the review of income and wealth

Review of Income and Wealth
Series 0, Number 0, 2024
DOI: 10.1111/roiw.12672

PARENTAL EXPENDITURES OF TIME AND MONEY ON CHILDREN IN THE U.S.

BY LEILA GAUTHAM*

Department of Economics, University of Leeds

AND

NANCY FOLBRE

Department of Economics, University of Massachusetts

How much do parents spend on children in the U.S.? While the U.S. Department of Agriculture (USDA) regularly addresses this question, it considers only money expenditures, omitting the sizeable monetary value of parental time. The 2017 and 2019 Panel Study of Income Dynamics offers a unique opportunity to provide a more complete picture. Analysis of this data reveals considerable substitutability between unpaid and paid childcare and generates estimates of average total expenditures that include a replacement cost estimate of the value of parental time. These estimates, constructed for comparability with USDA measures, reveal both higher levels of average parental expenditure and different patterns across household structure and income. These findings challenge public policies that use USDA estimates as a reference point for setting the child support obligations of non-custodial parents and reimbursement rates for foster care. They also undermine many conventional equivalence scales and measures of income/time poverty.

JEL Codes: D13, J13, J22

Keywords: children, household expenditures, childcare, time use, valuation

1. INTRODUCTION

Economists typically define family expenditures as monetary outlays, omitting consideration of the imputed value of time devoted to unpaid household services such as childcare. Existing U.S. Department of Agriculture (USDA) estimates of parental expenditures, often used as benchmarks for public policy, apply this narrow definition. Efforts to go beyond it have been hampered by lack of household-level survey data covering both expenditures of money and expenditures of time. In 2017 and 2019, however, the Panel Survey of Income Dynamics (PSID) collected data on

We are grateful to discussants and audiences at the IARIW 37th General Conference at Luxembourg, the 2022 Gender Inequalities Workshop at the Levy Economics Institute of Bard College, and the Poverty, Development and Globalization Workshop at Azim Premji University for comments and feedback. We are also grateful to the anonymous reviewer and Prasada Rao, journal editor of this manuscript, for helpful suggestions.

*Correspondence to: Leila Gautham, Department of Economics, University of Leeds, Leeds LS2 9NL, UK (l.gautham@leeds.ac.uk)

both, providing a unique opportunity to develop a more complete picture of substitutability between time and money, average levels of total parental expenditure, and differences in the composition of expenditures by household structure and income.

Estimates of parental expenditures that include the imputed value of unpaid childcare can improve family decisions. Potential parents should have a clear idea of the time, as well as the money, they are likely to spend. Motherhood, unlike fatherhood, typically imposes temporal constraints that reduce earnings and increase economic vulnerability (Kleven et al., 2019; Misra et al., 2007). Mothers are more likely than fathers to become single parents, a transition that increases demands on their time as well as their money. Parenthood is an enormous source of subjective satisfaction, but it is also a valuable contribution to the capabilities of the next generation that yields fiscal benefits (Wolf et al., 2011). Parental expenditures of both time and money represent a costly investment in the future.

Yet public policies in the U.S. implicitly assume that parenting is not work. Many forms of public assistance in the U.S., including the Earned Income Tax Credit, are conditioned on participation in paid employment, which reduces time available for unpaid childcare and often requires out of pocket expenditures on childcare. Official U.S. poverty thresholds vary only by family composition, with no consideration of reductions in the supply of unpaid childcare resulting from paid employment. Conventional equivalence scales weigh the consumption needs of children less than those of adults, ignoring the costly temporal demands than children impose (Folbre et al., 2018). Neither the child support obligations of non-custodial parents nor the reimbursement rates set for foster parents explicitly consider the value of parental time.

