures illustrating the construction of the NLSY79 (Figures 1 and 2) also provide a useful overview of format of the PSID data sets we construct for our analyses.

From the household data, we also create the following controls at the birth of the child: whether the head is single, whether the head is Black, the highest education level of the parents, average age of parents, region, and the number of children in the household. The regressions also control for the assessment age and year. Because the PSID is a household-based survey, we cannot always identify a child's parents; rather, we know the relationship to the head or spouse. For the CDS sample, we require at least one observation up to age 17 where the head or spouse is a parent so that we can infer the average age and highest education level of the parents at birth. But to maximize the number of usable CDS observations for the childhood assessments, we do not require the household head or spouse to be a parent at every age, though this is the case for most individuals.[5] To control for household fixed effects, we identify individuals in the same household in any PSID wave used to construct our measures and group them together with a unique household id.

For the adult outcomes sample, we require every wave up to age 17 to be in a household where the head or spouse is a parent, and instead of using single head as a control we identify single mothers. For the adult outcomes, we control for the year of the outcome, the age the outcome is measured at, and the child's gender and race, whereas we exclude race as a control for the

[5] Suppose the household head is a grandparent until a child turns 6, at which point the head or spouse is a parent. We can infer the average age of the parents at the child's birth by subtracting the child's age. But for the parents' education, there is a chance that their observed education at age 6 is different from the unobserved education at the child's birth. This only potentially affects a small number of observations.

childhood outcomes because there are extensive missing values.[6] Using the Family Identification Mapping System tool provided by the PSID, we identify siblings in order to estimate sibling fixed effects.

Similar to our NLSY79 analyses, our PSID estimation samples vary across specifications. For the childhood assessment and earnings outcomes, the regression samples consist of as many observations per child as there are for a given outcome, and we cluster the standard errors at the child level. For children's college degree attainment, we limit the sample to young adults who have at least one interview between ages 25 and 40, and use the reported educational attainment at the oldest age they are in the data. For regressions with this outcome we cluster errors at the child household level. All regressions use the PSID's longitudinal weights.

Unweighted descriptive statistics are presented in Table 2. Paralleling Table 1, column 1 includes the observations that are included in either of the childhood assessments baseline regressions, and column 2 includes observations that are in either of the adult outcomes baseline regressions. Slightly more than 40 percent of the adult outcomes observations have completed at least 16 years of education, which we equate to having a college degree. The unconditional average real earnings is $45,560, and 88 percent of the real earnings sample has non-zero earnings. Cumulative unionization is somewhat higher than in the NLSY79, but recall that the NLSY79 unionization measures are based solely on the mother whereas in the PSID, we consider the household to be unionized if either the head or spouse is covered by a union. As another contrast to the NLSY79, the PSID unionization exposure does not increase with a child's age, presumably for the same reason. The adult PSID sample is slightly older than the NLSY79, on average, reflecting the fact that the PSID is an older survey than the NLSY79. On average, each child appears 1.6 times in the childhood assessments analyses, and 4.8 times in the adult earnings analyses.

The darker shaded bars in Figures 3 and 4 show the age distributions in the PSID childhood assessments and adults outcomes data, respectively. Childhood assessment observations range from age 3 to 18, with slightly more observations between ages 6 and 12 or 13. In the PSID sample used to analyze college degree attainment, the sample is slightly skewed toward older ages because we

[6] The difference in the availability of race is because for the adult outcomes, we observe most of the individuals as split-off heads, so more information is collected than when they are children in the CDS.

select the oldest observations for each person (Figure 4). In contrast, the sample used to analyze annual earnings is weighted toward younger ages because we use all available observations, but most children have not been in the PSID long enough to reach ages closer to 40.

The right sides of Figures 5 and 6 present the distribution of union treatment values in the samples used to analyze childhood assessments and adult outcomes in the PSID. As with the NLSY samples, the most frequent union exposure is zero years. The 30-40 percent of observations that have non-zero union exposure exhibit variability across the full range of possibilities.

3 Results: Childhood Assessments

We start with the results for the childhood assessments for cognitive skill and behavior. In constructing our dependent variables, all of the scales have been standardized to have mean 0 and standard deviation 1, so the regression coefficients can be interpreted as indicating the average number of standard deviations shifted by a marginal change in the explanatory variable. And in all cases, a larger value of the dependent variable is a positive outcome: higher cognitive achievement or more positive behaviors. The Data section above contains details about underlying measures.

NLSY79 Results

Baseline regression results for the NLSY79 are reported in Table 3. The key treatment variable is the child's cumulative union exposure from birth to the age that the dependent variable is measured, which ranges from 5-14 for cognitive skill and 3-14 for the behavioral assessment. In the NLSY79, we define exposure to unionization as having a mother who is represented by a union. Without any controls (column 1), there is not a statistically significant relationship between union exposure and cognitive skill. Column (2) adds a full set of control variables as described in the previous section, and recall that mother's age, mother's education, and mother's marital status are all measured at birth not at the time of the assessment in order to avoid over-controlling for factors that might be affected by a mother's unionization during her offspring's childhood. Given that a focus on cumulative unionization is an atypical research approach, a lack of union exposure may be due to a mother working in nonunion jobs (the typical comparison) or not working at

all. To help avoid the union estimate picking up an employment effect, we limit the regression samples to children of mothers who are employed for at least half of the child's lifetime up to the assessment age, and in columns (2)-(3) and (5)-(6) in Table 3 we also control for the fraction of time the mother is employed over that same time period.

Adding the full controls in column (2) makes the estimated effect of mother's unionization on child cognitive skill more negative, but the estimate remains noisy and insignificant. Results for control variables, however, fit expected patterns.[7] Column (3) adds a mother fixed effect to the regression. The cumulative union exposure effect is identified in two ways: a) variation in a mother's unionization history as a child ages and has their cognitive skill re-assessed at an older age, and b) variation in a mother's unionization history across siblings of different ages (recall Figure 1). This latter type of variation also identifies the controls and time-invariant mother characteristics (namely, race) drop out. The sample size drops slightly between columns (2) and (3) due to the exclusion of children without siblings. Controlling for mother fixed effects, however, does not change the negative, statistically insignificant result for cumulative union exposure in the regression predicting cognitive skill. Some other coefficients in the model also become statistically insignificant.[8]

Columns (4)-(6) in Table 3 repeat the approach of columns (1)-(3) with the behavioral, rather than cognitive, assessment as the dependent variable. The pattern of results is qualitatively similar to that for cognitive skill. The unadjusted cumulative union coefficient is negative and insignificant (column 4) and, with the addition of controls (column 5) and mother fixed effects (column 6), it becomes more negative, but is always noisily estimated and statistically insignificant.[9]

While the overall pattern of results for the cognitive and behavior assessments seem sensible,

[7]First-born children, on average, have the highest level of cognitive skill compared to later-born siblings, higher levels of a mother's education is associated with higher cognitive achievement in their offspring, whereas children of unmarried mothers at their birth and children of nonwhite mothers, on average, have lower cognitive achievement scores.

[8]Even though most of the control variables are technically identified with the inclusion of a mother fixed effect, the implied experiment is a strict one–for example, comparing a sibling born to a mom while single with a sibling born when the same mother was married.

[9]Without mother fixed effects, mothers who were more highly educated at childbirth and Black mothers report more positive child behaviors. Female offspring are assessed to have more positive behaviors, on average, than male children, and this is robust to the inclusion of the mother fixed effect.

there is no evidence that a child's length of time in a household with a unionized mother significantly affects these childhood outcomes. The point estimates are negative which imply that the greater the proportion of time that a mother is unionized, the worse are the predicted childhood outcomes for her offspring, but none of these estimates are statistically meaningful, even at a 10 percent level of significance.

While there is not evidence of a general union effect, union status may have more impact in particular contexts. For instance, a given parental wage increase might have different impacts at different stages of child development, motivating analysis allowing effects of parent union status to differ by child age. Union status might have more positive impacts in more-disadvantaged families for two separate, reinforcing reasons. First, unions tend to have more-positive impact on wages and earnings for workers with lower non-union wages (Card, 1996; Frandsen, 2021). Second, increasing family resources often appears to have bigger impacts on children's development when the family has fewer baseline resources (Dahl and Lochner, 2012; Løken et al., 2012; Elango et al., 2015). Together, these motivate analysis allowing union membership effects to differ by proxies for family advantage. In particular, we use whether the mother has any college education and whether the family has below-median income at the time of each child's birth. We also consider heterogeneity by mother's marital status and child gender and race.

We repeat estimation of the regression models with full controls (columns 2 and 4) and with mother fixed effects (columns 3 and 6) using various subsamples of the full data set. Figure 7 summarizes the results for the key cumulative unionization variable. The top half of the figure is for the cognitive assessment, the bottom half for the behavioral assessment. The left side of the figure presents the results for the regressions that include full controls, the right side of the figure adds mother fixed effects. Each row of the figure represents a particular sample, the dots show the point estimate of the key cumulative union exposure predictor, and the bars indicate its 95 percent confidence interval. The cumulative union coefficients, standard errors, and sample sizes that underlie Figure 7 are reported in Appendix Table A1.

The top and bottom halves of Figure 7 start by repeating the baseline sample results from Table 3 for comparison purposes. Next, the results are reported restricting the sample to particular age ranges (specifically, ages 6-11 and 12-14), female children, unmarried birth mothers, Black or Hispanic mothers, mothers who did not have a college degree when the child was born, and

households with below median income.[10] For the models with full controls, across the subsamples, the union estimates in the various cognitive achievement and behavior models are mostly negative but are never statistically significant at a 5 percent significance level. Shifting attention to the right side of the figure where the regressions also include mother fixed effects, estimates unsurprisingly become noisier. The only estimates that are statistically significant at a 5 percent level are the fixed effects estimate for the behavioral assessment for mothers who lacked a college degree when their child was born and those with below-median household income at the time of the child's birth. In both cases, the estimated effect of union membership is negative on children's behavior.

The last two rows of the top and bottom portions of the table explore the importance of the baseline employment criteria for inclusion (at least half of years) in the regression sample. The "working every year" rows tighten the requirement for inclusion by analyzing only children whose mothers worked in every year up to the assessment age. The "no employment constraint" row, in contrast, relaxes the inclusion requirement by not conditioning on mother's employment. Results do not change.

PSID CDS Results

Turning to the childhood assessments in the PSID CDS, Table 4 presents the baseline regression results. The approach is the same as in Table 3 with analyses for cognitive skill (columns 1-3) and behavior (columns 4-6) being presented with increased controls, starting with no controls and ending with a household fixed effect. The fundamental question is the same as in the NLSY79 analyses too: does a child's cumulative exposure to unionization up until the age of the assessment affect the results of that assessment? But recall that for the PSID, we identify unionized households as those where the head and/or spouse (if present) are represented by a union. As in the NLSY79 analyses, the samples are conditioned on a degree of employment; specifically, only children living in a household in which the head and/or spouse were employed for at least half of the years up to the assessment are included. Lastly, recall that the range of ages assessed by the PSID CDS is also wider than in the NLSY79 (recall Figure 3).

[10] Median income is from the U.S. Census Bureau, Current Population Survey, 1954 to 2022 Annual Social and Economic Supplements (CPS ASEC).

The results reveal a number of similarities between the NLSY79 results that were presented in Table 3 and the PSID CDS results in Table 4 for the control variables.[11] The key similarity for our purposes is the lack of significant relationship between cumulative unionization and either of the childhood assessments, regardless of the set of control variables. In other words, just as in the NLSY79 where we can see a mother's unionization history, in the PSID where we can track household head(s) unionization history, the analysis does not find compelling evidence of an overall relationship between growing up in a union household and outcomes on two key childhood assessments. Paralleling the NLSY79 subsample analyses presented in Figure 7, Figure 8 shows the results of the analogous exercise for the childhood assessments in the PSID CDS. The numerical results and sample sizes are reported in Appendix Table A2. The first row in the top and bottom halves of the table again presents the baseline results for comparison. Below that is a row that shows the results when the sample includes only households headed by parents and stepparents. Most of the other rows are similar to the NSLY79 breakdowns, except in the PSID we can extend the older age group until age 17. The only union estimate that is statistically significant is for the age 12-17 subsample predicting cognitive achievement with full controls. This significance is not robust to the inclusion of fixed effects because of a large increase in the standard error. The last two rows of the top and bottom halves again illustrate that the overall results are not dependent on our particular employment criteria for sample inclusion.

Alternative Union Exposure Measures

Our empirical approach focusing on cumulative union exposure from childbirth to the age of assessment is predicated on variation in child development resulting from a cumulative set of influences over a child's life. But there are other possibilities, which imply alternative specifications of the union treatment variable. This issue is explored in Table 5. In Panel A, the first block of three rows again repeats the baseline results from the NLSY79 for easy comparison, with the sample

[11] Female offspring have significantly higher behavior scores–meaning more positive behavior–on average, even after controlling for household fixed effects. Parents with higher levels of education at childbirth are associated with higher levels cognitive skill among their children. Children born when the household head is single have lower cognitive scores than those born into dual-couple households. Unlike in the NLSY79 results, there is also a strong pattern in Table 4 in which children born to older parents fare more favorably on both the cognitive and behavioral assessments, even after controlling for a household fixed effect.

sizes reported in the last of the three rows. In the alternative models, we use employment-related sample inclusion criteria similar to that used for the baseline results, but we adjust the time frame of the employment requirement to match the time frame of the union exposure.[12]

Columns (1) and (3) report the results for the cognitive and behavioral assessments, respectively, with the full controls from Table 3, while columns (2) and (4) add the mother fixed effect. The second block in Table 5 still assumes that child development is a cumulative process, but focuses on the five years immediately preceding each assessment. That is, mother unionization is measured as the average time spent represented by a union in that five year period, rather than since the child's birth. The results are not materially different, except in column (4) where greater unionization in the five years preceding the behavioral assessment is significantly associated with more negative behavior, but only in the within-mother specification.

The dominant approach to analyzing what unions do is to use an indicator of whether the worker is unionized at the time of the outcome being measured (e.g., a wage outcome, provision of health benefits, or whether a worker votes). Thus, the third and fourth blocks of Panel A in Table 5 limit the mother's unionization history to the year of the childhood assessment. In the third block, we measure union exposure as the fraction of the year that the mother was unionized (recall that the NLSY79 has weekly employment measures). The fourth block is the closest to the traditional approach–that is, the child is indicated as having a unionized mother at the time of the assessment if she was represented by a union at any time in that year. In other words, the union variable in the fourth block is a dichotomous (mother) union indicator. Only in this last case is there a statistically significant result, and only then at a 10 percent significance level. Specifically, when a mother is unionized during the year of the child's behavioral assessment, the average behavioral assessment is lower compared to nonunion mothers, controlling for mother fixed effects.

Turning to Panel B in Table 5, the first block repeats the baseline results for the PSID. The sec-

[12] More specifically, when unionization is measured over the previous five years, then the sample inclusion criterion is that the mother (NLSY79) or household head and/or spouse (PSID) must have been employed for at least half of the time in that same five-year span. When unionization is measured just for the year of the assessment, then in the NLSY79 analyses in Table 5, children are only included when the mother works at least half of that year. Since we rely on annual measures in the PSID, this means that in this last scenario, the head and/or spouse must be working in that year.

ond block measures household unionization using the preceding five-year average as done for mothers in Panel A. And the last block of Panel B creates single-year dummy variable indicators for whether the child's father or stepfather was unionized during the same survey as the childhood assessment, and for whether the child's mother or stepmother was unionized during the same survey as the childhood assessment. There are not any statistically significant union results for cognitive skill. Unionized (step)fathers are associated with lower behavioral scores when controlling for household fixed effects. In perhaps most stable result throughout all of the analyses, a union (step)mother at the time of the behavioral assessment is associated with a 0.165-0.195 standard deviation increase in the behavioral scores–that is, with more positive behaviors.[13] Curiously, this is the opposite of the result in the NLSY79 when controlling for mother fixed effects.

4 Results: Adult Outcomes

Turning to offspring's adult outcomes, we focus on two: 1) whether the offspring has a college degree by the last observed age starting from age 25 up to age 38 (NLSY79) or 40 (PSID), and 2) unconditional annual labor earnings at all observed ages between age 25 and 38 (NLSY79) or 40 (PSID). For the NLSY79, the average age at which educational attainment is measured is 30.7 compared to 33.6 in the PSID. Recall that we use a direct question on college degree attainment in the NLSY79 (mean 0.287) whereas in the PSID we construct an indicator for college degree attainment using information on highest grade completed (mean 0.395 completing 16 years or more). For the college attainment models, we estimate linear probability models. For labor earnings, we use a Poisson pseudo-likelihood regression (Correia et al., 2020) because the data include zero earnings (for a little over 10 percent of observations in each data set).

Our key question of interest is whether variation in the amount of time an individual spent being raised by a unionized mother (NLSY79) or at least one unionized parent (PSID) during childhood shapes these two adult outcomes. To allow for the possibility of a differential impact of unionization across a child's life cycle, we create a set of three key independent variables: union exposure between ages 0 and 5, between 6 and 11, and between 12 and 17. We also impose an em-

[13] The PSID model with the two dichotomous indicators also includes controls for dual earner households and single households to avoid the two union dummy variables being confounded by these influences.

ployment requirement similar to what was done in the childhood assessment models–specifically, to be included in the analyses, a child's mother (NLSY79) or one or more parents (PSID) had to have been employed for at least 50 percent of time when the child was 0-17 years old. As a reminder, Figure 2 presents a simplified sketch of the logic of the data construction for the adult outcomes analyses.

