

Inequality in Early Care Experienced by US Children

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The care that children experience in early childhood lays the foundation for their future capacities. This paper documents the characteristics of parental and nonparental care experienced by US children before they enter K–12 schooling. We focus primarily on data for children ages zero to four, with occasional discussion of ages five and six. Our analyses span the last two decades, a period during which some important changes occurred in US children’s early care experiences. Care is produced in many different ways: by parents or by other relatives in their own home, in-home by a nonrelative, by a nonrelative in their own home, in public centers such as a school-based pre-kindergarten program or Head Start, or by a private center run by a for-profit or nonprofit organization. Moreover, within each category, care can be provided on a full-time or part-time basis, or in higher- or lower-quality ways.

We build a unified view of children’s care experiences across all types of care to generate new insights into differences in early care experiences between children from families of different socioeconomic status. Our primary finding is that, accounting for both parental and nonparental care, children in families of lower

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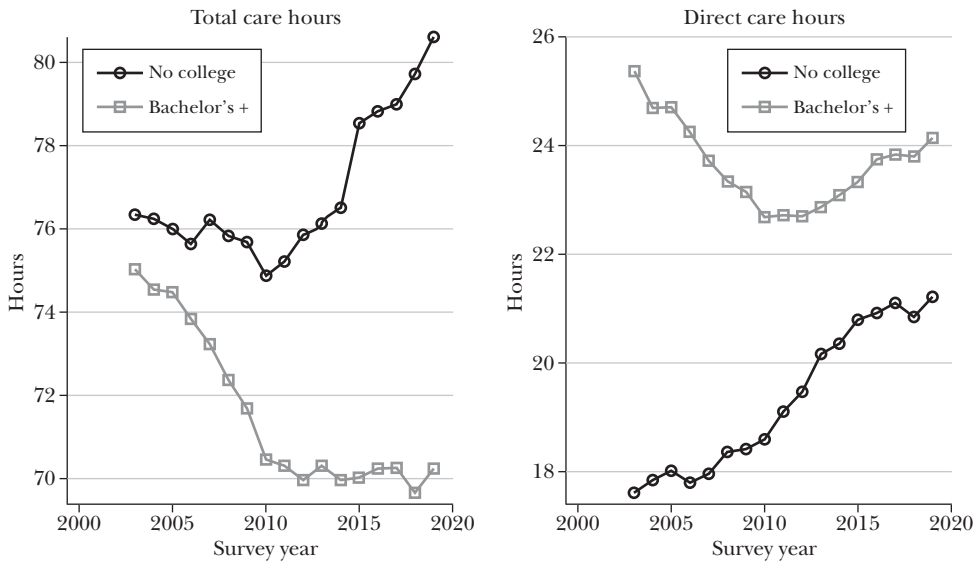
socioeconomic status enter K–12 schooling having experienced substantially lower quality care in all domains during their first five years of life. Gaps are largest for the youngest children and then close as children age.

We also find substantial shifts over the last two decades in care experiences and inequality. As one example, Figure 1 shows evolving patterns of maternal caregiving time. The lines in the figure display average weekly caregiving hours provided by mothers with at least a bachelor's degree and by mothers with no college experience. The left panel shows that in the early 2000s, mothers with more and less formal education averaged similar amounts of maternal care hours weekly, yielding a gap of approximately zero. Since then, mothers with more formal education came to provide fewer hours of care time while mothers with no college education increased the total amount of hours spent with their children, and so the gap widened through 2019. Just prior to the COVID-19 outbreak, higher-educated mothers spent on average about ten fewer hours per week with their children than did mothers with no college experience. Parents of higher socioeconomic status are increasingly specializing in non-childcare activities (primarily labor market work) and making greater use of care from outside their family.¹

The comparisons in Figure 1 illustrate several aspects of our study. We focus on children's *full care experience*, including a range of parental and nonparental care activities, and not on a narrow measure of care such as time parents spent reading to children (Budig and Folbre 2004; Folbre et al. 2005). We focus on a broad range of activities *over two decades*, which allows us to capture substantial changes in care that would have been missed with a shorter time period. We compare across socioeconomic groups, using the level of mother's education as our proxy for child socioeconomic status. We draw upon a variety of datasets: Figure 2, for example, shows that children whose mothers have at least a bachelor's degree are spending fewer hours with their mother but more hours in nonparental care, compared to children of mothers with no college education. The data on care provided directly by mothers is from the American Time Use Survey, while information on nonparental care is from the National Household Education Survey. Overall, our analysis

¹This fact—that parents of higher socioeconomic status spend less total time with their children—may be surprising given prior literature that seems to assert the opposite. In our reading of this prior literature, one issue that causes confusion is the varying meaning of the terms “child care” or “time with children.” For example, an influential paper published in this journal by Guryan, Hurst, and Kearney (2008), focused on a finding from an analysis of 2003–2006 American Time Use Survey data that highly educated mothers spend more time in intensive activities such as reading, playing, and bathing with their children than do other mothers. However, as that paper acknowledges, this subset of intensive-care activities comprises only about one-quarter of the total time that parents spend with their young children, and thus excludes the majority of parental-care time, such as when the parent is eating with the child or is cooking while the child plays nearby. The authors wrote that “high-educated parents and low-educated parents spend nearly identical amounts of total time around their children,” but this point concerning total time seems to have been largely overlooked. Many subsequent papers mistakenly cite the substantial difference in *intensive* parenting time as evidence that parents with more formal education spend more *total* time with their children than do parents with less education. Further, we document that since the 2003–2006 period covered in that earlier study, higher-educated parents spend even *less* total time with their children than do their less-educated peers.

Figure 1

Trends in Mothers' Time Allocation by Maternal Education

Source: American Time Use Survey 2003–2019.