The task of approximating this value is not easy. Childcare itself must be defined, either by letting respondents decide what it means, as in the PSID, or asking them to report specific activities during their waking hours, as in the American Time Use Survey (ATUS). Unpaid childcare itself can take different forms. The ATUS tallies both active childcare (such as feeding or bathing a child) and supervisory time when adults report that a child under the age of 13 was "in their care" while engaging in activities other than active childcare. Time expenditures go beyond active and supervisory care because children increase the demand for other unpaid household services, such as housework and meal preparation.

Most imputations of the value of unpaid services are based on replacement cost—what it would cost on an hourly basis to purchase replacement services of comparable quality—making choice of appropriate wage rates crucial. Substitutability between unpaid work and purchased services indicates how respondents view the relative quality of these two sources of supply. Most households probably require a minimum amount of time for unpaid services for which substitutes cannot be purchased, and, likewise, a minimum amount of income that cannot be replaced by unpaid services. The tradeoffs that take place between these thresholds deserve careful empirical scrutiny.

Exploration of these methodological issues sets the stage for our analysis of pooled data from the 2017 and 2019 PSID. We estimate the value of monetary expenditures and the imputed value of time expenditures based on assumptions comparable to those applied in USDA estimates. Our estimates of total parental expenditures on children are, not surprisingly, considerably higher than

those based on money expenditures alone. They also reveal a very different picture of variances among households with children. USDA measures based on the Consumer Expenditure Survey (CE) show that single parent households devote about the same amount of money to children as two-parent households. Because single parent households have less available parental time, our measures show that their average total expenditures are considerably lower than those of two-parent households. The USDA measures show that two-parent low-income households spend less money on children than affluent households, but the additional parental time they devote to children reduces this difference. These empirical findings urge recalibration of thresholds of need built into a number of public policies.

2. DEFINITION AND VALUATION OF UNPAID CHILDCARE

The advent of nationally representative time use surveys has called attention to the quantitative significance of unpaid household work, including childcare. In such surveys, work is typically defined as any activity that another person could, in principle, be paid to perform. Time-diary surveys such as the ATUS usually go into considerable detail, asking respondents to report their activities during the previous day, and coding physical care of children, such as feeding, bathing, and dressing, developmental care such as reading to children or helping them with homework, and logistical/managerial care such as transporting children, accompanying them to doctor's appointments, or arranging services on their behalf. Young children also require supervision. They cannot be left alone without an older child or adult nearby and "on call" in case active care is required (Folbre, 2023; Folbre & Yoon, 2007).

Unlike time-diary surveys, those based on activity lists, such as the PSID, ask respondents to report approximately how much time they devoted to an activity during a longer time period, such as a week. Time-diary surveys are generally considered more reliable because respondents are more likely to accurately recall activities during the previous day and less likely to succumb to social desirability bias, reporting what seems appropriate or expected rather than what they actually did. Furthermore, diary-based surveys constrain respondents to a 24 h day, while activity lists that allow respondents to report activities that overlap with one another.

On the other hand, activity lists allow respondents to apply their own definitions of childcare, which likely include responsibilities that constrain their physical location and their choice of activities. These surveys typically yield much larger estimates of childcare time than diary-based surveys, probably because they pick up extensive supervisory care (UNWomen, 2021). Unlike most diary-based surveys, the ATUS asks adults living in a household with a child under 13 if a child was "in your care" while they were engaging in other activities (not including active childcare). Analysis of pooled data for the ATUS for 2004–2019 shows that mothers living in a household with at least one child under 13 spent an average of 2.3 h in active care, but 9.0 h with a child in her care. The corresponding figures for fathers were 1.2 and 6.1 (Suh & Folbre, 2022). As our empirical analysis will show, ATUS estimates of childcare that include "in your care" supervisory time are remarkably close to the more approximate measures of the PSID.