The presentation of the adult outcomes results follows that of the childhood assessments. We start with the full results for the NLSY79 with three specifications (no controls, full controls, full controls plus a mother fixed effect). This is followed by subsample analyses using the NLSY79 data. Then we present the full results for the PSID for the same specifications except we using sibling fixed effects, followed by subsample analyses. The last subsection in this section presents results for alternative union measures.

NLSY79 Results: College Attainment and Earnings

Table 6 presents the full baseline results for the two adult outcomes for the NLSY79 data. Without any controls, greater union exposure during ages 12-17 is associated with a significant increase in the likelihood of getting a college degree (column 1), which declines in magnitude when full controls are added (column 2), and becomes statistically insignificant due to increased standard errors when a mother fixed effect is added (column 3). In the mother fixed effects specification, greater union exposure during ages 0-5 also has a significant positive relationship with college degree attainment. When not including the mother fixed effect, women, first-born children, and children of mothers who had higher amounts of education when the child was born are all more likely to get a college degree, on average. Children of Black mothers are less likely to complete college, on average.

Turning to the unconditional labor earnings Poisson regressions (columns 4-6), the union exposure coefficients are a mix of positive and negative point estimates, and only one is statistically significant. Specifically, greater union exposure during ages 6-11 is negatively related to earnings. Looking beyond the set of union treatment variables, women have lower unconditional earnings, whereas there is a positive relationship between older mothers and earnings as well as between higher levels of a mother's educational attainment at birth and her child's adult earnings. Chil-

dren of Black and Hispanic mothers have lower earnings as adults compared to children of white mothers.

As in the childhood assessment analyses, we can further ask whether childhood union exposure has an influence on adult outcomes in specific contexts. Figure 9 presents a coefficient plot for college degree attainment. On the left side of the figure are the three key union exposure coefficients from models with full controls; on the right side of the figure are the union exposure coefficients from models that also add the mother fixed effect. Figure 10 presents the results of the same analyses for labor earnings. The numerical results and sample sizes that underlie both figures are reported in Appendix Table A3.

Across both dependent variables, the two specifications, and the various subsamples there are a smattering of significant estimates. We want to be cautious about over-interpreting potentially random pockets of statistical significance. The largest effect is for age 6-11 union exposure on earnings of children of an unmarried mother controlling for mother fixed effects. Potentially notable are also the negative effects of age 6-11 and 12-17 union exposure on earnings of children of mothers who didn't have any college at birth.

PSID Results: College Attainment and Earnings

Table 7 presents the full baseline results for the same two adult outcomes in the PSID data. Without any controls, greater union exposure during ages 12-17 is weakly associated with a greater chance of getting a college degree (column 1), and the magnitude is larger when controlling for sibling fixed effects (column 3) but is also noisier such that it is not statistically significant. Indeed, none of the union exposure variables have a significant relationship with college attainment once control variables are added. Similarly, no significant relationships between union exposure as a child and labor earnings as an adult are found (columns 4-6).

Women are more likely to complete college and but have lower labor earnings. Children born into families with at least one college-educated parents are significantly more likely to get a college degree themselves, and also have higher labor earnings except when controlling for sibling fixed effects. Perhaps surprisingly, child born to a single parent are more likely to get a college degree.

Subsample analyses for the PSID are summarized in Figures 11 (college degree) and 12 (earn-

ings), with the numerical values and sample sizes shown in Appendix Table A4. Perhaps most notably because of its similarity with the NLSY79 earnings results for union exposure during ages 6-11, greater union exposure during ages 6-11 is associated with lower labor earnings in the PSID, and this is statistically significant in both specifications. Also, when controlling for sibling fixed effects, labor earnings for Black children and children of a Black household head have lower predicted adult earnings with greater union exposure at younger childhood ages, but higher predicted earnings and college attainment probability with greater union exposure at higher childhood ages. Lastly, taking the results at face value, greater union exposure among children born into households with income below the median increases the probability of earning a college degree (ages 12-17 exposure) but reduces labor earnings controlling for sibling fixed effects.

Alternative Union Exposure Measures

Rather than focusing on cumulative union exposure, we can also measure parental union status in what might be seen as a more conventional way–namely, via a dummy variable indicating unionization at a particular time period. Consistent with our approach of allowing unionization at different parts of childhood to have differential effects on adult outcomes, we look at whether mothers (NLSY79) or (step)parents (PSID) were unionized when the child was at the oldest of each of the three age ranges previously–specifically, at age 5, 11, and 17.[14]

The NLSY79 results are reported in Table 8. The top block repeats the baseline results for convenience, and the bottom block reports the results measuring union exposure at ages 5, 11, and 17. The sample sizes are slightly reduced because the employment requirement for inclusion is stronger–namely, the mother must be working when the child is age 5, 11, and 17. The only estimate for the single-age dummy variables that is statistically significant, even at a 10 percent level, is the effect of age 5 unionization on earnings when controlling for mother fixed effects. This is a very different result from the cumulative specification, which might indicate that caution is warranted in modeling this question in the traditional way.

The PSID results are reported in Table 9 in which we report one specification as an alternative

[14] Due to the biennial nature of the surveys for part of our analysis period, we use age 4 when age 5 is not a survey year, and similarly use age 10 and 18. Also, unlike for the childhood assessment analyses, we do not report results for five year averages because our baseline results already break down childhood into six year blocks.

to the baseline. That is, the alternative specification includes six dummy variables–three indicating whether the offspring's father or stepfather was unionized when the offspring was age 5, 11, and 17, and three analogous dummy variables for (step)mothers. As in the NLSY79 analyses, the sample sizes are reduced because we condition on at least one parent being employed at each of the three ages.[15] Similar to the NLSY79 results, a unionized (step)mother at age 11 reduces college attainment and labor earnings. A unionized (step)mother at age 17 increases college attainment, but this result is not observed in the NLSY79. These dummy variable specifications in Table 9 come closest to the approach used by Freeman et al. (2015). In that paper, a child of a father, but not a mother, who was unionized in one year when the child was less than 12 years old was found to have higher adult labor earnings and educational attainment. Our findings are different.[16]

Adult Unionization

The consideration of intergenerational transfers from unionized households also prompts the question of whether there is an intergenerational transfer of union status. That is, does time spent in a unionized household as a child shape the likelihood of being a unionized worker as an adult? There is insufficient data on union status for NLSY children when they are adults, but recall that the full battery of typical labor market questions are asked of PSID children who appear in the PSID as adults as heads of split-off households.[17] Among these PSID children-turned-adults, we track their union status starting at age 25 up to a maximum of age 40, similar to the college attainment and earnings variables. Based on this, we create two measures of adult unionization: the fraction of observed time covered by a union, and an indicator if they were ever unionized. The average of the mean unionization measure is around 0.114, and the average of the ever unionized measure is around 0.195. The results of estimating linear probability models using these two

[15] This alternative specification also includes variables indicating whether the household had dual earners or had a single head at each of the three ages, to try to reduce confounding effects because both parents can only be unionized in particular household configurations.

[16] Freeman et al. (2015) only look at children under 12 years old in the 1985 PSID and then use their adult earnings and education in the 2011 PSID, and restrict the analyses to full-time workers. So there are non-trivial differences in sample construction and control variables between our two sets of analyses.

[17] Children of mothers in the NLSY are only asked about unionization status during the 1994, 1996, and 1998 surveys; our sample of children begins in 1979, so 19 years of age is maximum age for which we observe a child's unionization status.

measures are reported in Table 10, with columns 1-3 focusing on mean adult unionization and columns 4-6 on ever unionized.

Moving across the columns, columns 1 and 4 do not include any control variables, columns 2 and 5 add the same controls variables used in the college attainment models in Table 7, and columns 3 and 6 add siblings fixed effects. The top panel of Table 10 follows the other adult outcomes regressions in allowing the effects of childhood unionization to vary between ages 0-5, 6-11, and 12-17, whereas the bottom panel uses a single union exposure variable spanning ages 0-17. Except when including a sibling fixed effect, the greater the amount of time spent in a unionized household between ages 12 and 17, the more time the child-as-adult spends covered by a union (columns 1-2) and the higher the likelihood of ever being unionized at age 25 or older (columns 4 and 5). Going from no union exposure between ages 12 and 17 to 100 percent exposure increases the chances of ever being unionized by 10 percentage points, which is a 50 percent increase relative to the sample mean. Similar results are found when pooling childhood exposure across ages 0 to 17.

5 Context for Interpretation

The consistent evidence here against a large effect of parent union membership on offspring outcomes surprised us because it is at odds with two bodies of literature discussed in the introduction: union membership tends to increase resources flowing to workers' families and increased family resources tend to generate better outcomes for children. We report here ancillary evidence to aid interpretation.

First, we see that in the era in which our intergenerational sample grew up, parent union membership is strongly associated with higher contemporaneous household income, validating the first link in the causal chain from unionization to resources to offspring outcomes.[18] Specifically, in the PSID, the estimate based on a linear model with full controls implies that moving from no union exposure to full union exposure during the first 6 years of a child's life implies a $4,538

[18]These results were generated from a sample constructed for this purpose rather than from the sample used in our other PSID analyses. The years were selected to match when our intergenerational sample grew up and the unionization measures were constructed using the same methods as in our main analysis sample.

increase in annual household income (Table A5: Column 1) and the model with sibling fixed effects implies a $7,325 increase. This finding is robust to using Poisson regressions (Columns 3 and 4). Effects on household income are similar at older child ages as well. So, parent union membership appears to be raising household income throughout offspring childhood, validating the first link in the causal chain.

We next present evidence on the role of childhood income alone and alongside union exposure in predicting outcomes, the second link in the causal chain. For these analyses, we construct a variable capturing mean household income in each child's years prior to the outcome, with timing analogous to the union exposure measure. All models use the full set of controls. In the NLSY, union exposure was imprecisely estimated to cause a -0.113 standard deviation reduction in offspring cognitive skill when income is excluded from the model as in all prior results (Table 3: Column 2), reproduced for reference as Table A6: Panel A: Column 1. Excluding union exposure, an extra $1,000,000 in mean annual income predicts a 0.468 standard deviation increase in cognitive skill (Column 2).[19] When both union exposure and income are included in a model together, the coefficients remain similar to the prior models (Column 3). Estimate stability between models with each predictor alone and both together also holds when sibling fixed effects are included (Columns 4-6) and for the Behavioral Assessment in the NLSY sample (Panel B), cognitive and behavioral assessments in the PSID (Panels C and D), and in terms of educational attainment and earnings in adulthood in each sample (Table A7). In sum, childhood income doesn't always seem to predict better childhood outcomes, but adding it doesn't change the estimated coefficient on union exposure. Though union exposure brings more income to the family, it appears that this income either does not translate directly into better outcomes, or union exposure may bring other important, countervailing changes, such as work hours or schedules that offset the positive influence of extra income.

Finally, using an analytic framework analogous to our modeling of the effect of union exposure, we present evidence on the effect of parents working in a high-wage industry on children's outcomes.[20] In models with sibling fixed effects, having a parent working in a high wage industry

[19] This income unit yields no leading zeros on the estimated coefficient.

[20] To measure whether an industry is high-wage, we compute the average wage within each Census 1990 industry between 1970 and 2022 using CPS data (Flood et al., 2021), compute the percentile of each industry's average wage each year, and average each industry's percentiles across

also does not increase their childhood cognitive nor behavioral skills (Table A8: Column 3), similar to the union results. In models with sibling fixed effects, having a parent working in a high-wage industry during ages 12 to 17 years does predict a similar increase in the probability of the child attaining a college degree as having a parent in union during those ages. Both having a parent in a union and having a parent in a high-wage industry during ages 12 to 17 years predict similar increases in children's adult annual earnings controlling for sibling fixed effects, but the estimates are imprecise (Table A9: Column 6). More generally, though, childhood exposure to a high-wage industry between ages 12 and 17 exhibits a more consistently a positive correlation with college attainment and earnings than does union exposure.

6 Conclusion

Building on previous analyses of what unions do beyond the workplace, we question whether being raised in a unionized family affects a child's life course as reflected in cognitive and behavioral assessments as children, and as reflected in college attainment and labor earnings as adults. We cannot directly observe how unionization may affect a child's development, but it seems reasonable to hypothesize that differential sets of resources and perhaps experiences (e.g., strikes) or attitudes between unionized and nonunion households may shape contrasting parental investments in their children and other parenting differences. This may lead to better or worse outcomes for children raised in unionized families. Moreover, we theorize that the child development milestones we analyze are the cumulative result of various influences across multiple years of one's childhood. So if unions are going to have an effect, we assert a need to move beyond conventional approaches that are appropriate for time-specific outcomes. More concretely, rather than limiting our analyses to age-specific, dummy variable indicators for parental union status, we construct cumulative measures reflecting the fraction of time children were raised by a union mother or in a unionized household. We analyze these issues using two large-scale, nationally-representative data sources. The NLSY79 has the advantage of clearly linking a child to their mother, but lacks in-

years. High-wage industries are then designated as those with an above median percentile. For each PSID year, if the head or spouse are working in a high-wage industry, we deem this as a high-wage industry household. For each child, a continuous variable that averages the household's rate of being a high-wage industry household is constructed analogously to the definition of union exposure.

formation on father's unionization. The PSID has unionization information on household heads and their spouses, which are often a child's parents or stepparent, but not always and are not always observed at birth.

Across the childhood assessments and adult outcomes in both data sets, including numerous subsamples, we fail to uncover a compelling, consistent pattern of unionization effects on these outcomes. There are some significant results, but little consistency across the two data sets, and often little consistency between specifications that do and do not control for mother or household fixed effects. We recommend against focusing on a few, potentially fragile statistically significant results when most of the results are insignificant.

Maybe unions have targeted effects in specific situations, but these are not general enough to be uncovered here. Qualitative research could perhaps better identify particular dynamics in which unionized parents affect child outcomes (e.g., Terriquez, 2011). Or maybe we are finding real limits to what unions do beyond the workplace. For example, other research, also using the PSID, does not find that union membership affects physical and mental health (Eisenberg-Guyot et al., 2021). Moreover, life cycle dynamics are complicated, and studies, for example, frequently find little effect of parental employment on child cognitive achievement (Schildberg-Hörisch, 2016). But ultimately, the challenge of null results is that we do not know whether there is no effect, or just subtle effects that we failed to uncover with our research design.

Our estimates push against an interpretation that unions affect children's development primarily through increased income. Interpreting our estimates relative to those in the literature can help clarify their meaning. Dahl and Lochner (2012) found that each $1,000 increase in family income raised children's average math and reading test scores by 6% of a standard deviation. In our models of childhood cognitive skill with sibling fixed effects, 95% confidence intervals on union exposure includes effects of that size in both the NLSY and PSID samples. Given that union exposure is estimated to lift annual household income by about $5,000 a year across childhood, the Dahl and Lochner estimated income effect would predict an increase in test scores of about 30% of a standard deviation. That is outside the 95% confidence interval for the NLSY union exposure estimate and just at the upper edge of the PSID estimate's. Countervailing channels such as increased work hours or unmodeled selection processes seem to be operating as well.

References

Abowd, John M and Henry S Farber (1982) "Job queues and the union status of workers," *Industrial and Labor Relations Review*, 35 (3), 354–367.

Aizer, Anna, Shari Eli, Joseph Ferrie, and Adriana Lleras-Muney (2016) "The long-run impact of cash transfers to poor families," *American Economic Review*, 106 (4), 935–71.

Artz, Benjamin, David G Blanchflower, and Alex Bryson (2021) "Unions increase job satisfaction in the United States," Working Paper 28717, National Bureau of Economic Research.

Baker, Paula C, Canada K Keck, Frank L Mott, and Stephen V Quinlan (1993) "NLSY child handbook, revised edition: A guide to the 1986-1990 National Longitudinal Survey of Youth child data,"Technical report, Center for Human Resource Research, The Ohio State University.

Bernal, Raquel and Michael P Keane (2010) "Quasi-structural estimation of a model of childcare choices and child cognitive ability production," *Journal of Econometrics*, 156 (1), 164–189.

——— (2011) "Child care choices and children's cognitive achievement: The case of single mothers," *Journal of Labor Economics*, 29 (3), 459–512.

Booth, Jonathan E, Daniela Lup, and Mark Williams (2017) "Union membership and charitable giving in the United States," *ILR Review*, 70 (4), 835–864.

Brown, David W, Amanda E Kowalski, and Ithai Z Lurie (2020) "Long-term impacts of childhood Medicaid expansions on outcomes in adulthood," *The Review of Economic Studies*, 87 (2), 792–821.

Budd, John W (2007) "The effect of unions on employee benefits and non-wage compensation: Monopoly power, collective voice, and facilitation," in Bennett, James T. and Bruce E. Kaufman eds. *What Do Unions Do? A Twenty-Year Perspective*, 160–192: Transaction Publishers.

Budd, John W and J Ryan Lamare (2021) "Worker Voice and Political Participation in Civil Society," in Zimmermann, Klaus F. ed. *Handbook of Labor, Human Resources and Population Economics*, 1–20: Springer.

Budd, John W and Brian P McCall (1997) "The effect of unions on the receipt of unemployment insurance benefits," *Industrial and Labor Relations Review*, 50 (3), 478–492.