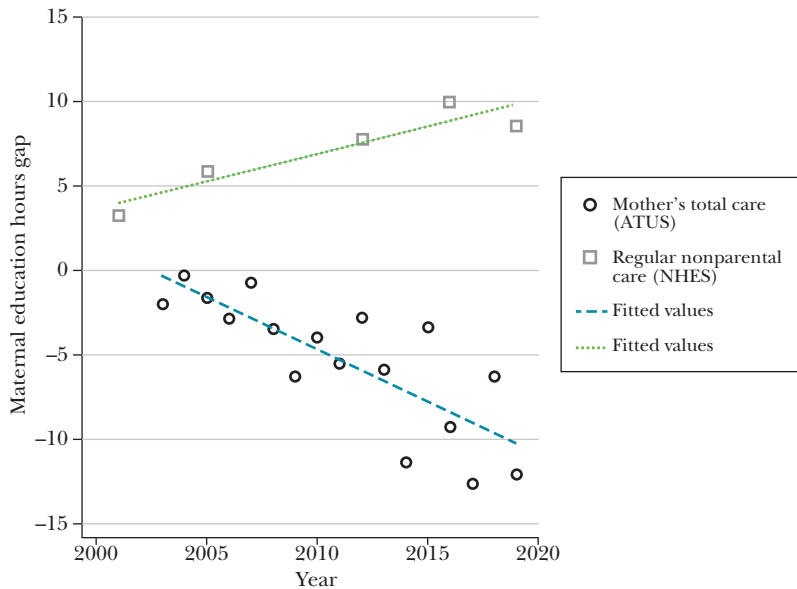
Notes: Sample includes all households with at least one child under the age of four. Five-year moving averages plotted. “Total Care Hours” includes all time the mother is around a child. “Direct Care Hours” is the subset of Total Care Hours in intense childcare activities.

is child-centric where possible, focusing on characterizing the care experienced by young children, rather than on parental time use.

We begin by discussing how we measure concepts such as “socioeconomic status” and “quality of care,” and the data sources upon which we will draw. We then turn to the category of “nonparental care” and see how it varies across children: for example, we document that children from families of lower socioeconomic status receive the majority of their nonparental care from relatives, while most nonparental-care hours for children of households of higher socioeconomic status come from centers or other nonrelative home-based providers. We also evaluate the quality of care provided in these different settings to children from households of differing socioeconomic status, including government programs like Head Start, by looking at detailed measures of activities children engage in with caregivers as well as outside observer ratings of care experiences. A crucial finding is that even within provider type, children from households of lower socioeconomic status receive lower quality care than do those of higher socioeconomic status. Using complementary datasets with measures of parental care quality, we show that children in higher socioeconomic status families also experience higher-quality parental care, reinforcing the advantages of higher-quality nonparental care. Finally, we discuss how to create an overall index of quality of care received by US children, including

Figure 2

Trends in the Gap in Nonparental Hours and in Maternal Care Hours by Socioeconomic Status



Source: American Time Use Survey 2003–2019. National Household Education Survey 2001–2019: nonparental care.

Note: Nonparental is weekly hours in “regular” nonparental arrangements, provided by relatives, centers, or any other nonrelative care providers. “Maternal Education Hours Gap” is the difference between average hours for families in which the mother has at least a bachelor’s degree and average hours for families in which the mother has no college education.

both parental and nonparental care, which reinforces the message that children who grow up in households of lower socioeconomic status receive lower quality of care during early childhood.

Measuring Care

We develop statistics that represent, to the extent possible, the quantity and quality of many varieties of care received by young US children. To measure inequality of care received by children, we need a reliable and standard way to capture socioeconomic status across the various datasets we use. We need ways to capture the quality of care across the range of different settings. And we need to work with a range of data sets. In this section, we explain our process for dealing with these issues, and then present results in the sections that follow.

Measuring Socioeconomic Status

We use the education level of the mother as our proxy for socioeconomic status. Maternal education is well-measured in every dataset we use. Maternal education is also relatively stable. In contrast, children's care experiences, maternal labor supply, and, hence, family income are jointly determined and can shift more frequently. However, our main results are robust to using family income as a measure of socioeconomic status as well.

Maternal education is correlated with other variables commonly used to measure socioeconomic status: educational attainment of others in the family, social network, income, family wealth, and neighborhood, among others. In that sense, it stands as a proxy for this bundle of variables.

Our focus on maternal education also has limitations. Our analyses exclude children living in households without a resident mother. In the National Survey of Early Care and Education data, which we use later in the paper, 7 percent of children under age 5 do not live with a resident mother.

Measuring Care Quality

In measuring the quality of care experienced by children, a significant challenge is that care quality measures tend to differ between parental and nonparental care settings and between different types of nonparental care. All children have the same number of hours per week (T), but each spends this time in a different mix of care settings.

We seek to summarize the quality of a child's overall care experience (Q) and aim to do so in a way that can integrate available information about weekly hours spent in parental care (τ_p) and nonparental care (τ_n) and the qualities of parental care (Q_p) and of nonparental care (Q_n) experienced. To aggregate information on these variables from different sources for the same focal population, we use a weighted average for simplicity:

$$Q = \frac{\tau_p}{T} Q_p + \frac{\tau_n}{T} Q_n.$$

Much of the paper walks through evidence about socioeconomic inequality in each of these variables and concludes with evidence about the magnitude of average care quality differences.

We use age-standardized measures of nonparental and parental quality to measure Q_n and Q_p . In this framework, an aggregate score $Q=0$ implies that a child's overall care experiences are equal to those of the average child, and a score $Q=1$ implies that a child's overall care experiences are one standard deviation higher than the average child's. In this framework, an aggregate quality score of $Q=0$ could be obtained through various combinations of parental and nonparental quality.²

²A limitation of this approach is the implicit equivalence in age-standardized units of our measures of parental and nonparental care. Ideally, we would anchor each separately in some outcome, allowing us to estimate the productivity of each. Chaparro, Sojourner, and Wiswall (2020) estimate this kind of

We consider measures of care quality based on a detailed accounting of activities that parents engage in with children and measures of parental and nonparental quality collected by independent observers. In particular, we focus on “process” measures of nonparental care (measuring the quality of interactions between a caregiver and child), as opposed to “structural” measures (child-to-staff ratios in daycare centers, for example). A well-developed literature has shown that “process” measures are strongly correlated with developmental outcomes, while “structural” measures are less so (Blau 1997, 2000; Early et al. 2006; Mashburn et al. 2008).

Two recent studies also examine quality differences in nonparental care: Pilarz, Lin, and Magnuson (2019) describe how much higher the probability of using any center-based care, proxying for high-quality nonparental care, is for higher-income families and explore other predictors of center use, such as parental employment, nonstandard work hours, and family structure. Bassok et al. (2016) describe variation in quality within and between types of nonparental care (centers, home-based, Head Start) and include analysis of how quality varies with income and other family characteristics.