Most estimates of the value of unpaid services on the household level multiply estimates of the amount of time devoted to these services by a wage rate based either on replacement cost (the hourly wage that would be charged by someone hired to provide services of comparable quality) or opportunity cost (typically proxied by provider's actual or potential hourly wage in paid employment). Replacement cost is generally considered a more appropriate choice for national income accounting because it comes closer to measuring actual value added. Opportunity cost, which may reflect non-pecuniary preferences for different types of work, is an additional factor especially relevant to individual decisions (National Academy of Science, 2005).

A previous imputation of childcare time in the ATUS (on the aggregate, rather than household level) utilized a replacement cost approach, applying a vector of wage rates to specific types of childcare, highest for developmental care and lowest for supervisory care, which was pegged at the federal minimum wage (Suh & Folbre, 2016). In the absence of disaggregated data on types of childcare, the minimum wage represents a cautious choice for a lower-bound estimate of the value of parental childcare. In the U.S. today, many states have set minimum wages considerably higher than the federal level, and application of these wage rates allows for geographic variation.

2.1. *Substitutability and Outsourcing*

Most parents develop caring relationships and child-specific skills that make some portion of their childcare time irreplaceable by market substitutes. Children in the U.S. today typically rely on a combination of parental care, care by other family members or friends, and paid care. Relatively little is known about specific "care packages," because the Consumer Expenditure Survey (CE) does not collect data on time use, the ATUS does not collect data on expenditures, and neither collects data on assistance received from family members and friends. The ATUS does include measures of family income, and analysis of its relationship to unpaid work finds little correlation (Frazis & Stewart, 2011). This does not imply lack of substitutability on a more disaggregated level: individuals in high-income households may engage in different kinds of unpaid work than those in low-income households.

However, it is difficult for most households to compensate for a low level of market income by providing services for themselves because they lack the resources and the skills to do so. Few people can build their own houses, fix their own cars, or produce their own phones or computers. Certain activities of household production may be more amenable to market substitution than others. Aguiar & Hurst (2005) find extensive substitutability between money and time devoted to meal provision. Substitution with respect to another activity of household provisioning—the care of children and family members experiencing sickness, disability or frailties of old age—has received little attention. Time devoted to care provision is quantitatively far more important than food preparation for households that include dependents in need of such care. The need for supervision, combined with the need for flexibility to provide active care when needed, represents a significant constraint on maternal employment.

Suzanne Bianchi observed long ago that time devoted to active childcare differs remarkably little across employed and non-employed mothers, considering

the temporal demands of most paid jobs (Bianchi, 2000). According to a recent analysis of pooled data from the ATUS for the 2004–2019 period, employed mothers in a household with at least one child under 13 spent an average of 1.5 h in active childcare, while those who were not employed spent an average of 3.1 h—a substantial difference in percentage terms, but, in absolute terms, only 1.6 h (Suh & Folbre, 2022). By contrast, these employed mothers spent 2.8 h on children in their care, while those who were not employed spent an average of 7.9 h. It seems quite likely that paid or donated childcare substitutes more strongly for parental supervisory time than for active paternal childcare. Importantly, the PSID provides a way of examining the relationship between a measure of parental childcare time that includes supervisory care and parental expenditures on purchased childcare.

3. DATA

The PSID is a nationally representative panel study inaugurated in 1968 that interviewed families annually until 1997 and biennially thereafter. It has collected information on paid work and housework hours from family members since 1968; in 2017 and 2019 it included an activity list that asked respondents to report time use in a typical week devoted to eight non-employment activities (housework, personal care, shopping, childcare, adult care, education, volunteering, leisure) for themselves and their spouse/partner (when applicable). The survey also collected information on family expenditures, wealth, and income.