Budd, John W and Karen Mumford (2004) "Trade unions and family-friendly policies in Britain," *Industrial and Labor Relations Review*, 57 (2), 204–222.

Bureau of Labor Statistics (2019) *National Longitudinal Survey of Youth 1979 cohort, 1979-2018 (rounds 1-28),*, Produced and distributed by the Center for Human Resource Research, The Ohio State University.

Card, David (1988) "Longitudinal analysis of strike activity," *Journal of Labor Economics*, 6 (2), 147–176.

——— (1996) "The effect of unions on the structure of wages: A longitudinal analysis," *Econometrica: Journal of the Econometric Society*, 957–979.

Chaparro, Juan, Aaron Sojourner, and Matthew J Wiswall (2020) "Early childhood care and cognitive development," Working Paper 26813, National Bureau of Economic Research.

Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez (2014) "Where is the land of opportunity? The geography of intergenerational mobility in the United States," *The Quarterly Journal of Economics*, 129 (4), 1553–1623.

Cohodes, Sarah R, Daniel S Grossman, Samuel A Kleiner, and Michael F Lovenheim (2016) "The effect of child health insurance access on schooling: Evidence from public insurance expansions," *Journal of Human Resources*, 51 (3), 727–759.

Cooksey, Elizabeth C (2018) "Using the National Longitudinal Surveys of Youth (NLSY) to conduct life course analyses," in Halfon, Neal, Christopher B Forrest, Richard M Lerner, and Elaine M Faustman eds. *Handbook of Life Course Health Development*, 561–577: Springer, Cham.

Correia, Sergio, Paulo Guimarães, and Tom Zylkin (2020) "Fast Poisson estimation with high-dimensional fixed effects," *The Stata Journal*, 20 (1), 95–115.

Dahl, Gordon B and Lance Lochner (2012) "The impact of family income on child achievement: Evidence from the earned income tax credit," *American Economic Review*, 102 (5), 1927–56.

De Chaisemartin, Clément and Xavier d'Haultfoeuille (2020) "Two-way fixed effects estimators with heterogeneous treatment effects," *American Economic Review*, 110 (9), 2964–96.

DeFina, Robert and Lance Hannon (2019) "De-unionization and drug death rates," *Social Currents*, 6 (1), 4–13.

Duncan, Greg J and Katherine Magnuson (2013) "Investing in preschool programs," *Journal of Economic Perspectives*, 27 (2), 109–32.

Duncan, Greg J, Pamela A Morris, and Chris Rodrigues (2011) "Does money really matter? Estimating impacts of family income on young children's achievement with data from random-assignment experiments.," *Developmental psychology*, 47 (5), 1263.

Duncan, Greg J, Kathleen M Ziol-Guest, and Ariel Kalil (2010) "Early-childhood poverty and adult attainment, behavior, and health," *Child Development*, 81 (1), 306–325.

Eisenberg-Guyot, Jerzy, Stephen J Mooney, Wendy E Barrington, and Anjum Hajat (2021) "Does the union make us strong? Labor-union membership, self-rated health, and mental illness: a parametric g-formula approach," *American Journal of Epidemiology*, 190 (4), 630–641.

Elango, Sneha, Jorge Luis García, James J Heckman, and Andrés Hojman (2015) "Early childhood education," in Moffitt, Robert A. ed. *Economics of Means-Tested Transfer Programs in the United States, Volume 2*, 235–297: University of Chicago Press.

Epps, Sylvia R, Seoung Eun Park, Aletha C Huston, and Marika Ripke (2005) "A scale of positive social

behaviors," in Moore, Kristin Anderson and Laura H. Lippman eds. *What Do Children Need to Flourish?*, 163–179: Springer.

Farber, Henry S, Daniel Herbst, Ilyana Kuziemko, and Suresh Naidu (2021) "Unions and inequality over the twentieth century: New evidence from survey data," *The Quarterly Journal of Economics*, 136 (3), 1325–1385.

Flood, Sarah, Miriam King, Renae Rodgers, Steven Ruggles, Robert Warren, and Michael Westberry (2021) "Integrated Public Use Microdata Series (IPUMS), Current Population Survey: Version 9.0 [dataset]," https://doi.org/10.18128/D030.V9.0.

Frandsen, Brigham R (2021) "The surprising impacts of unionization: Evidence from matched employer-employee data," *Journal of Labor Economics*, 39 (4), 861–894.

Freeman, Richard B (1980) "The exit-voice tradeoff in the labor market: Unionism, job tenure, quits, and separations," *The Quarterly Journal of Economics*, 94 (4), 643–673.

Freeman, Richard, Eunice Han, David Madland, and Brendan V Duke (2015) "How does declining unionism affect the American middle class and intergenerational mobility?" Working Paper 21638, National Bureau of Economic Research.

Frymer, Paul and Jacob M Grumbach (2021) "Labor unions and white racial politics," *American Journal of Political Science*, 65 (1), 225–240.

Goodman-Bacon, Andrew (2021) "The long-run effects of childhood insurance coverage: Medicaid implementation, adult health, and labor market outcomes," *American Economic Review*, 111 (8), 2550–93.

Hendren, Nathaniel and Ben Sprung-Keyser (2020) "A unified welfare analysis of government policies," *The Quarterly Journal of Economics*, 135 (3), 1209–1318.

Hirsch, Barry T, David A Macpherson, and J Michael DuMond (1997) "Workers' Compensation Recipiency in Union and Nonunion Workplaces," *Industrial and Labor Relations Review*, 50 (2), 213–236.

Hoynes, Hilary, Diane Whitmore Schanzenbach, and Douglas Almond (2016) "Long-run impacts of childhood access to the safety net," *American Economic Review*, 106 (4), 903–34.

Institute for Social Research (2022) *Panel Study of Income Dynamics, public use dataset*, Produced and distributed by the Institute for Social Research, University of Michigan.

Institute of Medicine and National Research Council (2000) *From neurons to neighborhoods: The science of early childhood development*: National Academies Press.

Knepper, Matthew (2020) "From the fringe to the fore: Labor unions and employee compensation," *Review of Economics and Statistics*, 102 (1), 98–112.

Kulkarni, Abhir and Barry T Hirsch (2021) "Revisiting Union Wage and Job Loss Effects Using the Displaced Worker Surveys," *ILR Review*, 74 (4), 948–976.

Løken, Katrine V, Magne Mogstad, and Matthew Wiswall (2012) "What linear estimators miss: The effects of family income on child outcomes," *American Economic Journal: Applied Economics*, 4 (2), 1–35.

Park, Tae-Youn, Eun-Suk Lee, and John W Budd (2019) "What do unions do for mothers? Paid maternity leave use and the multifaceted roles of labor unions," *ILR Review*, 72 (3), 662–692.

Peterson, James L and Nicholas Zill (1986) "Marital disruption, parent-child relationships, and behavior problems in children," *Journal of Marriage and the Family*, 48 (2), 295–307.

Reeves, Aaron, Rachel Loopstra, and Valerie Tarasuk (2021) "Wage-Setting policies, employment, and food insecurity: A multilevel analysis of 492 078 people in 139 countries," *American Journal of Public Health*, 111 (4), 718–725.

Sastry, Narayan, Paula Fomby, and Katherine McGonagle (2018) "Using the Panel Study of Income Dynamics (PSID) to conduct life course health development analysis," in Halfon, Neal, Christopher B Forrest, Richard M Lerner, and Elaine M Faustman eds. *Handbook of Life Course Health Development*, 579–599: Springer, Cham.

Schildberg-Hörisch, Hannah (2016) "Parental employment and children's academic achievement," briefing paper, IZA World of Labor.

Sojourner, Aaron J (2013) "Do unions promote members' electoral office holding? Evidence from correlates of state legislatures' occupational shares," *ILR Review*, 66 (2), 467–486.

Sojourner, Aaron and Jooyoung Yang (2022) "Effects of union certification on workplace-safety enforcement: regression-discontinuity evidence," *ILR Review*, 75 (2), 373–401.

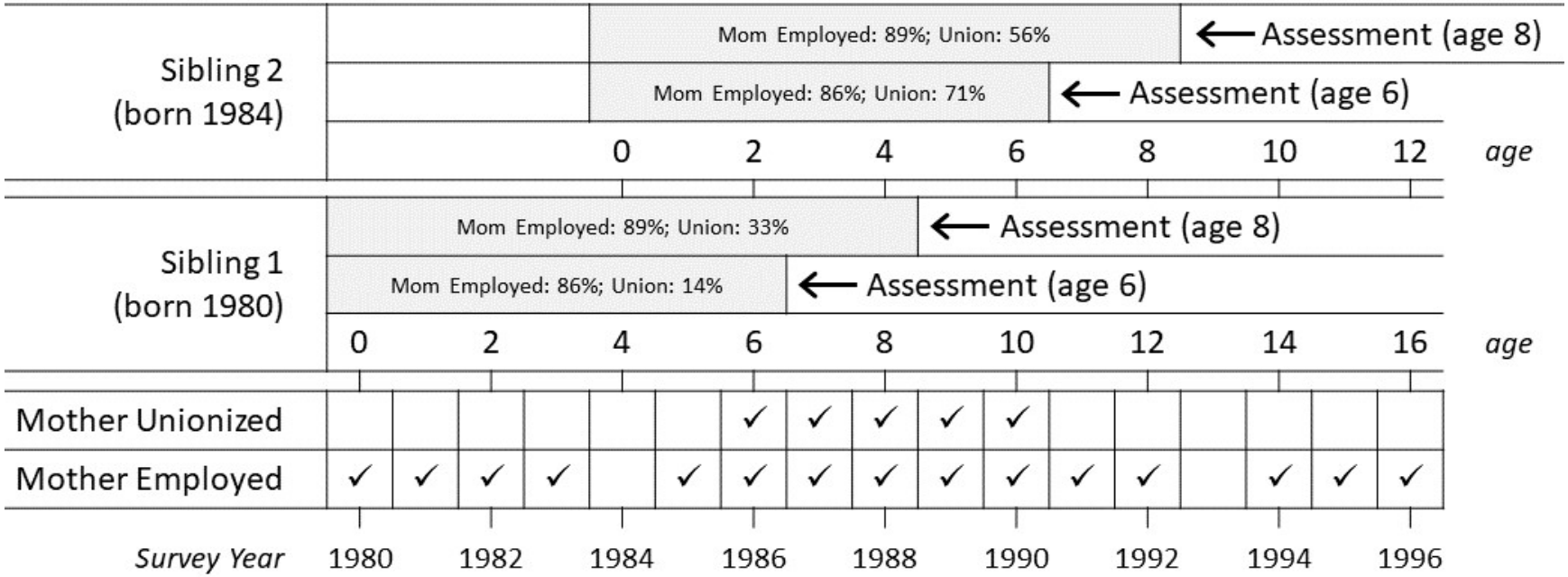
Terriquez, Veronica (2011) "Schools for democracy: Labor union participation and Latino immigrant parents' school-based civic engagement," *American Sociological Review*, 76 (4), 581–601.

VanHeuvelen, Tom and David Brady (2022) "Labor unions and American poverty," *ILR Review*, 75 (4), 891–917.

Ysseldyke, James E (1990) "Goodness of fit of the Woodcock-Johnson Psycho-Educational Battery-Revised to the Horn-Cattell Gf-Gc theory," *Journal of Psychoeducational Assessment*, 8 (3), 268–275.

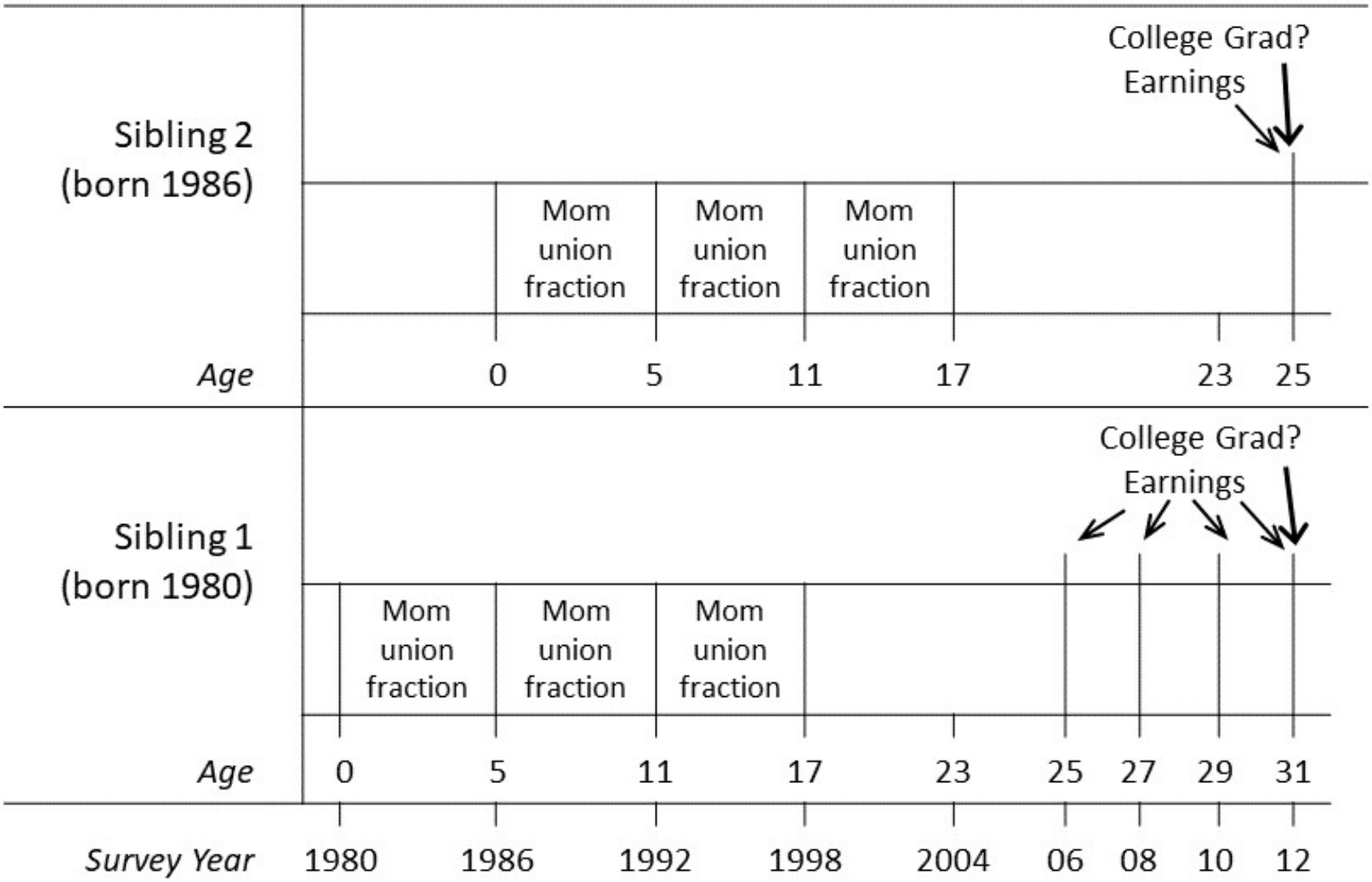
Zullo, Roland (2011) "Labor unions and charity," *Industrial and Labor Relations Review*, 64 (4), 699–711.

Figure 1: Sample Data Construction: NLSY79 Childhood Assessments



Note: This figure provides a hypothetical, simplified illustration of how a mother's employment and unionization history are used to construct the union treatment variable and parental employment control variable for modeling the outcomes from multiple assessments for two siblings. The actual number of assessments per offspring varies.

Figure 2: Sample Data Construction: NLSY79 Adult Outcomes



Note: This figure provides a hypothetical illustration of how a mother's unionization history are used to construct the union treatment variable and parental employment control variable for modeling the outcomes from multiple adult outcomes for two siblings. The actual number of earnings measurements per offspring varies; educational attainment is measured at the oldest observed age.