The current study focuses on measuring care quantities and interactions within different types of care and does not seek to link types of care explicitly to child development outcomes, such as cognitive test scores at kindergarten entry, or even later life outcomes, such as years of completed schooling or adult wages. Of course, such studies require both data that track children over sustained periods of time as well as plausible sources of causal identification. Although we do not focus on later outcomes, a large body of research does estimate strong relationships between early childhood care—both parental and nonparental—and later outcomes (for reviews and recent work, see García, Heckman, and Ronda 2021; Heidlage et al. 2020; Larson et al. 2020; York, Loeb, and Doss 2019; Mayer et al. 2019; Elango et al. 2016; Heckman and Mosso 2014; Shonkoff and Phillips 2000). Thus, while we rely in this essay only on measures of care quality, there is good reason to believe that better quality care translates to better later life outcomes.

Strengths and Limitations of Mixed Data Sources

In making our comparisons, we draw on data from seven primary sources: the National Survey of Early Care and Education (NSECE) (NORC 2012), the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) (US Department of Education 2001–2006), the American Time Use Survey (ATUS) (Hofferth et al. 2020), the Panel Study of Income Dynamics-Child Development Supplement (PSID-CDS)

relationship using experimental data from the late 1980s. In addition, these types of additive indexes implicitly assume that quality in the two types of care are perfect substitutes, up to the respective time weighting. In general, there may in fact be some sort of complementarity across care types in producing particular developmental outcomes (say, measures of cognitive skills at kindergarten entry). In particular, there may be strong complementarities in the sense that very low quality environments can have scarring effects. Caucutt et al. (2020) provide recent estimates of complementarities across several childhood investments. While many other ways to aggregate are possible, almost all would produce a qualitatively similar conclusion.

(Survey Research Center 2019), the National Household Education Survey (NHES) (US Department of Education 2001–2019), the October education supplement of the Current Population Survey (October CPS) (Flood et al. 2021), and the Survey of Income and Program Participation (SIPP) (US Census Bureau 2018). We will briefly discuss each dataset as it is introduced, with more detailed information available in the Appendix.

Here, we just note that each of these data sources has strengths and weaknesses. For example, many studies use the American Time Use Survey, and we do so here as well. But the ATUS covers only parental caregiving hours for one sample parent per household, and thus it cannot deliver an accurate, holistic view of children’s time, nor even just of a child’s time with both parents. Such concerns will be noted as they arise throughout the discussion.

Quality of Nonparental Care

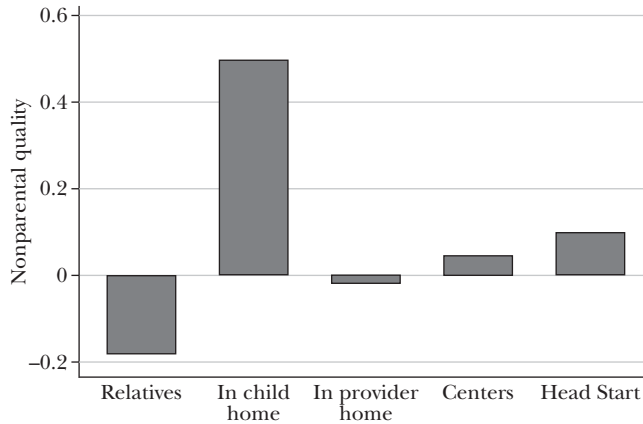
Gaps between Types of Nonparental Care

Children from families of higher socioeconomic status tend to spend larger shares of their nonparental care time in types of care that tend to be higher quality, although these differences diminish as children age into kindergarten. Compared to children whose mothers did not graduate high school, children of mothers with at least a bachelor’s degree spend twice as much of their nonparental care time in public or private centers and about half as much time in the care of relatives during the first three years of their lives. Our measure of quality suggests that centers tend to be about a quarter of a standard deviation higher quality than relative care.

To create a unified view of gaps across levels of socioeconomic status in nonparental care, we harness data on the quality of care by type from the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) together with data on children’s time in different types of care from the National Survey of Early Care and Education (NSECE). From these two datasets, we create a harmonized classification of nonparental care types. We divide nonparental care into five care types, defined by caregiver and the setting in which care occurs: 1) *relative*, which includes grandparents, siblings, or any nonparental relative in any setting; 2) *in child home*, which is a sitter or nanny in the child’s home; 3) *public center*, which includes publicly funded programs such as Head Start, school-based pre-kindergarten, or K–12 school; 4) *private center*, which is a for-profit or nonprofit center without direct public funding, though attending children may receive public vouchers; and 5) *in provider home*, which is care in any other setting, primarily in provider’s home, sometimes referred to as “family child care” or “home-based care.”

In the Early Childhood Longitudinal Study, Birth Cohort data, quality is measured by sending observers to caregiving sites to rate the quality of care against a specified rubric: the Arnett Scale of Caregiver Behavior. This Arnett Scale was designed specifically to be reliable across all types of nonparental care and focuses on caregiver-child interactions. Indeed, the ECLS-B is uniquely useful due to having

Figure 3
Average Quality by Nonparental Care Type (Ages Zero–Four)



Sources: US Department of Education (2001–2006), National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B).

Notes: Average quality measured using Arnett Z-scores. “Centers” are non–Head Start centers.

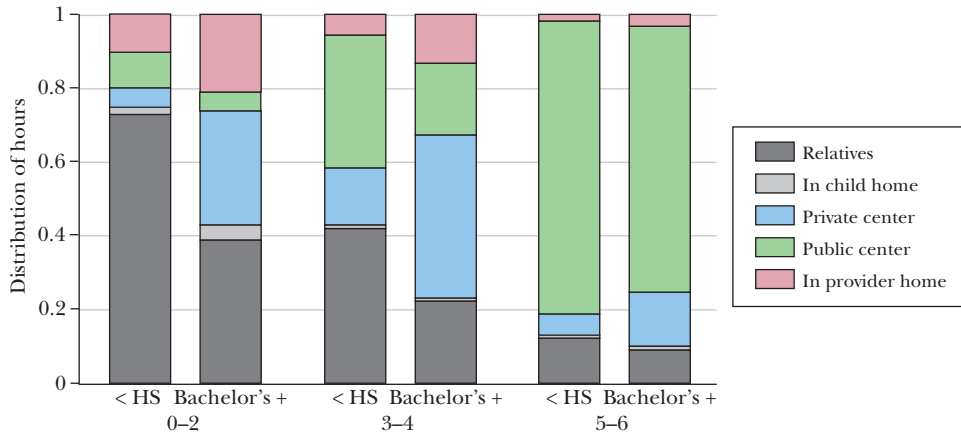
a valid measure of care quality across nonparental care types in a large sample representative of US children. The ECLS-B is a bit dated, representing the cohort born in 2001, but no more-recent data allows this comparison. Other observer-based measures are specific to particular types of nonparental care, such as center care or in-provider home care and so cannot be compared across children with different types of primary providers.