We restrict our attention to families with at most two adults in the family and at least one child under 18, where the second adult (if present) is the spouse/partner of the reference person, in order to compute total hours devoted by all adults in the family to unpaid household services including childcare. Our analysis is disaggregated by the age of youngest child, dividing families into six categories: families where the youngest child is aged 0–2, 3–5, 6–8, 9–11, 12–14, and 15–17 years. All adults in the families included must be between 20 and 60 years of age. Of the total sample of 19,176 households in 2017 and 2019, around 3994 partnered two-parent families and 1804 single-parent families satisfy our restrictions. The latter are primarily single-mother families (81 percent of all single-parent families). Overall, our sample of 5798 families constitutes about 77 percent of all families with at least one child under 18.[1] Our variables of interest include:

Unpaid childcare: Total household weekly hours spent by reference person and spouse on childcare based on the following question: "In a typical week, how many hours [do you/does [he/she]] spend) caring for or looking after children?" (PSID, 2017). Hours spent providing childcare are excluded if it is part of the respondent's job.

[1]Note that the PSID asks questions about the family unit rather than the household, where the former is defined as a group of people living together (in the same household unit) as a family, almost always related by blood, marriage, or adoption (PSID, 2021). Unrelated persons that are part of the family unit need to be permanently living with the family and share both income and expenditures.

Unpaid household services: Total hours spent by reference person and spouse on housework (household activities and purchasing goods and services) and childcare (as defined above) in a typical week in the previous year. Household activities include cooking, cleaning, and other work around the house; purchasing goods and services includes buying groceries or clothes, or shopping online.

Annual childcare expenditure: Respondents are asked how much they and their family paid for childcare in the previous year. This, and all other expenditures (as well as money incomes) are expressed in 2018 dollars.

Annual family money expenditure: Total annual money expenditure represents the sum of family money outlays in the previous year on the following categories: food, housing, transportation, education, childcare, healthcare, clothing, trips, and recreation. Housing expenditures include expenditures on consumer durables but not the rental value of owner-occupied housing.

Family money income: The income reported here was based on the previous tax year and can contain negative values, which indicate a net loss, typically a result of business or farm losses. This variable is the sum of three variables: taxable income of all family members, transfer income of all family members, and Social Security income of all family members.

The PSID provides a unique combination of data on household expenditures and household time use in one- and two-parent families. However, since its measures of time use are based on a stylized activity list, a comparison with the time-diary approach of the ATUS is warranted. Insolera et al. (2019) offer preliminary validation, reporting that most reported measures of time use in the PSID align well with ATUS, despite substantial differences in leisure time. Our more narrowly focused comparison of 2017 and 2019 ATUS and PSID data, restricts the ATUS sample to reference persons and their spouses/unmarried person (about 90 percent of all ATUS respondents).[2] The age profiles of respondents are fairly similar in the two data sets (see Figure A.1). To create a category comparable to childcare time in the PSID, we define childcare in the ATUS as time spent caring for and helping household and non-household children including activities relating to their education and health. We also add time when children under 13 are in the respondents' care, an indicator of supervisory responsibilities.

Average weekly hours devoted to unpaid household services in the PSID and ATUS are remarkably similar, with the ATUS reporting greater weekly time of about 2.8 h (see Table 1). Childcare time is identical for women in both the PSID and ATUS, supporting the likelihood that the stylized question on time use in the PSID picks up the effect of "in your care" responsibilities. However, men report greater

[2]In the PSID the reference person is defined as "at least 18 years old and the person with the most financial responsibility for the family unit. If this person is female and she has a (male) spouse or partner in the family unit, then he is designated as Reference Person" (https://psidonline.isr.umich.edu/Guide/FAQ.aspx). However, the CPS designates the person who either owns or rents the housing unit as the reference person (irrespective of gender) (https://www.census.gov/programs-surveys/cps/technical-documentation/methodology.html).