Figure 3: Age Distributions in the Childhood Assessments Samples

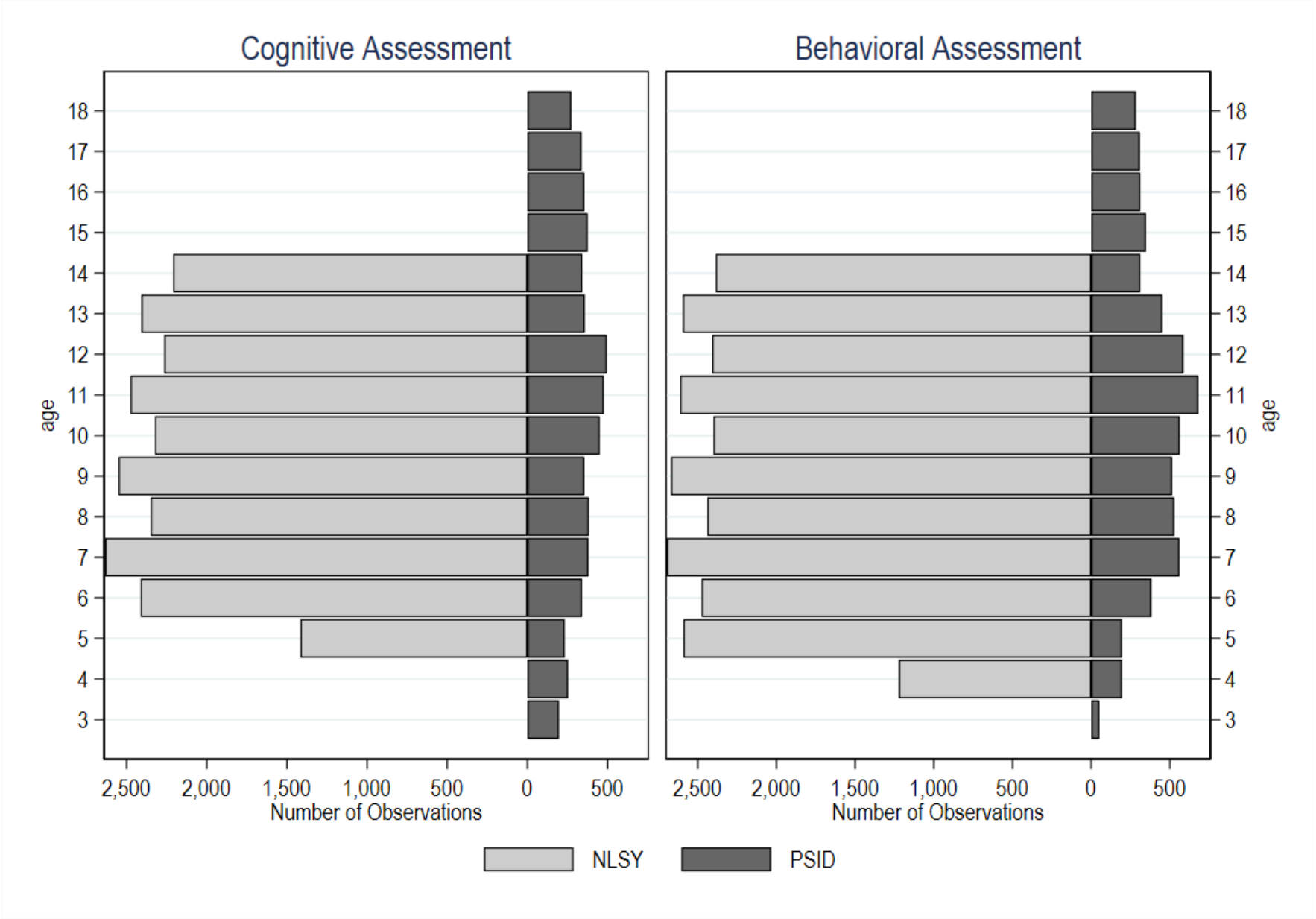


Figure 4: Age Distributions in the Adult Outcomes Samples

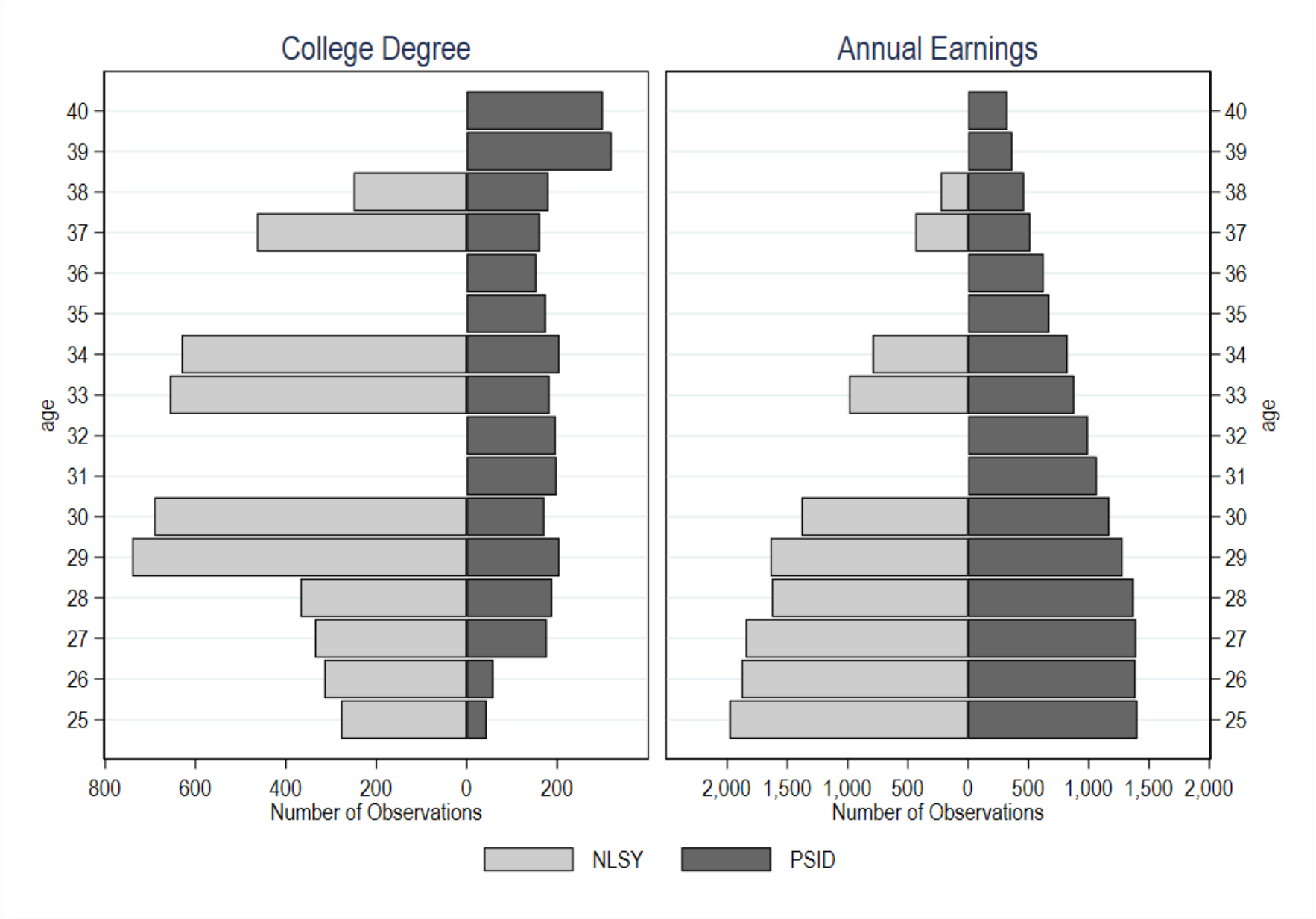
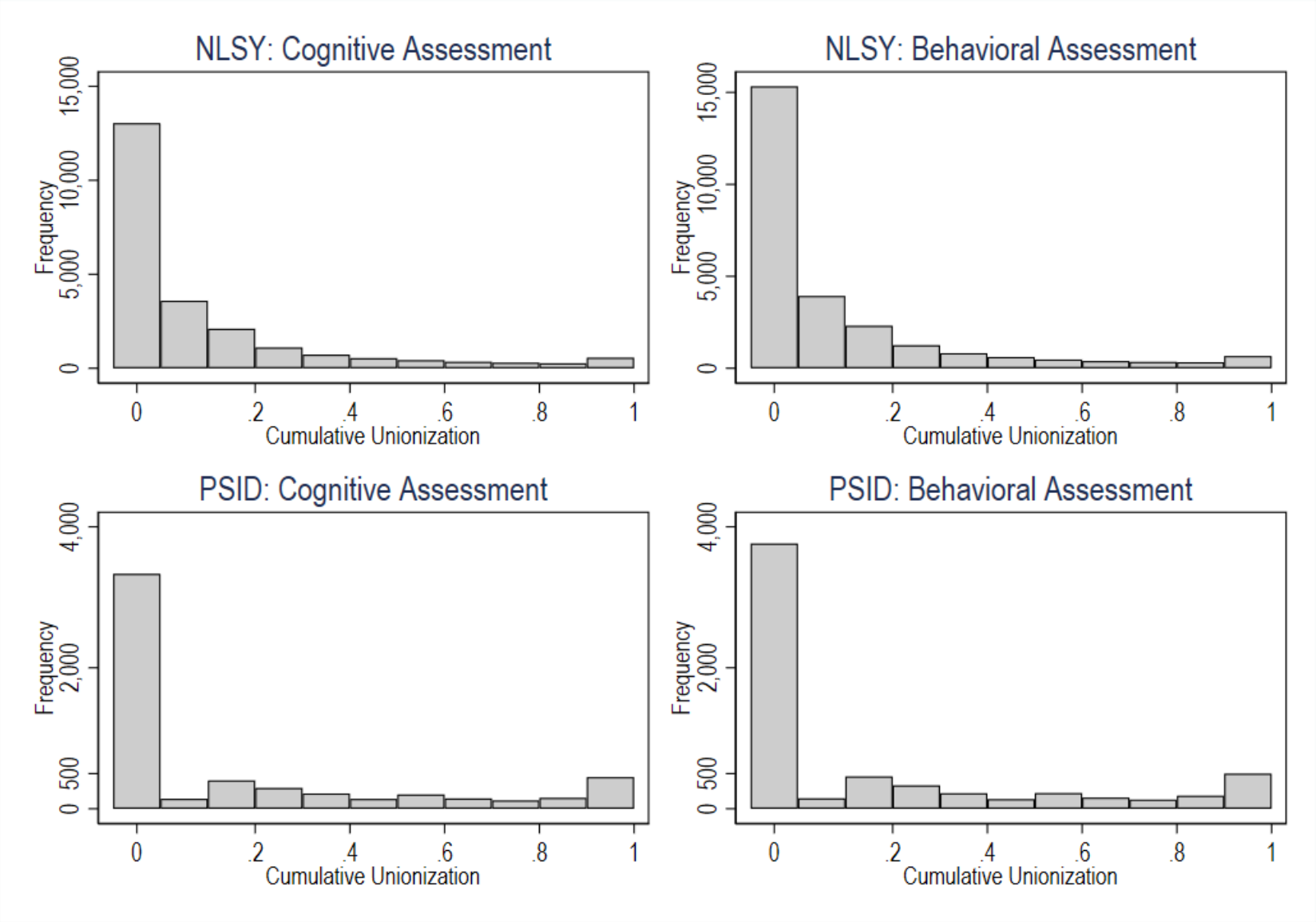
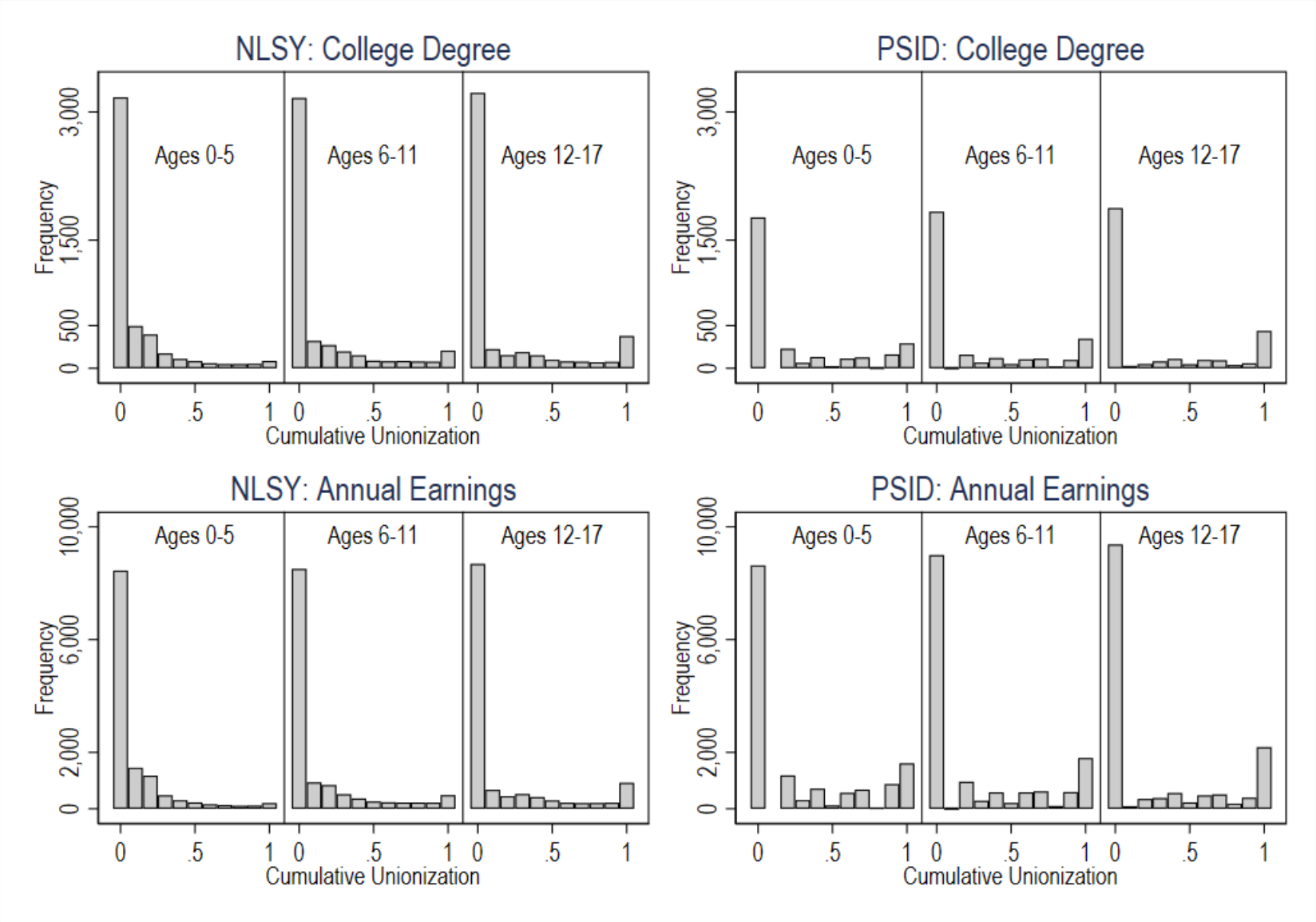


Figure 5: Union Exposure Distributions in the Childhood Assessments Samples



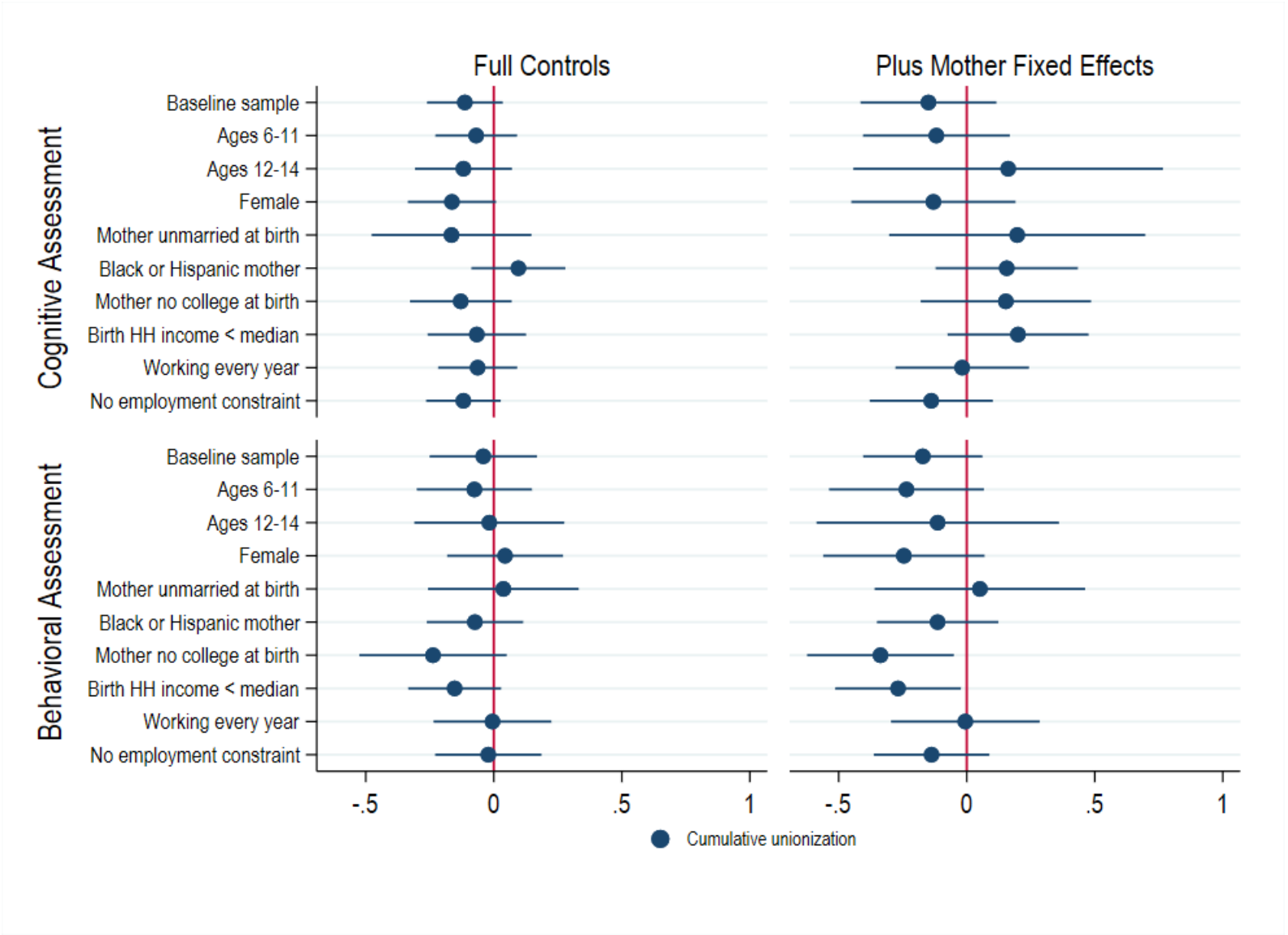
Note: The bars at zero only include observations with no union exposure.