We age-standardize the Arnett scores within the full sample, for each child’s year of age. Figure 3 provides the average standardized Arnett Z-score by care type, for children from birth through age four. The nonparental care type with the lowest average quality is relatives, averaging about 0.2 standard deviations below the mean. The highest-quality type of nonparental care is provided in the child’s home (think “nannies”), at about 0.5 standard deviations above mean. Care in the provider’s home averages just below the sample mean and center-based care tends to score better than average. Here, center care includes any private or public centers, preschools, and pre-K arrangements. The average quality of Head Start care exceeds the average quality of non–Head Start centers, of non–Head Start home-based care, and of relatives. Prior studies report similar rankings (for example, see Bassok et al. 2016; Bernal and Keane 2010).

We can then use the National Survey of Early Care and Education data to examine differences in usage of different types of nonparental care across socioeconomic status. This source provides a careful, nationally representative view of where children spent their time, collected during the first half of 2012. Using child

Figure 4

Distribution of Hours in Nonparental Care Types by Maternal Education



Source: National Survey of Early Care and Education 2012.

Notes: Distribution of hours in “regular” nonparental arrangements. Public center includes Head Start, school-based preschool, and K-12.

and parent time diaries and additional surveys, it aims to capture all sources of nonparental care for each child. For any *regular* (used at least five hours weekly) nonparental providers, information on the provider type is included.

Children from families of lower socioeconomic status receive a far higher share of their nonparental care from relatives than do other children, particularly at younger ages. Figure 4 displays the distribution of nonparental care types by child age group and mother’s education level.³ In the first three years of life, relatives provide about 75 percent of nonparental care for children whose mothers do not have a high school degree but only about 39 percent for children whose mothers have at least a bachelor’s degree. Remember that, as shown in Figure 3, care by relatives tends to be of the lowest quality for child development.

Children from households with a lower level of maternal education also get more of their care from public programs than do children from households of higher socioeconomic status, but the shares of such care and the differences across groups are much smaller than with relative care. In contrast, children from higher socioeconomic status groups get a much larger share of their nonparental care in the first three years of life from private centers and other providers. The share of time with nannies or sitters is very small for both groups, even among those whose mothers have a college degree. The role of public providers (Head Start and school-based pre-kindergarten) expands substantially once children reach preschool age

³To measure public providers, we follow Goerge et al. (2015).

(three to four years old) and the share of care provided by relatives declines. By K–12 age, public programs (kindergarten and first grade) are the dominant form of care for all children.

One might wonder whether these differences across socioeconomic status are explained by differences in employment of mothers across groups. However, when we dig more deeply into the data, this hypothesis does not hold true. Shares of care from different provider types are very similar within maternal education group, whether or not the mother is employed. But as might be expected, for each maternal education group, maternal employment is associated with a larger quantity of nonparental care.⁴

Gaps within Types of Nonparental Care

Quality difference exists within types of care, not just between them. Using the Early Childhood Longitudinal Study, Birth Cohort data, we examine differences in nonparental care quality within care type. Socioeconomic status gaps in the quality of care experienced within care type further reinforce gaps in quality across care types.

Figure 5 plots average Arnett scores of the quality of care by mother's education within broad categories of care types and the child's age group. Children ages zero to two years whose mothers have at least a bachelor's degree experience much higher quality care within care type. The gap in care quality across categories of mother's education is substantial for center-based care (0.4 standard deviations) but even larger still for relative care (0.8 standard deviations). For children ages three through four, we see a similar pattern. The gap for center care is 0.3 standard deviations but over 0.9 standard deviations for relative care. In short, care environments experienced by children in households with high socioeconomic status are above average quality within care type, regardless of type of care. This result echoes Chaudry et al. (2021), who also use the Early Childhood Longitudinal Study, Birth Cohort data but split the sample by family income and use a different measure of quality.

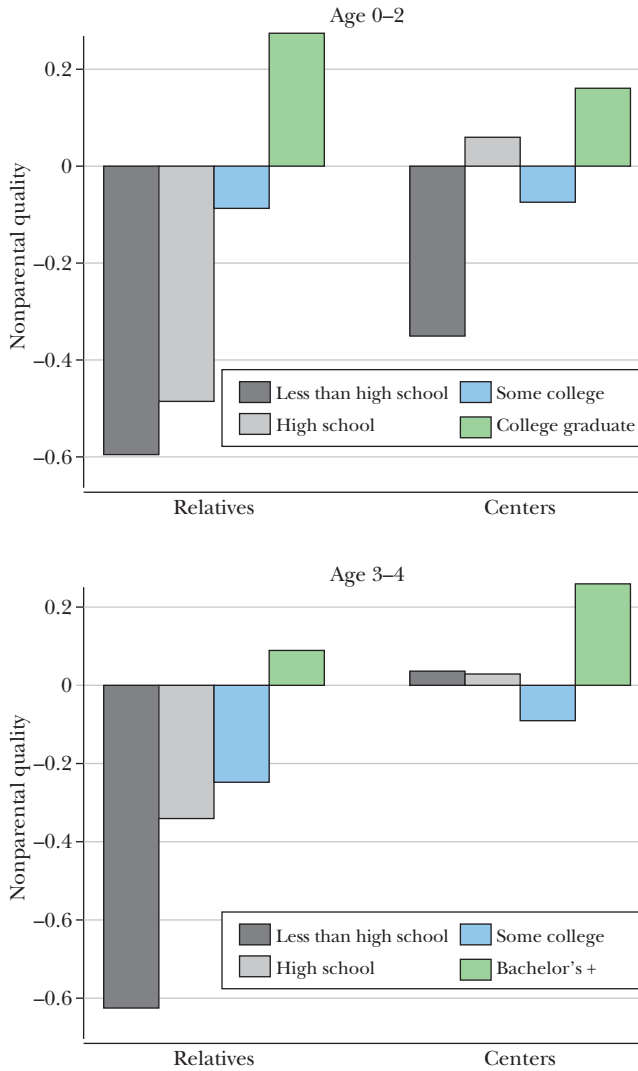
The gaps in quality of nonparental care across and within care types combine to produce gaps in the overall quality of non-parental care experienced by children of different socioeconomic status. The darker bars in Figure 5 present average quality for the primary nonparental care arrangement, regardless of type, within maternal education level but aggregating across ages. They reveal a roughly 0.4 standard deviation difference in nonparental care quality between children of mothers with a bachelor's and those without a high school degree.