TABLE 1
Average Time Devoted to Unpaid Household Services (Weekly Hours), PSID and ATUS

	Women		Men	
	PSID	ATUS	PSID	ATUS
All unpaid household services				
All families	37.6	40.4	19.3	26.2
	(45.0)	(39.5)	(26.3)	(31.3)
Families without a child under 18	20.5	23.6	12.8	17.1
	(18.3)	(22.1)	(13.4)	(20.1)
Families with a child under 18	71.2	71.7	33.4	44.4
	(60.3)	(45.4)	(39.0)	(40.5)
Household activities				
All families	15.1	16.9	8.3	11.3
	(12.7)	(16.8)	(8.2)	(15.4)
Families without a child under 18	13.5	16.6	8.5	12.1
	(10.9)	(17.0)	(8.4)	(16.0)
Families with a child under 18	18.4	17.7	8.0	9.7
	(15.1)	(16.3)	(7.7)	(13.9)
Purchasing goods and services				
All families	4.8	4.8	2.7	3.6
	(4.9)	(8.3)	(3.4)	(7.6)
Families without a child under 18	4.7	4.7	2.9	3.7
	(5.0)	(8.3)	(3.6)	(7.5)
Families with a child under 18	4.9	4.9	2.4	3.6
	(4.9)	(8.1)	(3.0)	(7.8)
Childcare				
All families	18.0	18.7	8.3	11.3
	(39.0)	(32.6)	(23.4)	(24.8)
Families without a child under 18	2.5	2.3	1.5	1.3
	(10.6)	(10.8)	(7.9)	(8.6)
Families with a child under 18	48.7	49.2	23.2	31.1
	(53.7)	(37.3)	(35.9)	(33.1)
N	15,930	9659	13056	7944

Notes: Both samples are restricted to reference persons and spouses 18+, and are weighted by survey weights. Childcare from the ATUS includes active and in-your-care time. Daily hours in the ATUS are multiplied by 7 to construct weekly hours. Standard deviations are given in parentheses.

Abbreviations: ATUS, American Time Use Survey; PSID, Panel Study of Income Dynamics.

Source: PSID and ATUS, 2017 and 2019.

time on childcare in the ATUS than in the PSID (11 h compared to 8 h), which accounts for some of the discrepancy in time spent on all household services (26 vs. 19 h for men in the PSID). Men may be more likely to report in-your-care time when they are specifically prompted to report it in the ATUS. In general, the PSID appears to undercount men's unpaid work, implying that our measure of unpaid household services in the PSID is an underestimate.

Another limitation of the PSID time use data lies in lack of differentiation among types of childcare. In particular, we cannot distinguish between time spent on "developmental care" (activities that are considered more likely to promote child development, such as reading or playing with children) and other less-intensive responsibilities, such as time that respondents in the ATUS reported that a child under the age of 13 was "in their care." Research based on the ATUS shows that

young children in households with high levels of maternal education spend less time with parents but receive more developmental care (Flood et al., 2022). Our estimates of variations in PSID childcare time across categories of family income are subject to the caveat that unpaid childcare quality cannot be taken into account.[3] This problem is less severe for expenditures on paid childcare since these are likely to correlate with quality.

3.1. *PSID Child Development Supplement*

The core PSID interviews lack information on unpaid childcare provided by adults outside the family unit. To that end, we use data from the PSID Child Development Supplement (PSID-CDS) in 2014 and 2019. The CDS is a nationally representative sample of children in the U.S., recording information relating to their health, development and wellbeing. The 2014 and 2019 CDS waves sample all children aged 0–17 in the core PSID families. CDS waves were also conducted in 1997, 2002–2003, and 2007–2008, but we consider only 2014 and 2019 that are closest in time to our primary analysis and share the same survey methodology. For each child in grade 6 or below (or not attending school yet), the CDS asks about childcare arrangements in the past 4 weeks. The combined sample size of such children, pooling both waves, is 5708. Responses are coded as belonging to the following categories: (1) relative in a child's home, (2) non-relative in child's home (sitter/nanny/au pair), (3) care in a relative's home, (4) care in non-relative's home (family daycare provider), (5) Head Start program, (6) prekindergarten program, nursery, preschool, childcare center, (7) before or after school program, (8) child cares for self alone, and (9) other. We proxy unpaid childcare from non-household adults by the average time the child spends every week in categories (1) and (3) (though it is possible that some care from relatives may involve monetary compensation from parents).