Figure 6: Union Exposure Distributions in the Childhood Assessments Samples



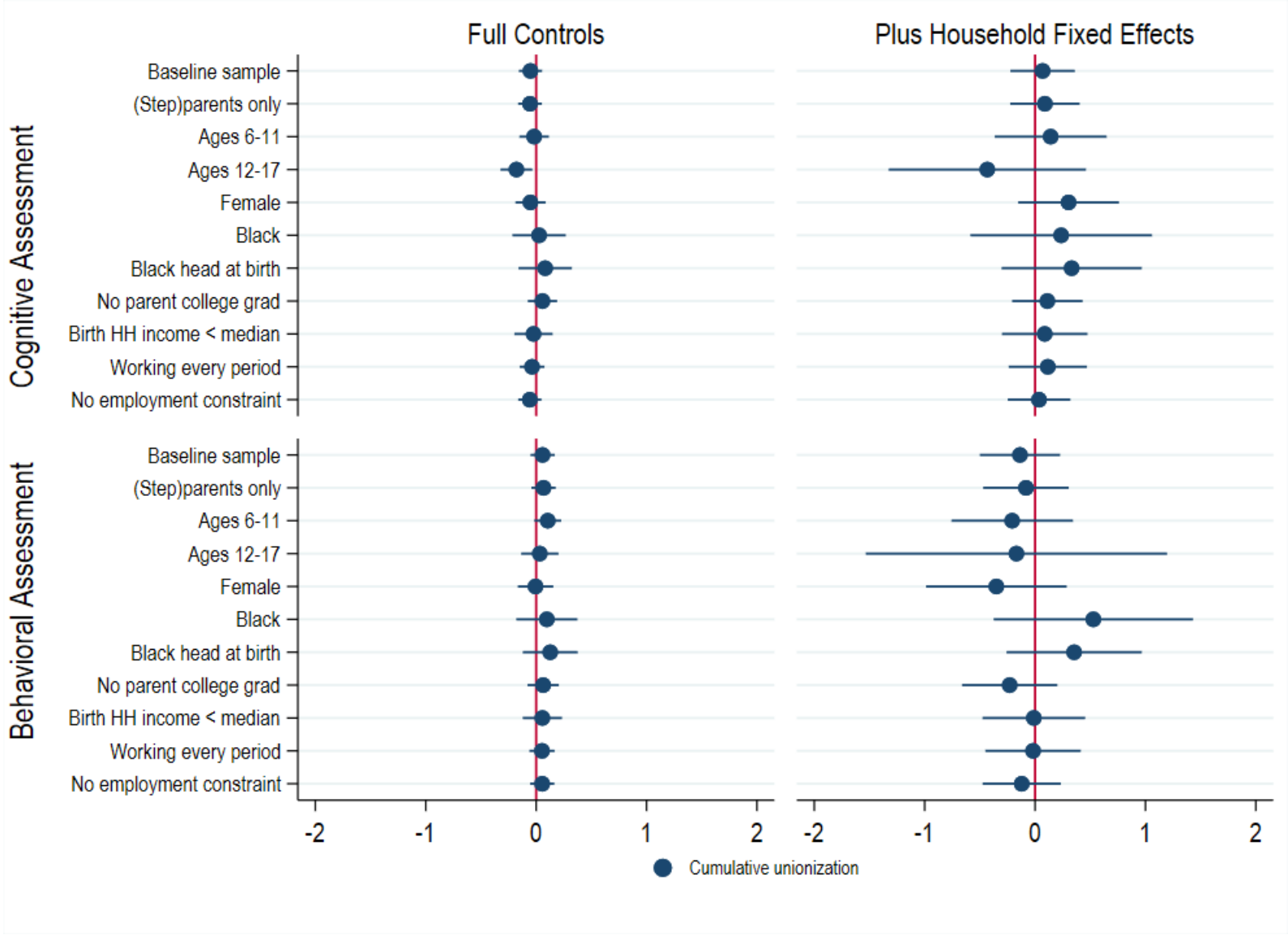
Note: The bars at zero only include observations with no union exposure.

Figure 7: Subsample Analyses: NLSY79 Childhood Assessments



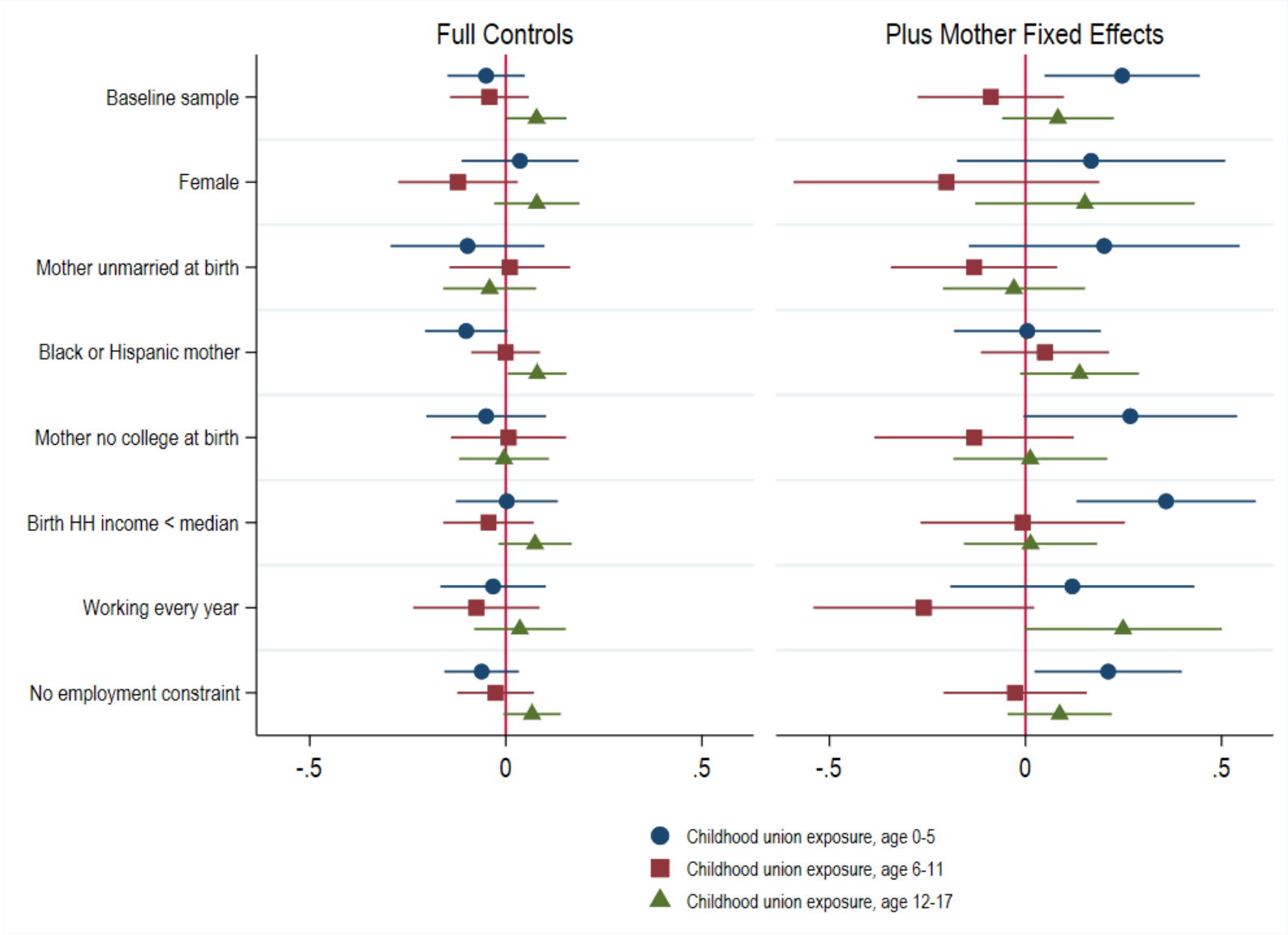
Note: The dots represent the point estimate for the cumulative union treatment variable in each subsample, and the bars represent its the 95 percent confidence interval. All regressions include full controls, and the models on the right-hand side of the figure also include mother fixed effects. The numerical results and sample sizes are shown in Appendix Table A1.

Figure 8: Subsample Analyses: PSID Childhood Assessments



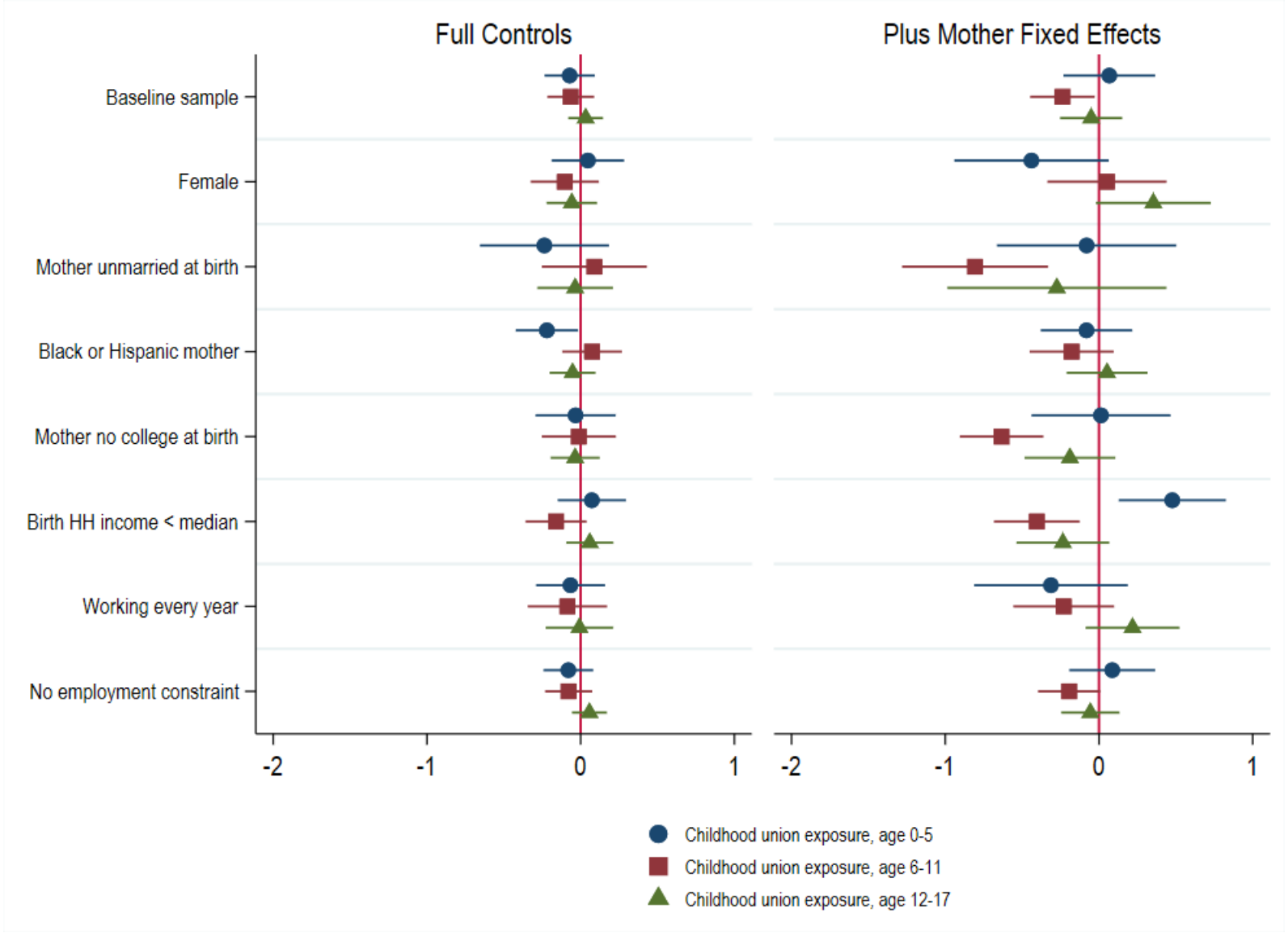
Note: The dots represent the point estimate for the cumulative union treatment variable in each subsample, and bars represent 95 percent confidence intervals. All regressions include full controls, and the models on the right-hand side of the figure also include household fixed effects. The numerical results and sample sizes are shown in Appendix Table A2.

Figure 9: NLSY79 Subsample Analyses: College Degree



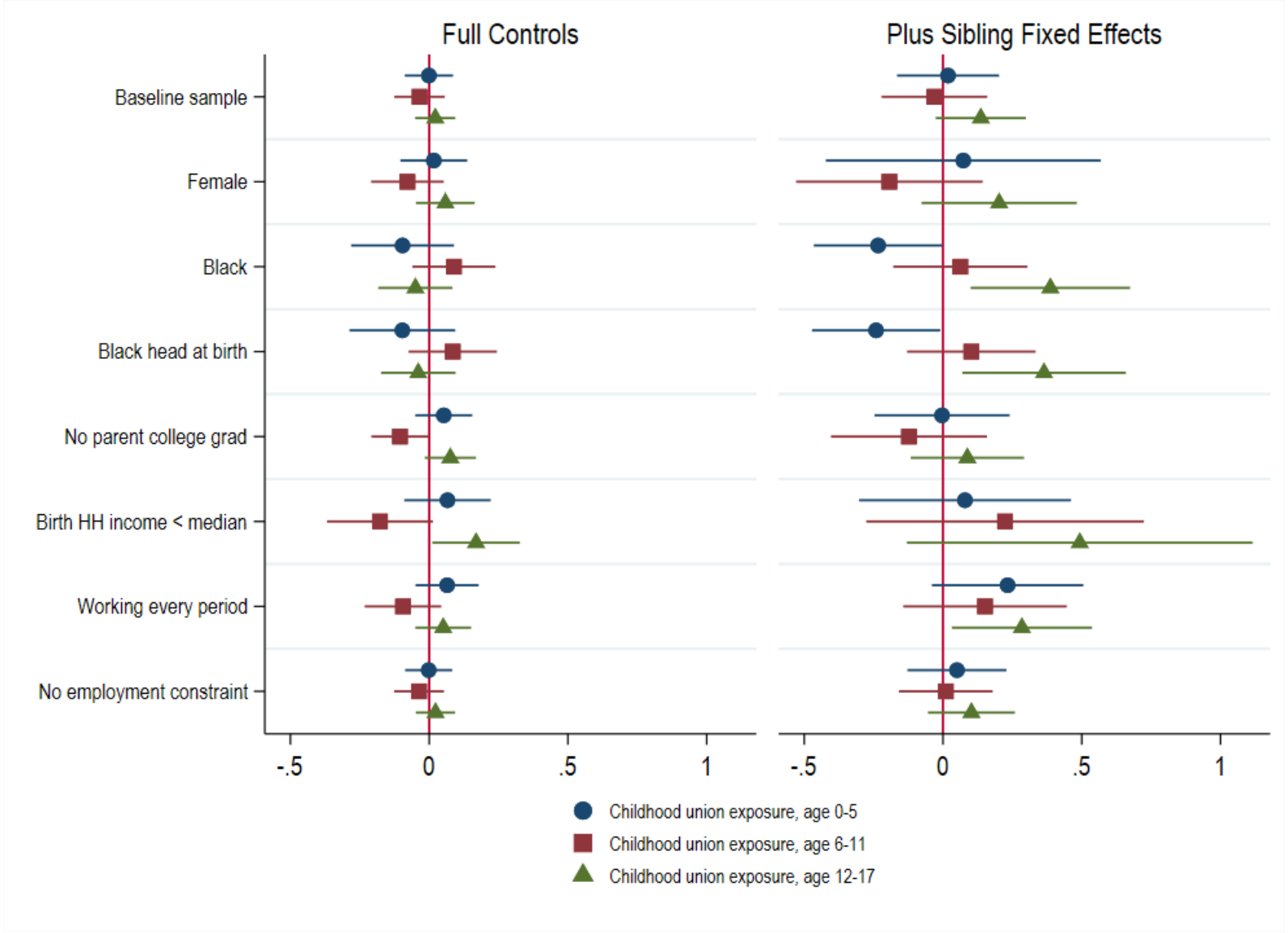
Note: The dots represent the point estimate for the cumulative union treatment variable for three age ranges in each subsample, and the bars represent 95 percent confidence intervals. All regressions include full controls, and the models on the right-hand side of the figure also include mother fixed effects. The numerical results and sample sizes are shown in Appendix Table A3.