Head Start and Quality of Care

In closer examination of this data, we also find that the quality gap in nonparental care quality gets smaller as children age, because children ages three through four from households of lower socioeconomic status experience a higher proportion

⁴The online Appendix offers data and illustrative figures on this point: see A-8 for the zero-to-two age group, and A-20 for ages three to four.

Figure 5
Average Quality of Nonparental Care by Mother Education, Child Age, and Care Type



Sources: US Department of Education (2001–2006), National Center for Education Statistics, and Early Childhood Longitudinal Study, Birth Cohort (ECLS-B).

Notes: Average quality measured using Arnett Z-scores. “Centers” is all centers, including Head Start.

of center-based and Head Start care, which tends to be of higher quality than the other kinds of nonparental care they commonly receive.⁵

⁵Although the price of care is not a direct measure of quality, if one makes the plausible assumption that price is correlated with quality, it can provide another measure. Using National Survey of Early Care and

Indeed, we can also use this framework to explore the quantitative importance of a leading government childcare program, Head Start, in raising the quality of care experienced by children from low socioeconomic status households and, thus, reducing the socioeconomic gap in nonparental care quality. The federal Head Start program provides direct funding primarily for childcare centers to provide free (or highly subsidized) care to eligible children, primarily three and four years old, from low-income households. About 25 percent of the Head Start participants were younger than age three and served by Early Head Start (ACF 2021). In 2019, Head Start served about 1 million children, at an outlay of about \$10 billion in federal government funding. This level of funding allows it to serve 11 percent of eligible children under age three and 36 percent of eligible of three and four year-olds (NHS 2020).

Despite Head Start serving far less than the majority of eligible children, the program plays a large role in lifting the average quality of nonparental care quality for disadvantaged American children.⁶ The lighter bars in Figure 6 present average quality of care excluding households who report using a Head Start care arrangement. The importance of Head Start is evident, especially among the children from lower socioeconomic status households. Excluding Head Start pushes the average nonparental care quality for children in low socioeconomic status households down by more than 0.2 standard deviations, doubling the disadvantage relative to the sample mean.⁷

This rough calculation does not necessarily serve as the policy counterfactual effect of defunding Head Start. In the absence of the program, care patterns would shift in ways that are difficult to foresee. The absence of Head Start would also have broader implications for children's health and well-being. In addition to care, Head Start provides an array of services to enrolled children and their families, including health and home visiting services.

Quality of Parental Care

To this point, our discussion has shown that children from families of higher socioeconomic status tend to experience more time in nonparental care and

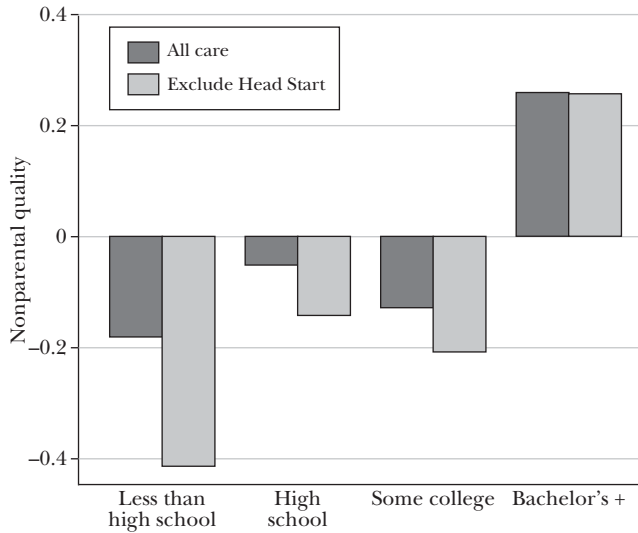
Education data, Appendix Figure A-23 displays median and mean price *paid* per hour for center-based care, conditioning on maternal education and child age. The center-based care that children whose mothers have a bachelor's degree experience is significantly more expensive per hour than that of children whose mother do not have a high school degree: the ratio of average prices paid is roughly three to one. Of course, this difference is certainly attributable to a variety of factors—including location, price discrimination, differences in the valuation of nonquality attributes, and the effectiveness of search—but it is also supportive of and consistent with the evidence that children of mothers with a bachelor's degree experience higher quality center-based care.

⁶Among families eligible for public childcare subsidies, the quality of care received from Head Start tends to exceed that received either using Child Care and Development Fund vouchers or in unsubsidized care (Johnson, Ryan, and Brooks-Gunn 2012).

⁷Appendix Figure A-24 displays the analogous statistics conditioning on family income instead of mother's education as a proxy for socioeconomic status. As discussed earlier, the same conclusion holds.

Figure 6

Average Nonparental Care Quality with and without Head Start, by Mother Education



Source: Department of Education, National Center for Education Statistics, Early Childhood Longitudinal Study, Birth Cohort (ECLS-B).

Notes: Average quality measured using Arnett Z-scores. “Exclude Head Start” uses only non-Head Start arrangements.

higher-quality nonparental care. We now show that differences in the quality of parental care tend to reinforce this gap. For every measure of parental care quality studied, children from families of higher socioeconomic status experience substantially higher quality parental care on average.

In this analysis, we draw on three types of data to measure quality of care: parent time diaries from the American Time Use Survey, which provide information about the time parents spend with their children; child time diaries from the Panel Study of Income Dynamics-Child Development Supplement (PSID-CDS), which describe the activities children experience, the number of parents present, and the intensity with which parents participate in the activity; and outside-observer based measures of parental engagement and the home environment, which are available in the PSID-CDS.

With the American Time Use Survey and Panel Study of Income Dynamics-Child Development Supplement time diary data, we use the available variables to construct comprehensive measures of the total time that parents spend with their children (ATUS) and the total time that children are in the presence of their parents (PSID-CDS). Within each of these measures of total parenting time (parental time “given” and “received,” respectively) we classify how much of this time is spent in intense parental activities (for example, reading or playing directly with a child

rather than the parent working in one room and the child playing in another). We can further classify parental time spent in certain activities, including educational activities (like reading or being read to, or receiving music lessons) or screen-based leisure time (television or computers). We focus on the share, rather than the level, of parental care time in these categories because we aim to measure the quality of children's overall care experiences. Focusing just on the level of parent time in intense or direct care conflates the quantity of parental care time with its quality and obscures the fact that children have a time budget. Any time spent in parental care crowds out nonparental care time, which has its own quality level. The major difference between the two data sources is that the ATUS provides parent-level time diaries and the PSID-CDS provides child-level time diaries (completed with the help of parents, of course) and other child-specific measures.⁸

Many prior studies of the quality of parent care focused on parent time diaries from the American Time Use Survey. This data has substantial advantages, including a large sample size and annual surveys covering the past 20 years. However, the ATUS has limitations for our purposes: this survey only records the total time allocation of one respondent parent and does not allow an assignment of time to specific children in the household. As a result, maternal education differences in these data may not necessarily reflect the gradient in care received by children if parents allocate care among their children differently across the education spectrum. However, we find that conclusions drawn from the ATUS are consistent with those from the Panel Study of Income Dynamics-Child Development Supplement, which allows for a child-specific assignment of care time.

Three main conclusions emerge from this exercise. First, from the American Time Use Survey, highly-educated mothers spend a larger fraction of their parental time in the kinds of activities that are considered more likely to promote child development. Using the sample of households with at least one child under age five, pooling the most recent ATUS surveys from 2016–2019, and conditioning on a full set of indicators for the number and ages of household children, we find that while mothers with a bachelor's degree spend about 14 *fewer* hours in total childcare than do mothers without a high school degree, these mothers spend nearly six hours *more* in direct, intensive childcare per week (for details see Appendix Table A-3). This implies that the average fraction of parenting time spent in more intensive activities is substantially higher for mothers with a bachelor's degree, over 70 percent higher. We see similar patterns for father's time for these same households: while total childcare time is about the same, fathers in highly educated households (mother has a bachelor's degree) devote about five more hours per week in direct, intensive childcare than do their less-advantaged peers, with a similarly larger fraction of their parenting time spent in these activities.

Second, turning to the Panel Study of Income Dynamics-Child Development Supplement child time-diary data, we see patterns consistent with the American

⁸For details on the classification of activities, like how night sleep is handled and other matters, see Appendix Section B.3.

Time Use Survey parent diaries. More-advantaged children spend a higher fraction of their total time with parents receiving intense and active parenting (about 5–6 percentage points higher, representing 10–20 percent more relative to children of low socioeconomic status households), a higher fraction of time in education activities (about 2 percentage points higher, representing about two-thirds more), and a smaller fraction of their parental time in screen-based leisure time (about 4 percentage points lower, representing about one-quarter less). Further, when receiving parental care time, children of highly educated mothers are more likely to be cared for by two parents (8 percentage points more likely, representing a quarter more relative to children of low socioeconomic status households) and by the father only (almost 6 percentage points, representing three-quarters more). Their less-advantaged peers spend a larger fraction of parental time with the mother only. However, we note that using which parents are present during parental time received has shortcomings: it omits nonparent caregivers present and the number of other children present.⁹

Third, the Panel Study of Income Dynamics-Child Development Supplement data contains several additional measures of parental care and home environment characteristics, from both parents' self-reports and from direct observation of parent-child interactions and the home environment by trained observers during a home visit. With these, we build additional measures of parental-care quality. Our primary measures of parent and home environment quality come from the Home Observation for Measurement of the Environment (HOME) Inventory. The HOME Inventory is a set of items that aim to measure the quality of a child's home environment, including interactions with the primary caregiver (almost always the mother). We partition the HOME items into three sets: observer-based measures of the primary caregiver and interactions between the caregiver and child, observer-based measures of the home environment, and parent-reported survey items. The Data Appendix describes how we construct Z-score indices from the HOME score items. By each measure, children from higher socioeconomic status households have higher quality care experiences at home. For example, when pooling all items of the HOME inventory, children of mothers with a bachelor's have an average score of over 0.8 standard deviations higher than that of those with no college education.

We conclude our analysis of parental quality patterns by noting that restricting focus to a small subset of intense parental care activities, such as parents reading to children, can suggest that there has been a trend toward convergence in parental care experiences over the last two decades; for example, Cha and Park (2021) and Prickett and Augustine (2021) show a "converging" trend in some intense parenting activities using the American Time Use Survey data. Although children from more-advantaged households do continue to receive more hours of this intense parental

⁹These statistics from PSID-CDS are based on regressions with controls for child age and survey years fixed effect, available in the online Appendix (see Table A-1). In addition, Appendix Table A-9 contains analogous estimates including additional control variables, and Appendix Table A-10 presents estimates using levels as the outcome variable rather than shares.

engagement at least by 2019 (the last year of our data, pre-COVID-19), the gap has fallen, as shown in Figure 1. However, the time that parents from households of higher socioeconomic status spend with their children continues to be of much higher average quality as measured by the fraction of that time in intense or education-specific activities, and other observer-based measures.

Quantities of Care

Our next step is to quantify the differences across socioeconomic status in the amounts and shares of child time spent in parental and nonparental care. We establish that children from households of higher socioeconomic status spend less of their time in parental care than do less-advantaged children. Then, to construct a measure of each child's aggregate care quality that combines information on the quantities and qualities of parental and nonparental care, we turn to the Early Childhood Longitudinal Study, Birth Cohort dataset. While the datasets used above have superior measures of parental-care quality and time in (non)parental care, the ECLS-B is uniquely valuable here because it contains measures of the joint distribution of parental and nonparental care quality, and time in each. Crucially, the ECLS-B contains measures of nonparental care quality that are comparable across nonparental care types.