Figure 10: NLSY79 Subsample Analyses: Annual Earnings



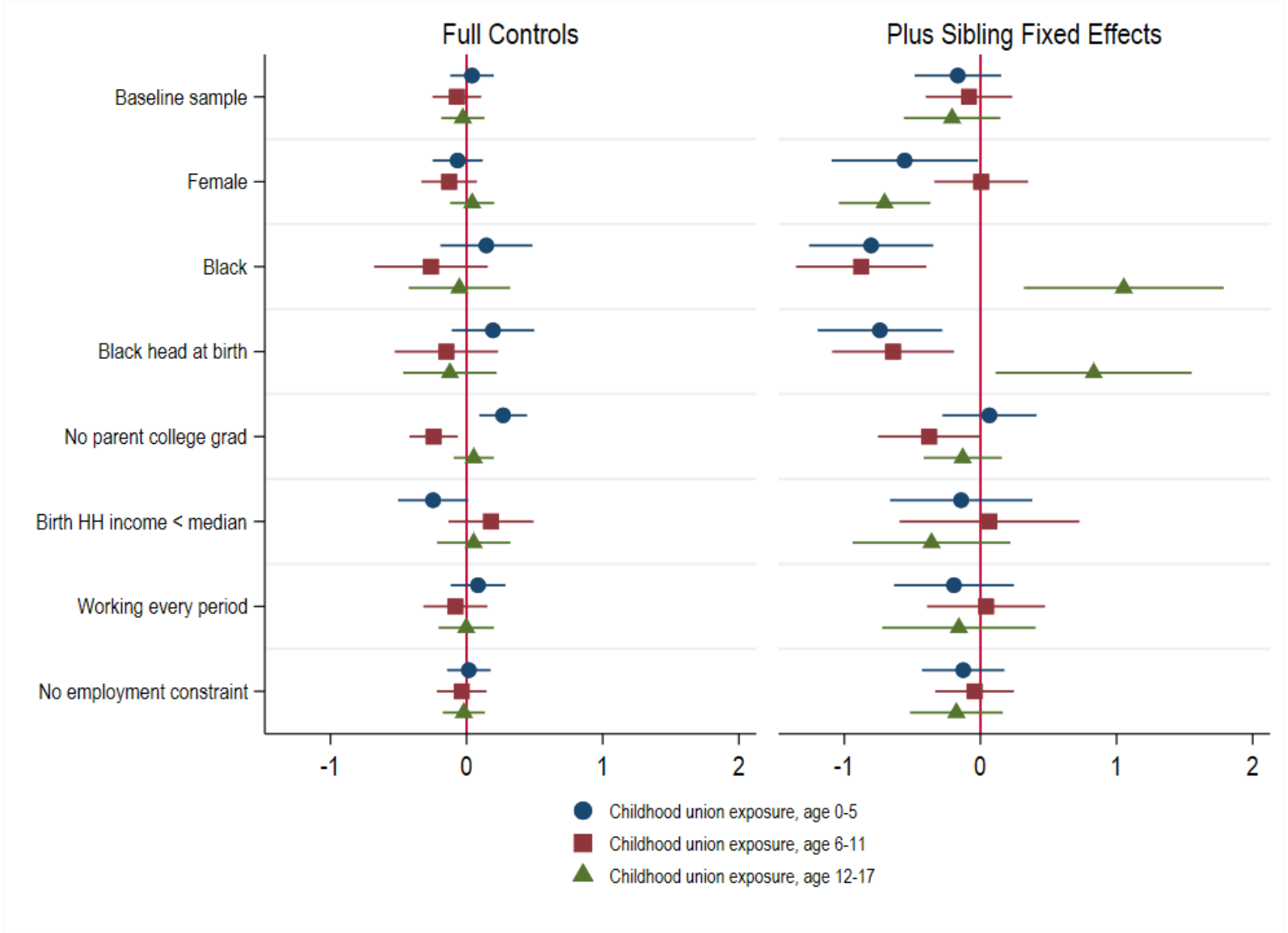
Note: The dots represent the point estimate for the cumulative union treatment variables for three age ranges in each subsample, and bars represent 95 percent confidence intervals. All Poisson regressions include full controls, and the models on the right-hand side of the figure also include mother fixed effects. The numerical results and sample sizes are shown in Appendix Table A3.

Figure 11: PSID Subsample Analyses: College Degree



Note: The dots represent the point estimate for the cumulative union treatment variable for three age ranges in each subsample, and bars represent 95 percent confidence interval. All regressions include full controls, and the models on the right-hand side of the figure also include sibling fixed effects. The numerical results and sample sizes are shown in Appendix Table A4.

Figure 12: PSID Subsample Analyses: Annual Earnings



Note: The dots represent the point estimate for the cumulative union treatment variables for three age ranges in each subsample, and the bars represent its the 95 percent confidence interval. All Poisson regressions include full controls, and the models on the right-hand side of the figure also include sibling fixed effects. The numerical results and sample sizes are shown in Appendix Table A4.

Table 1: Summary Statistics for the NLSY79 Analysis Samples

	Child Assessments	Adult Outcomes
	(1)	(2)
Panel A: Outcome and Treatment Variables		
PIAT cognitive assessment	0.090 (0.955)	—
Behavioral assessment	-0.271 (0.971)	—
Is a college graduate	—	0.265 (0.441)
Annual earnings (2011 dollars), ages 25-38	—	29,377 (25,748)
Cumulative union exposure	0.117 (0.227)	0.124 (0.211)
Cumulative union exposure, ages 0-5	—	0.087 (0.194)
Cumulative union exposure, ages 6-11	—	0.128 (0.257)
Cumulative union exposure, ages 12-17	—	0.156 (0.299)
Panel B: Control Variables		
Age	9.208 (3.012)	28.739 (3.334)
Female	0.495 (0.500)	0.508 (0.500)
Birth order of child	1.923 (0.946)	1.779 (0.875)

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	Child Assessments	Adult Outcomes
	(1)	(2)
Mother's age at child's birth		
19 or younger	0.089	0.153
	(0.285)	(0.360)
20-24 years old	0.306	0.452
	(0.461)	(0.498)
25-29 years old	0.304	0.312
	(0.460)	(0.463)
30-34 years old	0.198	0.080
	(0.398)	(0.272)
35 and older	0.104	0.002
	(0.305)	(0.048)
Mother's education at child's birth		
Not high school degree	0.156	0.223
	(0.363)	(0.417)
High school degree	0.448	0.488
	(0.497)	(0.500)
Some college	0.231	0.201
	(0.422)	(0.401)
College degree	0.164	0.088
	(0.371)	(0.283)
Unmarried mother at birth	0.222	0.265
	(0.416)	(0.441)
Black mother	0.286	0.325
	(0.452)	(0.468)
Hispanic mother	0.199	0.208
	(0.399)	(0.406)
Fraction of time mother employed	0.720	0.708
	(0.244)	(0.215)
Sample size (max)	27,548	13,209
Unique individuals (max)	6,862	4,731

Table 2: Summary Statistics for the PSID Analysis Samples

	CDS Sample	Adult PSID Sample
	(1)	(2)
Panel A: Outcome and Treatment Variables		
WJ-R cognitive assessment	0.082 (0.984)	—
Behavioral assessment	0.020 (0.973)	—
Has 16+ years of education	—	0.415 (0.493)
Annual earnings (2011 dollars), ages 25-40	—	45,560 (55,180)
Cumulative union exposure	0.200 (0.322)	0.246 (0.319)
Cumulative union exposure, ages 0-5	—	0.248 (0.360)
Cumulative union exposure, ages 6-11	—	0.242 (0.364)
Cumulative union exposure, ages 12-18	—	0.248 (0.379)
Panel B: Control Variables		
Age	10.638 (4.040)	30.609 (4.146)
Female	0.491 (0.500)	0.526 (0.499)
Black	0.378 (0.485)	0.355 (0.478)
White	0.569 (0.495)	0.609 (0.488)
Number of children in HH at birth	2.063 (1.080)	2.255 (1.075)

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	CDS Sample	Adult PSID Sample
	(1)	(2)
Parents' average age at child's birth		
19 or younger	0.081	0.054
	(0.273)	(0.226)
20-24 years old	0.224	0.237
	(0.417)	(0.425)
25-29 years old	0.302	0.353
	(0.459)	(0.478)
30-34 years old	0.261	0.239
	(0.439)	(0.426)
35 and older	0.132	0.117
	(0.339)	(0.322)
Parents' highest education at child's birth		
$<$ 12 years	0.105	0.082
	(0.307)	(0.274)
12 years	0.297	0.350
	(0.457)	(0.477)
13-15 years	0.305	0.275
	(0.461)	(0.446)
16+ years	0.293	0.293
	(0.455)	(0.455)
Single head at birth	0.199	0.124
	(0.400)	(0.330)
Black head at birth	0.376	0.353
	(0.484)	(0.478)
White head at birth	0.590	0.605
	(0.492)	(0.489)
Fraction of time in an employed household	0.931	0.914
	(0.131)	(0.128)
Sample size (max)	6,937	14,893
Unique individuals (max)	4,274	3,080

Table 3: Effect of Union Exposure on Cognitive and Behavioral Development: NLSY79

	PIAT Cognitive Assessment			Behavioral Assessment		
	(1)	(2)	(3)	(4)	(5)	(6)
Cumulative union exposure	–0.017	–0.113	–0.150	0.059	–0.041	–0.172
	(0.078)	(0.075)	(0.135)	(0.102)	(0.107)	(0.119)
Female		0.030	–0.012		0.089**	0.094***
		(0.034)	(0.034)		(0.039)	(0.031)
Birth order (1st child omitted)						
2nd child		–0.101***	–0.078**		–0.012	0.004
		(0.038)	(0.037)		(0.047)	(0.038)
3rd child		–0.206***	–0.113*		0.076	0.113*
		(0.054)	(0.068)		(0.069)	(0.061)
4th child		–0.371***	–0.180*		0.050	0.167**
		(0.061)	(0.098)		(0.091)	(0.085)
Mother's age at child's birth (< 20 years old omitted)						
20-24 years old		–0.063	–0.067		–0.050	0.021
		(0.052)	(0.067)		(0.055)	(0.068)
25-29 years old		–0.078	–0.211**		0.080	0.073
		(0.067)	(0.107)		(0.071)	(0.118)
30-34 years old		–0.023	–0.238		0.100	0.122
		(0.087)	(0.154)		(0.091)	(0.172)
35+ years old		0.068	–0.285		0.156	0.113
		(0.113)	(0.217)		(0.119)	(0.229)
Mother's education at child's birth (not high school degree omitted)						
High school degree		0.233***	0.125		0.040	0.005
		(0.047)	(0.098)		(0.055)	(0.085)
Some college		0.422***	0.050		0.139**	0.061
		(0.057)	(0.143)		(0.064)	(0.135)
College degree		0.702***	–0.193		0.181**	–0.246
		(0.065)	(0.188)		(0.073)	(0.212)
Unmarried mother at birth		–0.223***	0.025		–0.203***	–0.028
		(0.041)	(0.054)		(0.049)	(0.048)

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	PIAT Cognitive Assessment			Behavioral Assessment		
	(1)	(2)	(3)	(4)	(5)	(6)
Black mother		–0.410***			0.133***	
		(0.040)			(0.048)	
Hispanic mother		–0.242***			0.082	
		(0.047)			(0.064)	
Fraction of time mother employed		1.245	–0.379		0.242	0.512
		(0.896)	(0.662)		(0.767)	(0.698)
Fraction of time mother not employed		1.216	–0.384		0.120	0.511
		(0.890)	(0.671)		(0.763)	(0.706)
Child age controls	No	Yes	Yes	No	Yes	Yes
Year and region FE	No	Yes	Yes	No	Yes	Yes
Mother fixed effects	No	No	Yes	No	No	Yes
Sample size	23,043	23,043	22,724	26,494	26,494	26,189
No. of individuals	6,410	6,410	6,091	6,827	6,827	6,522

Notes. All regressions weighted by the child sample weight. Robust standard errors in parentheses are clustered by mother. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 4: Effect of Union Exposure on Cognitive and Behavioral Development: PSID

	WJ-R Cognitive Assessment			Behavioral Assessment		
	(1)	(2)	(3)	(4)	(5)	(6)
Cumulative union exposure	–0.056	–0.051	0.069	0.088	0.058	–0.136
	(0.059)	(0.054)	(0.149)	(0.055)	(0.056)	(0.186)
Female		–0.004	0.021		0.186***	0.277***
		(0.035)	(0.043)		(0.036)	(0.043)
Number of children in household at birth		–0.083***	–0.062*		0.009	–0.059*
		(0.019)	(0.035)		(0.019)	(0.033)
Parents' average age at child's birth (< 20 years old omitted)						
20-24 years old		0.126	0.248**		0.209**	0.336***
		(0.081)	(0.099)		(0.102)	(0.128)
25-29 years old		0.164**	0.327***		0.370***	0.439***
		(0.080)	(0.122)		(0.099)	(0.150)
30-34 years old		0.267***	0.348**		0.363***	0.479***
		(0.085)	(0.142)		(0.101)	(0.169)
35 and older		0.351***	0.341**		0.323***	0.533***
		(0.097)	(0.169)		(0.112)	(0.199)
Parents' highest education at child's birth (< 12 years omitted)						
12 years		0.228***	0.352**		–0.051	–0.402**
		(0.073)	(0.162)		(0.081)	(0.189)
13-15 years		0.475***	0.542***		–0.042	–0.010
		(0.075)	(0.180)		(0.083)	(0.233)
16+ years		0.818***	0.451		0.078	–0.316
		(0.078)	(0.341)		(0.084)	(0.313)
Single head at birth		–0.041	–0.186**		–0.100	0.039
		(0.067)	(0.092)		(0.077)	(0.116)
Black head at birth		–0.231**	0.525*		0.091	0.063
		(0.097)	(0.298)		(0.121)	(0.320)
White head at birth		0.276***	0.166		–0.163	0.293
		(0.085)	(0.151)		(0.111)	(0.211)
Fraction of years head(s) employed		0.091	–0.080		0.757***	–0.146
		(0.168)	(0.317)		(0.204)	(0.402)
Child age controls	No	Yes	Yes	No	Yes	Yes
Year and region FE	No	Yes	Yes	No	Yes	Yes
Household fixed effects	No	No	Yes	No	No	Yes
Sample size	5,605	5,605	5,059	6,258	6,258	5,564
No. of individuals	3,392	3,392	2,846	3,674	3,674	2,980

Notes. All regressions weighted by the child longitudinal weight. Robust standard errors in parentheses are clustered by household. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 5: Alternative Union Treatments: Childhood Assessments

Union Treatments	Cognitive Assessment		Behavioral Assessment	
	(1)	(2)	(3)	(4)
	Panel A: NLSY79			
Cumulative union exposure	–0.113	–0.150	–0.041	–0.172
(up to assessment age)	(0.075)	(0.135)	(0.107)	(0.119)
	23,043	22,724	26,494	26,189
5-year union exposure	–0.074	–0.036	–0.017	–0.127**
(up to assessment age)	(0.066)	(0.080)	(0.091)	(0.062)
	19,827	19,474	22,616	22,301
Union exposure during the	–0.053	–0.031	0.012	–0.034
assessment age	(0.056)	(0.053)	(0.076)	(0.042)
	20,574	20,228	23,526	23,201
Any union exposure during	–0.044	–0.010	0.014	–0.055*
the assessment age	(0.043)	(0.035)	(0.058)	(0.029)
	20,574	20,228	23,526	23,201
	Panel B: PSID			
Cumulative union exposure	–0.051	0.069	0.058	–0.136
(up to assessment age)	(0.054)	(0.149)	(0.056)	(0.186)
	5,605	5,059	6,258	5,564
5-year union exposure	–0.068	0.052	0.038	0.107
(up to assessment age)	(0.049)	(0.088)	(0.052)	(0.113)
	4,382	3,850	4,977	4,265
Single-age indicators of unionization (in one model)				
Unionized (step)father	–0.003	0.034	–0.053	–0.224**
(at assessment age)	(0.046)	(0.090)	(0.056)	(0.097)
Unionized (step)mother	–0.076	–0.019	0.165***	0.195**
(at assessment age)	(0.061)	(0.079)	(0.057)	(0.099)
	5,461	4,901	6,130	5,406
Controls				
Full controls	Yes	Yes	Yes	Yes
Mother/HH fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated unionization treatment coefficient and clustered standard error in parentheses, for various definitions of the treatment. Sample sizes for each model are reported in the last entry in each model. The controls in the alternative model include the controls from the baseline, but the employment controls and employment-related inclusion criteria are changed to match the treatment. The last PSID model includes controls for single head and dual earner households. All models are estimated using sampling weights. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 6: Effect of Childhood Union Exposure on Adult Outcomes: NLSY79

	College Degree			Annual Earnings		
	(1)	(2)	(3)	(4)	(5)	(6)
Union exposure, ages 0-5	0.024	–0.050	0.247**	0.016	–0.071	0.067
	(0.054)	(0.050)	(0.101)	(0.085)	(0.083)	(0.152)
Union exposure, ages 6-11	–0.038	–0.042	–0.088	–0.088	–0.064	–0.238**
	(0.054)	(0.051)	(0.095)	(0.077)	(0.078)	(0.107)
Union exposure, ages 12-17	0.155***	0.078**	0.083	0.064	0.033	–0.051
	(0.042)	(0.039)	(0.073)	(0.058)	(0.058)	(0.103)
Female		0.058***	0.047**		–0.301***	–0.332***
		(0.015)	(0.019)		(0.026)	(0.028)
Birth order (1st child omitted)						
2nd child		–0.035**	0.008		–0.061**	–0.055
		(0.016)	(0.026)		(0.030)	(0.036)
3rd child		–0.099***	0.001		–0.089**	–0.033
		(0.024)	(0.042)		(0.044)	(0.069)
4th child		–0.045	0.081		–0.279***	–0.105
		(0.039)	(0.067)		(0.065)	(0.109)
Mother's age at child's birth (< 20 years old omitted)						
20-24 years old		–0.053**	–0.024		–0.094*	–0.038
		(0.027)	(0.039)		(0.053)	(0.071)
25-29 years old		0.019	0.009		–0.025	0.101
		(0.038)	(0.065)		(0.067)	(0.100)
30-34 years old		0.081	0.100		0.010	0.248*
		(0.051)	(0.088)		(0.084)	(0.136)
35+ years old		0.020	0.246		0.429**	0.917**
		(0.128)	(0.165)		(0.197)	(0.385)
Mother's education at child's birth (not high school degree omitted)						
High school degree		0.083***	0.026		0.173***	0.239**
		(0.020)	(0.044)		(0.043)	(0.115)
Some college		0.237***	–0.006		0.272***	0.223
		(0.030)	(0.077)		(0.052)	(0.152)
College degree		0.491***	–0.160		0.449***	0.001
		(0.035)	(0.120)		(0.059)	(0.199)
Unmarried mother at birth		–0.078***	–0.047		–0.049	0.124**
		(0.021)	(0.041)		(0.040)	(0.060)