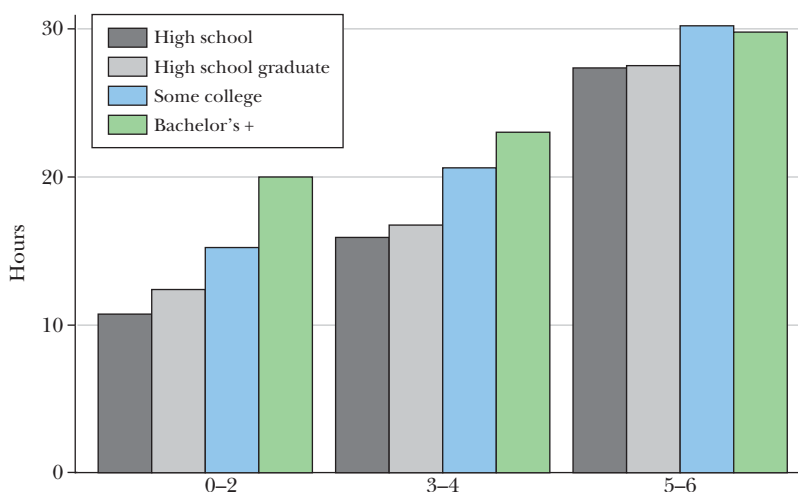
Among all young children, weekly nonparental care hours increase as children age, but they do so especially quickly as children age into eligibility for more public care and education programs. Our discussion of hours of nonparental care draws upon the 2012 child time diaries from the National Survey of Early Care and Education, which provide a comprehensive, nationally representative, relatively recent view of children's time, permitting the best measure of parental versus nonparental care available, overall and by age and socioeconomic status.¹⁰

In their first two years of life, children average about 12 hours of nonparental care weekly. These averages mask large differences in nonparental care hours by socioeconomic status. For the youngest children (ages zero to two), those children whose mothers have less than a high school degree receive just over 10 hours of nonparental care; for children whose mothers have a high school degree, 12 hours; for some college, 15 hours; and for children whose mothers have at least bachelor's degree, nearly 20 hours weekly of nonparental care (Figure 7).

As children reach ages three and four, the amount of time they spend in nonparental care rises for all levels of socioeconomic status. However, the rise is faster for those whose mothers have less education, and thus the differences across groups diminish. Children three to four years old whose mothers have less than a high

¹⁰For figures and additional numerical detail on the patterns of hours of nonparental care discussed here, see online Appendix Section A. One limitation worth noting here is that the survey took place in the winter and spring, and so it does not represent children's experiences in the summer or fall. It is important to note that the statistics for average hours include households that report zero hours.

Figure 7

Average Weekly Nonparental Care Hours by Child Age and Maternal Education

Source: National Survey of Early Care and Education 2012.

Note: Comprehensive nonparental care hours for each child.

school degree average about 15 hours of nonparental care per week (up from just over ten hours for the zero to two year-olds). Children whose mothers have at least a bachelor's average roughly 22 hours weekly (up slightly from nearly 20 hours for the zero to two year-olds).

By the time children reach ages five and six, when almost all children are in K–12 schooling, nonparental care rises to an average of about 30 hours per week. At this point, the gradient by socioeconomic status in the time that children receive nonparental care essentially disappears.

These differences are also apparent if one looks at the share of children receiving full-time nonparental care, which we define as 31 or more hours per week. In the first years of life, fewer than 20 percent of children whose mothers do not have a high school diploma receive full-time nonparental care (see Appendix Figure A-11). At the same ages, the share of children receiving full-time care among those whose mothers have a bachelor's degree is about twice as high.

The other datasets examined tell a similar story about the evolution of nonparental and parental care for recent years. The PSID-CDS provides child time diaries and tells a very similar story. The October Current Population Survey shows a similar gradient for children age three and up using a more-limited subset of nonparental care types: “pre-school,” “nursery school,” or “pre-K.” Similarly, recent data from the Survey of Income and Program Participation show comparable educational gradients in the incidence of using any nonparent care and nonparent, nonrelative care. Details for these alternative measures are available in the online Appendix.

Average Care Quality Experienced by Children

Figure 8 plots the gaps in average care quality experienced between children with four-year-college-educated mothers versus those whose mothers have a high school degree or less. For this illustrative calculation, we omit the “some college” group entirely. We construct this figure using the Early Childhood Longitudinal Study, Birth Cohort data, computing the overall care quality for each sample child, and using the age-standardized frequency parents read to their child per hour of parental care, the age-standardized Arnett scores, and the number of weekly hours in nonparental and parental care to measure parental quality, nonparental quality, and time in each (Q_p , Q_n , τ_n , and τ_p), respectively.¹¹

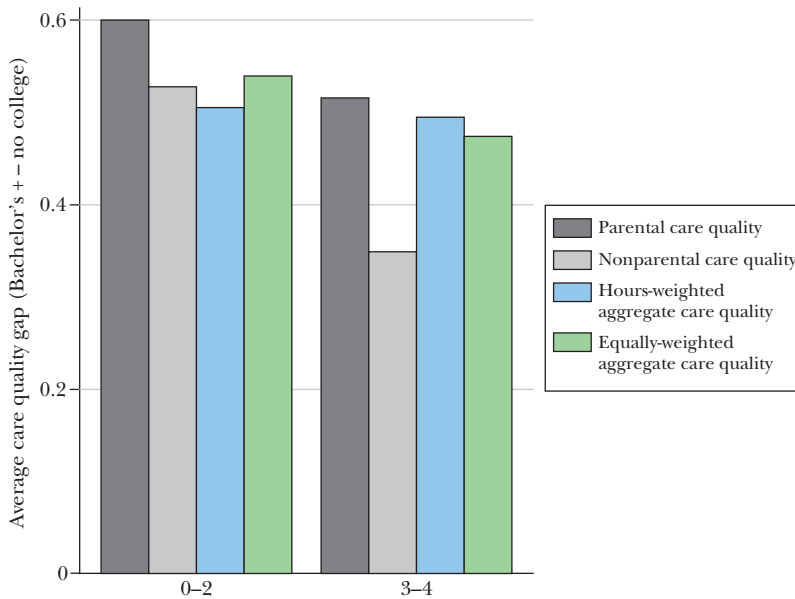
Analysis of these child-level indices of aggregate care quality reveals several patterns. First, those children whose mothers have a higher level of education receive better quality care in both parental and nonparental settings at all ages during early childhood, as shown by the first bars for each of the age groups. Second, at both age groups (zero to two and three to four), the gap in age-standardized parental care quality is largest, and incorporating the quality of nonparental care tends to moderate inequality, particularly for younger children. Third, for the third and fourth bars shown for the two age groups of Figure 8, we also construct overall measures of aggregate quality weighted by hours spent in parental and nonparental care, and an equal-weighted measure in which the quality scored for both parental and nonparental care are given a weight of 0.5. We find a similar gap as using the hours-weighted measure, indicating that hours allocated across care types are not greatly influencing the pattern of overall inequality.