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	College Degree			Annual Earnings		
	(1)	(2)	(3)	(4)	(5)	(6)
Black mother		–0.069***			–0.219***	
		(0.019)			(0.035)	
Hispanic mother		–0.038*			–0.076**	
		(0.020)			(0.035)	
Mom employed fraction, ages 0-5		0.169	–0.249		–0.393	1.514
		(0.254)	(0.912)		(0.354)	(1.084)
Mom employed fraction, ages 6-11		–0.220	0.266		0.074	0.413
		(0.241)	(0.375)		(0.348)	(0.349)
Mom employed fraction, ages 12-17		–0.001	0.158		–0.087	–0.066
		(0.067)	(0.132)		(0.103)	(0.159)
Mom non-employed fraction, ages 0-5		0.144	–0.314		–0.442	1.535
		(0.251)	(0.912)		(0.357)	(1.081)
Mom non-employed fraction, ages 6-11		–0.243	0.290		–0.057	0.456
		(0.242)	(0.376)		(0.355)	(0.358)
Mom non-employed fraction, ages 12-17		0.005	0.212		–0.034	–0.010
		(0.074)	(0.142)		(0.118)	(0.190)
Child age controls	No	Yes	Yes	No	Yes	Yes
Year and region FE	No	Yes	Yes	No	Yes	Yes
Mother fixed effects	No	No	Yes	No	No	Yes
Sample size	4,730	4,730	3,592	12,814	12,814	12,418
No. of individuals	4,730	4,730	3,592	4,595	4,595	4,267

Notes. Annual earnings specification estimated by Poisson regression. All regressions weighted by the child sample weight. Robust standard errors in parentheses are clustered by mother (college degree) or child (earnings). Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 7: Effect of Childhood Union Exposure on Adult Outcomes: PSID

	College Education			Annual Earnings		
	(1)	(2)	(3)	(4)	(5)	(6)
Union exposure, ages 0-5	–0.033	–0.001	0.018	0.019	0.040	–0.166
	(0.053)	(0.044)	(0.094)	(0.083)	(0.082)	(0.162)
Union exposure, ages 6-11	–0.084	–0.035	–0.031	–0.114	–0.071	–0.084
	(0.057)	(0.046)	(0.097)	(0.088)	(0.091)	(0.162)
Union exposure, ages 12-17	0.082*	0.022	0.136	0.033	–0.028	–0.208
	(0.048)	(0.037)	(0.083)	(0.086)	(0.081)	(0.181)
Female		0.110***	0.099***		–0.410***	–0.389***
		(0.020)	(0.025)		(0.043)	(0.043)
Black		–0.044	–0.242		–0.031	–0.222
		(0.097)	(0.156)		(0.224)	(0.296)
White		0.057	–0.048		0.037	–0.198
		(0.060)	(0.072)		(0.114)	(0.130)
Number of children in household at birth		–0.013	0.012		–0.024	–0.019
		(0.010)	(0.015)		(0.024)	(0.028)
Parents' average age at child's birth (< 20 years old omitted)						
20-24 years old		–0.042	–0.017		–0.199*	–0.294***
		(0.057)	(0.075)		(0.114)	(0.110)
25-29 years old		–0.003	–0.088		–0.094	–0.410***
		(0.058)	(0.097)		(0.112)	(0.152)
30-34 years old		0.066	–0.082		–0.083	–0.605***
		(0.062)	(0.119)		(0.115)	(0.184)
35 and older		0.036	0.004		–0.148	–0.802***
		(0.065)	(0.146)		(0.116)	(0.236)
Parents' highest education at child's birth (< 12 years omitted)						
12 years		–0.007	–0.041		0.137*	0.252
		(0.044)	(0.065)		(0.078)	(0.164)
13-15 years		0.169***	0.103		0.247***	0.174
		(0.045)	(0.075)		(0.082)	(0.170)
16+ years		0.483***	0.289***		0.560***	0.142
		(0.047)	(0.090)		(0.083)	(0.181)
Single head at birth		0.069*	0.120**		0.025	0.019
		(0.039)	(0.059)		(0.094)	(0.133)

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	College Education			Annual Earnings		
	(1)	(2)	(3)	(4)	(5)	(6)
Black head at birth		0.065	–0.113		–0.181	–1.116***
		(0.087)	(0.194)		(0.201)	(0.312)
White head at birth		0.073	–0.047		0.018	–0.519*
		(0.054)	(0.103)		(0.106)	(0.297)
Fraction of years head(s) employed		0.291***	–0.029		1.052***	0.640
		(0.110)	(0.308)		(0.207)	(0.518)
Child age controls	No	Yes	Yes	No	Yes	Yes
Year and region FE	No	Yes	Yes	No	Yes	Yes
Sibling fixed effects	No	No	Yes	No	No	Yes
Sample size	2,923	2,923	2,213	14,739	14,739	13,852
No. of individuals	2,923	2,923	2,213	3,055	3,055	2,815

Notes. Annual earnings specification estimated by Poisson regression. All regressions weighted by the child longitudinal weight. Robust standard errors in parentheses are clustered by siblings (college degree) or child (earnings). Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 8: Alternative Union Treatments: Adult NLSY79 Assessments

Union Treatments	College Degree		Annual Earnings	
	(1)	(2)	(3)	(4)
Baseline specification				
Union exposure, ages 0-5	–0.050	0.247**	–0.071	0.067
	(0.050)	(0.101)	(0.083)	(0.152)
Union exposure, ages 6-11	–0.042	–0.088	–0.064	–0.238**
	(0.051)	(0.095)	(0.078)	(0.107)
Union exposure, ages 12-17	0.078**	0.083	0.033	–0.051
	(0.039)	(0.073)	(0.058)	(0.103)
	4,730	3,592	12,814	12,418
Single-age indicators of unionization				
Unionized mother	–0.019	0.069	–0.066	–0.141*
when child is 5	(0.026)	(0.051)	(0.044)	(0.072)
Unionized mother	0.013	–0.003	0.006	–0.039
when child is 11	(0.027)	(0.058)	(0.049)	(0.066)
Unionized mother	0.018	0.034	0.004	0.037
when child is 17	(0.026)	(0.043)	(0.046)	(0.066)
	3,277	2,159	8,798	8,461
Controls				
Full controls	Yes	Yes	Yes	Yes
Mother fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated unionization treatment coefficient and clustered standard error in parentheses, for various definitions of the treatment. Sample sizes for each model are reported in the last entry in each model. The controls in the alternative model include the controls from the baseline. The alternative model is conditioned on the mother being employed at each of the three ages. All models are estimated using sampling weights. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 9: Alternative Union Treatments: Adult PSID Assessments

Union Treatments	College Degree		Annual Earnings	
	(1)	(2)	(3)	(4)
Baseline specification				
Union exposure, ages 0-5	–0.001	0.018	0.040	–0.166
	(0.044)	(0.094)	(0.082)	(0.162)
Union exposure, ages 6-11	–0.035	–0.031	–0.071	–0.084
	(0.046)	(0.097)	(0.091)	(0.162)
Union exposure, ages 12-17	0.022	0.136	–0.028	–0.208
	(0.037)	(0.083)	(0.081)	(0.181)
	2,923	2,213	14,739	13,852
Single-age indicators of unionization				
Unionized (step)father	–0.015	0.064	0.016	0.046
when child is 5	(0.039)	(0.071)	(0.071)	(0.097)
Unionized (step)mother	–0.036	–0.076	0.101	0.272**
when child is 5	(0.047)	(0.087)	(0.082)	(0.116)
Unionized (step)father	0.052	0.040	0.006	0.093
when child is 11	(0.045)	(0.085)	(0.085)	(0.173)
Unionized (step)mother	–0.063	–0.151*	–0.167*	–0.241**
when child is 11	(0.044)	(0.085)	(0.089)	(0.120)
Unionized (step)father	–0.075	0.053	–0.086	0.214**
when child is 17	(0.046)	(0.076)	(0.087)	(0.097)
Unionized (step)mother	0.105**	0.163**	0.104	0.056
when child is 17	(0.043)	(0.072)	(0.094)	(0.178)
	2,094	1,340	10,586	9,789
Controls				
Full controls	Yes	Yes	Yes	Yes
Sibling fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated unionization treatment coefficient and clustered standard error in parentheses, for various definitions of the treatment. Sample sizes for each model are reported in the last entry in each model. The controls in the alternative model include the controls from the baseline. The alternative model is conditioned on at least one head being employed at each of the three ages, and includes controls for single head and dual earner households at each of the three ages. All models are estimated using sampling weights. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table 10: Unionization as an Adult Outcome: PSID

	Mean Union Coverage			Ever Unionized		
	(1)	(2)	(3)	(4)	(5)	(6)
Union exposure by age range						
Union exposure, ages 0-5	0.029	0.026	0.019	0.052	0.044	–0.021
	(0.027)	(0.026)	(0.064)	(0.042)	(0.040)	(0.106)
Union exposure, ages 6-11	–0.023	–0.023	–0.080	–0.040	–0.041	–0.131
	(0.031)	(0.031)	(0.080)	(0.047)	(0.047)	(0.108)
Union exposure, ages 12-17	0.084***	0.079***	–0.004	0.107***	0.100***	–0.059
	(0.026)	(0.025)	(0.069)	(0.037)	(0.037)	(0.097)
Dependent variable mean	0.113	0.113	0.114	0.193	0.193	0.197
Sample size	2,508	2,508	1,804	2,508	2,508	1,804
Overall childhood union exposure						
Union exposure, ages 0-17	0.088***	0.082***	–0.087	0.119***	0.106***	–0.230
	(0.024)	(0.024)	(0.141)	(0.032)	(0.032)	(0.205)
Dependent variable mean	0.114	0.114	0.113	0.194	0.194	0.196
Sample size	2,593	2,593	1,851	2,593	2,593	1,851
Controls						
Full controls	No	Yes	Yes	No	Yes	Yes
Sibling fixed effects	No	No	Yes	No	No	Yes

Notes. The dependent variables are the average unionization rate of PSID offspring starting at age 25 (columns 1-3) or an indicator for whether a PSID offspring was unionized at any time starting at age 25 (columns 4-6). All regressions weighted by the child longitudinal weight. Robust standard errors in parentheses are clustered by siblings. All models use the same control variables as in Table 7. Significance levels are * 0.10, ** 0.05, *** 0.01.

7 Appendix

Table A1: Subsample Analyses: NLSY79 Childhood Assessments

Subsamples	Cognitive Assessment		Behavioral Assessment	
	(1)	(2)	(3)	(4)
Baseline sample	–0.113	–0.150	–0.041	–0.172
	(0.075)	(0.135)	(0.107)	(0.119)
	23,043	22,724	26,494	26,189
Ages 6-11	–0.069	–0.118	–0.076	–0.235
	(0.081)	(0.146)	(0.115)	(0.154)
	14,744	14,399	15,292	14,954
Ages 12-14	–0.118	0.162	–0.017	–0.113
	(0.097)	(0.308)	(0.149)	(0.241)
	6,883	6,175	7,388	6,665
Female	–0.163*	–0.130	0.044	–0.245
	(0.088)	(0.164)	(0.115)	(0.161)
	11,537	11,293	13,127	12,894
Mother unmarried at birth	–0.165	0.197	0.038	0.051
	(0.159)	(0.255)	(0.150)	(0.210)
	5,199	5,099	5,849	5,749
Black or Hispanic mother	0.096	0.156	–0.074	–0.114
	(0.094)	(0.142)	(0.096)	(0.121)
	11,243	11,123	12,731	12,635
Mother no college at birth	–0.129	0.153	–0.237	–0.337**
	(0.101)	(0.170)	(0.147)	(0.146)
	12,361	12,074	14,182	13,928
Birth HH income $<$ median	–0.066	0.200	–0.153*	–0.268**
	(0.098)	(0.140)	(0.093)	(0.125)
	14,648	14,383	16,659	16,430
Working every year	–0.063	–0.018	–0.005	–0.006
	(0.079)	(0.133)	(0.117)	(0.148)
	11,689	11,448	13,878	13,617
No employment constraint	–0.119	–0.138	–0.022	–0.137
	(0.074)	(0.123)	(0.106)	(0.115)
	31,126	30,836	36,068	35,817
Controls				
Full controls	Yes	Yes	Yes	Yes
Family fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated cumulative unionization treatment coefficient, clustered standard error in parentheses, and the sample size, for various subsamples as indicated by each row label. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A2: Subsample Analyses: PSID Childhood Assessments

Subsamples	Cognitive Assessment		Behavioral Assessment	
	(1)	(2)	(3)	(4)
Baseline sample	–0.051	0.069	0.058	–0.136
	(0.054)	(0.149)	(0.056)	(0.186)
	5,605	5,059	6,258	5,564
(Step)parents only	–0.056	0.089	0.067	–0.082
	(0.055)	(0.161)	(0.056)	(0.197)
	4,982	4,455	5,613	4,951
Ages 6-11	–0.018	0.142	0.105*	–0.207
	(0.068)	(0.258)	(0.062)	(0.281)
	2,561	1,662	3,423	2,195
Ages 12-17	–0.179**	–0.432	0.034	–0.169
	(0.074)	(0.455)	(0.086)	(0.695)
	2,202	1,315	2,095	1,222
Female	–0.051	0.304	–0.005	–0.350
	(0.070)	(0.233)	(0.082)	(0.325)
	2,759	2,301	3,088	2,531
Black	0.027	0.237	0.097	0.528
	(0.123)	(0.419)	(0.141)	(0.460)
	1,845	1,667	1,892	1,800
Black head at birth	0.082	0.332	0.128	0.354
	(0.123)	(0.324)	(0.127)	(0.312)
	2,215	1,949	2,312	2,059
No parent college grad	0.057	0.111	0.064	–0.230
	(0.068)	(0.163)	(0.072)	(0.220)
	3,979	3,562	4,402	3,868
Birth HH income $<$ median	–0.024	0.088	0.056	–0.011
	(0.088)	(0.197)	(0.091)	(0.237)
	3,425	2,987	3,778	3,271
Working every period	–0.037	0.116	0.053	–0.018
	(0.057)	(0.180)	(0.058)	(0.220)
	4,051	3,602	4,571	3,980
No employment constraint	–0.057	0.036	0.055	–0.121
	(0.054)	(0.145)	(0.056)	(0.181)
	6,277	5,733	7,006	6,319
Controls				
Full controls	Yes	Yes	Yes	Yes
Family fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated cumulative unionization treatment coefficient, clustered standard error in parentheses, and the sample size, for various subsamples as indicated by each row label. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A3: Subsample Analyses: NLSY79 Adult Outcomes

Subsamples	College Degree		Annual Earnings	
	(1)	(2)	(3)	(4)
Baseline sample				
Union exposure,	–0.050	0.247**	–0.071	0.067
ages 0-5	(0.050)	(0.101)	(0.083)	(0.152)
Union exposure,	–0.042	–0.088	–0.064	–0.238**
ages 6-11	(0.051)	(0.095)	(0.078)	(0.107)
Union exposure,	0.078**	0.083	0.033	–0.051
ages 12-17	(0.039)	(0.073)	(0.058)	(0.103)
	4,730	3,592	12,814	12,418
Female				
Union exposure,	0.036	0.167	0.047	–0.439*
ages 0-5	(0.076)	(0.174)	(0.120)	(0.256)
Union exposure,	–0.122	–0.202	–0.103	0.052
ages 6-11	(0.078)	(0.198)	(0.113)	(0.198)
Union exposure,	0.079	0.152	–0.058	0.354*
ages 12-17	(0.055)	(0.143)	(0.084)	(0.191)
	2,377	1,082	6,509	6,107
Mother unmarried at birth				
Union exposure,	–0.098	0.201	–0.236	–0.080
ages 0-5	(0.100)	(0.175)	(0.214)	(0.298)
Union exposure,	0.010	–0.131	0.089	–0.806***
ages 6-11	(0.078)	(0.108)	(0.174)	(0.242)
Union exposure,	–0.041	–0.029	–0.036	–0.274
ages 12-17	(0.060)	(0.092)	(0.126)	(0.364)
	1,195	677	3,367	3,228
Black or Hispanic mother				
Union exposure,	–0.101*	0.005	–0.220**	–0.081
ages 0-5	(0.054)	(0.095)	(0.104)	(0.152)
Union exposure,	–0.001	0.050	0.074	–0.177
ages 6-11	(0.045)	(0.083)	(0.099)	(0.140)
Union exposure,	0.080**	0.138*	–0.052	0.053
ages 12-17	(0.038)	(0.077)	(0.076)	(0.134)
	2,506	1,953	6,776	6,599
Mother no college at birth				
Union exposure,	–0.050	0.267*	–0.033	0.013
ages 0-5	(0.078)	(0.139)	(0.133)	(0.231)
Union exposure,	0.007	–0.131	–0.012	–0.634***
ages 6-11	(0.075)	(0.130)	(0.123)	(0.139)
Union exposure,	–0.005	0.012	–0.036	–0.189
ages 12-17	(0.058)	(0.100)	(0.082)	(0.151)
	2,331	1,764	6,550	6,337