An aggregate care quality index allows a quantitative assessment of the importance of two kinds of potential compensating behaviors: first, parents choosing higher-quality care in one domain to compensate for lower-quality care in the other domain, and, second, parents choosing low numbers of hours of the lower-quality care in favor of more hours of the higher-quality care. We conclude that aggregate measures incorporating both parental and nonparental care experiences also show substantial inequality in care experienced, with a larger degree of inequality for the youngest children.

It is possible that inequality of care obtains in both nonparental and parental domains, but is mitigated when considering aggregate care experienced. We investigated and ruled out two channels through which this may happen: 1) the possibility that children who experience higher-quality parental care tend to experience lower-quality nonparental care, and vice versa; and 2) the possibility of dynamic compensating behavior, whereby higher quality care experiences during preschool

¹¹ To measure parental quality per hour of care, we divide reading frequency by total parental care hours. Reading frequency is recorded as the midpoint of each categorical bin, with 0 recorded for “never,” 1.5 for “1–2 times,” and 4.5 for “3–6 times,” and 7 for “every day.” Frequency per hour is then age-standardized for each child age (in years) to create a Z-score (mean 0 and standard deviation 1 by construction) measure of Q_p .

Figure 8

Parental, Nonparental, and Aggregate Care Quality

Source: Department of Education, National Center for Education Statistics, and Early Childhood Longitudinal Study, Birth Cohort (ECLS-B).

Note: The vertical axis measures average age-standardized (z-score) difference in quality. Gap of 0 represents no difference, gap of 1 represents 1 standard deviation difference. Parental care quality measured using frequency parent reads to child. Nonparental care quality measured using Arnett score for primary nonparental care arrangement.

age might compensate for lower quality experiences as infants and toddlers, and vice versa.

In considering the first possibility, we find that children who tend to experience higher-quality parental care also tend to experience higher-quality nonparental care. We use the Early Childhood Longitudinal Study, Birth Cohort data to provide evidence on the joint distribution of nonparental and parental care quality as measured by the age-standardized Arnett score in the primary nonparental care arrangement against parental care quality with the commonly used measure of reported frequency of reading to the child.¹² For younger (age zero to two) and older (three through four) children, quality of nonparental care is on average higher for children whose parents read to them more, with the gradient

¹²We adapt a commonly used parental activity measure, the number of times parents report reading to their child over a week (for example, Cunha, Heckman, and Schennach 2010; Todd and Wolpin 2007; Blau 1999). For evidence on the developmental effects of reading, see Demir-Lira et al. 2019, Price and Kalil 2019, and the studies cited therein.

more pronounced for younger children. In a series of regressions, we find a positive correlation in measures of parental and nonparental quality, both overall and within sub-samples by mother's education (Appendix Table A-4).

For additional evidence on the correlation of parental and nonparental care quality, we turned to data from the American Time Use Survey. Although the ATUS data do not provide any information on nonparental care, as we have documented from other data, children from less-advantaged families tend to receive lower quality nonparental care. Do their parents compensate for this through higher-quality, more intensive care at home? Rather than seeing evidence that parental care is compensating for lower-average nonparental care, we see evidence of reinforcement. Average parenting quality, as measured using the fraction of time in intensive parenting, is lowest in families in which the mother provides the most hours of care, and highest when families rely on more nonparental care (see Appendix Figure A-1).

Concerning the second possibility of dynamic compensating behavior, we explore the persistence of inequality in care quality. Specifically, we exploit the longitudinal data in the Early Childhood Longitudinal Study, Birth Cohort to regress the quality of care in the later wave of the Early Childhood Longitudinal Study-Birth Cohort (period $t + 1$, when most children are between 3 and 4 years of age) on the quality of care in the earlier wave of the ECLS-B (period t , when most children are between 1.5 and 3 years of age). We see a statistically significant positive correlation between measures of quality of care as children get older (Appendix Table A-5). Similar, and in many cases even higher, levels of persistence are evident for parental care quality and overall quality constructed using the hours-weighted index described above. Although these findings do not indicate perfect persistence (with a caveat that classical measurement error in any of these measures would tend to attenuate findings toward zero), these results do seem to rule out strong dynamic compensating behavior, whereby higher-quality care experiences later compensate for lower-quality experiences earlier.

Conclusion

Prior to age six, at which age almost all American children are enrolled in public or private schooling, children from households of higher socioeconomic status, as measured by the mother's level of education, experience higher-quality nonparental and parental care. In particular, children from families of lower socioeconomic status experience lower-quality care because: 1) they spend more time in the types of nonparental care that tend to be lower quality on average; 2) they tend to experience nonparental care that is lower quality for its type; 3) they tend to experience lower-quality care when with parents; 4) a child's parental and nonparental care qualities tend to be positively correlated such that deficits in one tend to be reinforced in the other; 5) they spend more time with parents and the gap in care quality across socioeconomic status is larger in parental care than in nonparental

care; and 6) quality levels persist across early childhood such that those receiving lower-quality care earlier also tend to receive lower-quality care later. We want to put to rest the common, yet mistaken, claim that more-educated parents spend more total care time with their children than do less-educated parents. However, it is true that they spend more parental care time in narrow sets of activities believed to accelerate child development.

As noted at the beginning of this paper, we focus here on providing evidence for these differences in the quality of care received by children across socioeconomic status. However, we defer to the existing experimental and quasi-experimental evidence to demonstrate causal relationships between measures of quality and child outcomes. Notable in particular is evidence that children who experience poor quality care in and out of the home (“double trouble”) experience worse outcomes (Watamura et al. 2011).

Understanding the differential patterns of care received by children is central to designing policies to address inequality in early childhood opportunity. Across all levels of government, American communities annually invest only about \$1,500 per child in care and education during ages zero through four but nine times that amount in each of the following 13 years of life (Davis and Sojourner 2021). Although there is unlikely to be any single policy solution, improving care for young children in households of lower socioeconomic status likely requires expanded programs for government support of high-quality nonparental care (Hotz and Wiswall 2019; Davis and Sojourner 2021) as well as support for higher-quality parental care (Cunha, Elo, and Culhane 2020; Maloney et al. 2015; York, Loeb, and Doss 2019; Mayer et al. 2019).

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