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Subsamples	College Degree		Annual Earnings	
	(1)	(2)	(3)	(4)
Birth HH income < median				
Union exposure, ages 0-5	0.003	0.359***	0.073	0.477***
	(0.066)	(0.117)	(0.113)	(0.178)
Union exposure, ages 6-11	–0.044	–0.007	–0.160	–0.404***
	(0.059)	(0.133)	(0.101)	(0.142)
Union exposure, ages 12-17	0.075	0.013	0.059	–0.235
	(0.048)	(0.087)	(0.078)	(0.154)
	3,277	2,230	9,273	8,956
Working every year				
Union exposure, ages 0-5	–0.033	0.119	–0.066	–0.312
	(0.069)	(0.158)	(0.115)	(0.255)
Union exposure, ages 6-11	–0.075	–0.259*	–0.086	–0.229
	(0.082)	(0.143)	(0.132)	(0.167)
Union exposure, ages 12-17	0.036	0.249*	–0.008	0.218
	(0.060)	(0.128)	(0.112)	(0.156)
	1,740	1,125	4,410	4,217
No employment constraint				
Union exposure, ages 0-5	–0.062	0.211**	–0.080	0.086
	(0.049)	(0.096)	(0.083)	(0.143)
Union exposure, ages 6-11	–0.026	–0.026	–0.078	–0.194*
	(0.050)	(0.093)	(0.078)	(0.103)
Union exposure, ages 12-17	0.067*	0.087	0.057	–0.056
	(0.037)	(0.068)	(0.058)	(0.097)
	6,006	4,805	16,281	15,788
Controls				
Full controls	Yes	Yes	Yes	Yes
Family fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated coefficient and clustered standard error in parentheses for the age 0-5, 6-11, or 12-17 union treatment, grouped by subsamples. The sample size follows the last treatment for each subsample. Annual earnings specification estimated by Poisson regression. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A4: Subsample Analyses: PSID Adult Outcomes

Subsamples	College Education		Annual Earnings	
	(1)	(2)	(3)	(4)
Baseline sample				
Union exposure,	–0.001	0.018	0.040	–0.166
ages 0-5	(0.044)	(0.094)	(0.082)	(0.162)
Union exposure,	–0.035	–0.031	–0.071	–0.084
ages 6-11	(0.046)	(0.097)	(0.091)	(0.162)
Union exposure,	0.022	0.136	–0.028	–0.208
ages 12-17	(0.037)	(0.083)	(0.081)	(0.181)
	2,923	2,213	14,739	13,852
Female				
Union exposure,	0.017	0.073	–0.066	–0.556**
ages 0-5	(0.061)	(0.252)	(0.094)	(0.274)
Union exposure,	–0.078	–0.193	–0.128	0.006
ages 6-11	(0.067)	(0.171)	(0.104)	(0.176)
Union exposure,	0.058	0.203	0.041	–0.704***
ages 12-17	(0.054)	(0.142)	(0.083)	(0.172)
	1,497	718	7,778	7,298
Black				
Union exposure,	–0.096	–0.234**	0.145	–0.803***
ages 0-5	(0.094)	(0.118)	(0.172)	(0.233)
Union exposure,	0.089	0.062	–0.262	–0.875***
ages 6-11	(0.076)	(0.123)	(0.213)	(0.244)
Union exposure,	–0.050	0.387***	–0.053	1.053***
ages 12-17	(0.068)	(0.146)	(0.190)	(0.375)
	1,103	787	5,221	4,894
Black head at birth				
Union exposure,	–0.097	–0.241**	0.194	–0.738***
ages 0-5	(0.097)	(0.117)	(0.155)	(0.234)
Union exposure,	0.085	0.102	–0.148	–0.642***
ages 6-11	(0.081)	(0.118)	(0.194)	(0.228)
Union exposure,	–0.039	0.364**	–0.122	0.832**
ages 12-17	(0.068)	(0.150)	(0.175)	(0.368)
	1,098	774	5,191	4,851

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Subsamples	College Education		Annual Earnings	
	(1)	(2)	(3)	(4)
No parent college grad				
Union exposure,	0.053	–0.003	0.268***	0.067
ages 0-5	(0.052)	(0.124)	(0.090)	(0.177)
Union exposure,	–0.105**	–0.122	–0.242***	–0.377**
ages 6-11	(0.053)	(0.143)	(0.091)	(0.192)
Union exposure,	0.076	0.088	0.053	–0.130
ages 12-17	(0.047)	(0.104)	(0.075)	(0.147)
	2,084	1,474	10,415	9,755
Birth HH income < median				
Union exposure,	0.066	0.079	–0.246*	–0.141
ages 0-5	(0.079)	(0.193)	(0.132)	(0.266)
Union exposure,	–0.177*	0.224	0.179	0.067
ages 6-11	(0.097)	(0.253)	(0.159)	(0.337)
Union exposure,	0.169**	0.493	0.052	–0.359
ages 12-17	(0.080)	(0.316)	(0.137)	(0.296)
	717	391	3,725	3,478
Working every period				
Union exposure,	0.065	0.233*	0.084	–0.194
ages 0-5	(0.058)	(0.139)	(0.102)	(0.224)
Union exposure,	–0.094	0.152	–0.082	0.041
ages 6-11	(0.070)	(0.150)	(0.120)	(0.221)
Union exposure,	0.051	0.284**	–0.003	–0.158
ages 12-17	(0.051)	(0.128)	(0.104)	(0.287)
	1,534	1,110	7,876	7,387
No employment constraint				
Union exposure,	–0.002	0.050	0.016	–0.126
ages 0-5	(0.043)	(0.091)	(0.081)	(0.155)
Union exposure,	–0.036	0.010	–0.036	–0.043
ages 6-11	(0.046)	(0.086)	(0.093)	(0.147)
Union exposure,	0.023	0.102	–0.020	–0.177
ages 12-17	(0.036)	(0.080)	(0.079)	(0.174)
	3,341	2,562	16,754	15,737
Controls				
Full controls	Yes	Yes	Yes	Yes
Sibling fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated coefficient and clustered standard error in parentheses for the age 0-5, 6-11, or 12-17 union treatment, grouped by subsamples. The sample size follows the last treatment for each subsample. Annual earnings specification estimated by Poisson regression. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A5: The Household Union Exposure
Earnings Premium: PSID

Alternative Age Ranges	Linear Regression		Poisson Regression	
	(1)	(2)	(3)	(4)
Income and unionization averaged over ages 0-5				
Union exposure,	4538***	7325***	0.150***	0.278***
ages 0-5	(800)	(1262)	(0.025)	(0.047)
Dependent variable mean	25,192	25,172	25,192	25,511
Treatment mean	0.205	0.206	0.205	0.208
Sample size	8,334	7,070	8,334	6,976
Income and unionization averaged over ages 6-11				
Union exposure,	4193***	4458***	0.145***	0.162***
ages 6-11	(969)	(1496)	(0.029)	(0.053)
Dependent variable mean	24,908	24,461	24,908	24,796
Treatment mean	0.223	0.228	0.223	0.231
Sample size	7,918	6,791	7,918	6,699
Income and unionization averaged over ages 12-17				
Union exposure,	2344**	6125***	0.095***	0.218***
ages 12-17	(951)	(1333)	(0.031)	(0.050)
Dependent variable mean	22,689	21,836	22,689	21,990
Treatment mean	0.223	0.222	0.223	0.224
Sample size	7,533	6,710	7,533	6,663
Income and unionization averaged over ages 0-17				
Union exposure,	3263***	5278***	0.140***	0.208***
ages 0-17	(905)	(1358)	(0.031)	(0.055)
Dependent variable mean	21,801	21,241	21,801	21,365
Treatment mean	0.222	0.222	0.222	0.224
Sample size	8,685	7,752	8,685	7,707
Controls				
Demographic controls	Yes	Yes	Yes	Yes
Region and year effects	Yes	Yes	Yes	Yes
Sibling fixed effects	No	Yes	No	Yes

Notes. Each cell presents the estimated unionization treatment coefficient and standard error clustered by siblings in parentheses, using a non-Latino sample of PSID households with one or more children in the indicated age range, using children born 1970-1994. Household income and unionization are averaged across the indicated child age ranges. All regressions weighted by cross-sectional weights. The demographic variables control for household head's education, race, gender, and employment status and the number of children ages 0-17 living in the household. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A6: Analyzing the Role of Household Income: Childhood Assessments

	No Fixed Effects			Fixed Effects		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: NLSY Cognitive Assessment						
Cumulative unionization	–0.113		–0.107	–0.150		–0.150
	(0.075)		(0.075)	(0.135)		(0.135)
Mean cumulative income		0.468*	0.455*		0.293	0.295
		(0.264)	(0.264)		(0.352)	(0.351)
Sample size	23,043	23,043	23,043	22,724	22,724	22,724
No. of individuals	6,410	6,410	6,410	6,091	6,091	6,091
Panel B: NLSY Behavioral Assessment						
Cumulative unionization	–0.041		–0.040	–0.172		–0.170
	(0.107)		(0.108)	(0.119)		(0.119)
Mean cumulative income		0.091	0.086		–0.416	–0.410
		(0.199)	(0.202)		(0.357)	(0.359)
Sample size	26,494	26,494	26,494	26,189	26,189	26,189
No. of individuals	6,827	6,827	6,827	6,522	6,522	6,522
Panel C: PSID Cognitive Assessment						
Cumulative union exposure	–0.051		–0.034	0.068		0.083
	(0.054)		(0.053)	(0.149)		(0.149)
Mean cumulative HH income		1.857***	1.834***		–2.085*	–2.124*
		(0.457)	(0.459)		(1.220)	(1.215)
Sample size	5,602	5,602	5,602	5,056	5,056	5,056
No. of individuals	3,391	3,391	3,391	2,845	2,845	2,845
Panel D: PSID Behavioral Assessment						
Cumulative union exposure	0.058		0.059	–0.136		–0.149
	(0.056)		(0.056)	(0.186)		(0.185)
Mean cumulative HH income		0.005	0.035		1.704*	1.741*
		(0.507)	(0.506)		(0.969)	(0.972)
Sample size	6,255	6,255	6,255	5,561	5,561	5,561
No. of individuals	3,673	3,673	3,673	2,979	2,979	2,979
Controls						
Full controls	Yes	Yes	Yes	Yes	Yes	Yes
Mother/HH fixed effects	No	No	No	Yes	Yes	Yes

Notes. All models use the same weights, clustering, and control variables as in Tables 3 and 4. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A7: Analyzing the Role of Household Income: Adult Outcomes

	No Fixed Effects			Fixed Effects		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: NLSY College Degree						
Union exposure, ages 0-17	0.013		0.026	0.108		0.098
	(0.042)		(0.041)	(0.189)		(0.189)
Mean mother income, ages 0-17		0.882***	0.887***		1.034	1.002
		(0.239)	(0.239)		(0.919)	(0.921)
Sample size	4,730	4,730	4,730	3,592	3,592	3,592
No. of individuals	2,635	2,635	2,635	1,497	1,497	1,497
Panel B: NLSY Annual Earnings						
Union exposure, ages 0-17	–0.082		–0.064	–0.318		–0.312
	(0.060)		(0.059)	(0.218)		(0.217)
Mean mother income, ages 0-17		1.067***	1.055***		–0.755	–0.674
		(0.244)	(0.243)		(1.456)	(1.446)
Sample size	12,814	12,814	12,814	12,418	12,418	12,418
No. of individuals	4,595	4,595	4,595	4,267	4,267	4,267
Panel C: PSID College Degree						
Union exposure, ages 0-17	–0.008		0.004	0.091		0.091
	(0.035)		(0.035)	(0.198)		(0.198)
Mean HH income, ages 0-17		3.066***	3.071***		–0.328	–0.280
		(0.614)	(0.615)		(2.998)	(3.034)
Sample size	2,798	2,798	2,798	2,073	2,073	2,073
No. of individuals	2,798	2,798	2,798	2,073	2,073	2,073
Panel D: PSID Annual Earnings						
Union exposure, ages 0-17	–0.042		–0.009	–0.337		–0.385
	(0.069)		(0.068)	(0.396)		(0.410)
Mean HH income, ages 0-17		6.059***	6.048***		–16.385***	–16.627***
		(1.335)	(1.336)		(6.301)	(6.203)
Sample size	14,141	14,141	14,141	13,294	13,294	13,294
No. of individuals	2,921	2,921	2,921	2,694	2,694	2,694
Controls						
Full controls	Yes	Yes	Yes	Yes	Yes	Yes
Mother/HH fixed effects	No	No	No	Yes	Yes	Yes

Notes. All models use the same weights, clustering, and control variables as in Tables 6 and 7. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A8: Effects of Childhood Time in a High-Wage Industry Household: PSID Childhood Assessments

Alternative Treatments	Cognitive Assessment			Behavioral Assessment		
	(1)	(2)	(3)	(4)	(5)	(6)
Cumulative union exposure	–0.056	–0.051	0.069	0.088	0.058	–0.135
(up to assessment age)	(0.059)	(0.054)	(0.149)	(0.055)	(0.056)	(0.186)
	[0.204]	[0.204]	[0.208]	[0.202]	[0.202]	[0.209]
	5,602	5,602	5,057	6,256	6,256	5,561
High-wage industry exposure	0.586***	0.138***	–0.202	0.131**	–0.051	–0.196
(up to assessment age)	(0.051)	(0.053)	(0.145)	(0.052)	(0.056)	(0.145)
	[0.586]	[0.586]	[0.592]	[0.592]	[0.592]	[0.600]
	5,602	5,602	5,057	6,256	6,256	5,561
Controls						
Full controls	No	Yes	Yes	No	Yes	Yes
Household fixed effects	No	No	Yes	No	No	Yes

Notes. The high-wage industry treatment is calculated as the fraction of years that a household is designated as working in a high-wage industry, which occurs when the head or spouse is working in an industry in which the mean CPS real wage across 1970-2022 for that 3-digit industry is above the median across all industries. Treatment means are in brackets. All models use the same weights, clustering, and control variables as in Table 4. Significance levels are * 0.10, ** 0.05, *** 0.01.

Table A9: Effects of Childhood Time in a High-Wage Industry Household: PSID Adult Outcomes

Alternative Treatments	College Degree			Annual Earnings		
	(1)	(2)	(3)	(4)	(5)	(6)
Baseline specification						
Union exposure, ages 0-5	–0.055	–0.020	0.003	0.034	0.066	–0.044
	(0.058)	(0.049)	(0.117)	(0.092)	(0.089)	(0.175)
	[0.234]	[0.234]	[0.238]	[0.248]	[0.248]	[0.245]
Union exposure, ages 6-11	–0.088	–0.024	–0.009	–0.093	–0.043	0.032
	(0.061)	(0.052)	(0.115)	(0.097)	(0.100)	(0.169)
	[0.228]	[0.228]	[0.233]	[0.240]	[0.240]	[0.236]
Union exposure, ages 12-17	0.087*	0.019	0.185*	0.037	–0.034	0.226
	(0.051)	(0.040)	(0.098)	(0.094)	(0.088)	(0.151)
	[0.242]	[0.242]	[0.242]	[0.247]	[0.247]	[0.249]
Sample size	2,421	2,421	1,745	12,388	12,388	11,616
High-wage industry treatment						
High-wage industry exposure, ages 0-5	0.088*	0.000	–0.166**	0.021	–0.055	–0.133
	(0.045)	(0.039)	(0.082)	(0.076)	(0.075)	(0.150)
	[0.570]	[0.570]	[0.571]	[0.563]	[0.563]	[0.563]
High-wage industry exposure, ages 6-11	0.130***	0.040	–0.074	0.088	–0.011	–0.060
	(0.050)	(0.044)	(0.077)	(0.084)	(0.087)	(0.165)
	[0.622]	[0.622]	[0.628]	[0.620]	[0.620]	[0.619]
High-wage industry exposure, ages 12-17	0.188***	0.089**	0.157**	0.283***	0.174**	0.241*
	(0.044)	(0.038)	(0.078)	(0.072)	(0.070)	(0.138)
	[0.644]	[0.644]	[0.651]	[0.645]	[0.645]	[0.644]
Sample size	2,421	2,421	1,745	12,388	12,388	11,616
Controls						
Full controls	No	Yes	Yes	No	Yes	Yes
Household fixed effects	No	No	Yes	No	No	Yes

Notes. The high-wage industry treatment is calculated as the fraction of years that a household is designated as working in a high-wage industry, which occurs when the head or spouse is working in an industry in which the mean CPS real wage across 1970-2022 for that 3-digit industry is above the median across all industries. Treatment means are in brackets. All models use the same weights, clustering, and control variables as in Table 7. Significance levels are * 0.10, ** 0.05, *** 0.01.