4. TRADEOFFS BETWEEN TIME AND MONEY IN THE PSID

The PSID data make it possible to explore the impact of outsourcing on time use, distinguishing between weekly hours on unpaid services that are not directly child-related and those that are. Non-child related expenditures and non-directly child related time devoted to housework and shopping appear to be complements rather than substitutes. Figure 1a presents binned scatterplots of weekly hours of housework (household activities and shopping) against annual family non-child expenditures (total expenditures minus childcare expenditures), conditioning on the

[3]Child time diaries from the Panel Study of Income Dynamics-Child Development Supplement (PSID-CDS) record the activities children experience and the number of parents present (PSID, 2022). Unfortunately, these are not directly comparable to either the PSID or the ATUS, which provide parent-level time use data. However, average hours of parental care received by children reported in Flood et al. (2022) on the PSID-CDS are similar to our own estimates below in Figure 3. See their Figure A.12 "Parental Care Hours Received in PSID-CDS" in their online appendix: total parental care hours range between 80 h per week (child aged 0) to 50 h per week (child aged 6)—compare against our Figure 3 below.

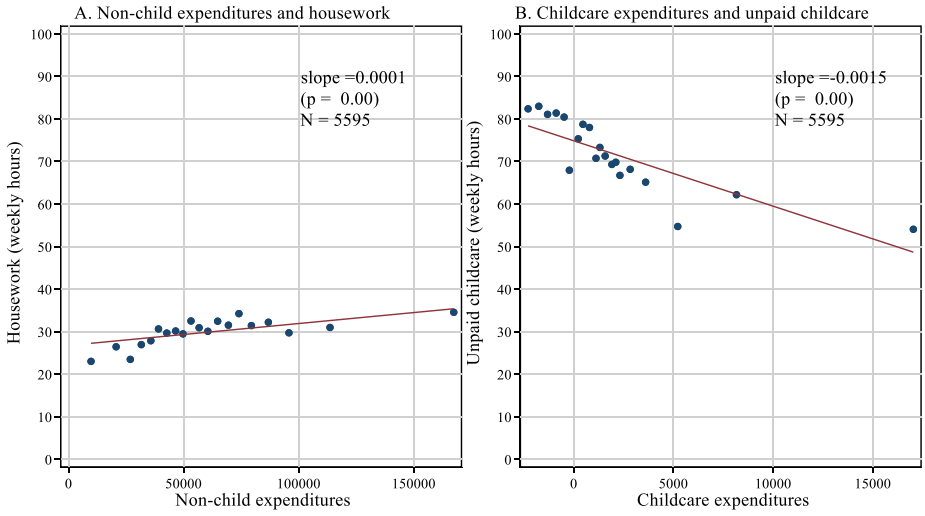

Figure 1. Weekly family hours on unpaid household services against annual family expenditure. *Source*: PSID 2017–2019. Binned scatterplots of weekly hours unpaid services (housework and childcare) against annual family expenditures (non-childcare and childcare-related), conditioning on the number of children, age of the youngest child, region, and metropolitan residence. Abbreviations: PSID, Panel Study of Income Dynamics.

number of children, age of the youngest child, region, and metropolitan residence in two-parent families. Non-child unpaid services cluster tightly between 25 and 35 h per week and have a small positive relationship with non-child annual expenditures.

By contrast, unpaid childcare time varies negatively with childcare expenditures, with greater variation in hours. For instance, a $1000 increase in non-child expenditures is associated with a 0.05 h increase in housework, while a $1000 increase in childcare expenditures annually is associated with a 1.53 h decrease in weekly unpaid childcare time.[4] The negative relationship between childcare expenditures and unpaid childcare is even stronger when we exclude households spending more than $5000 annually on childcare (an arbitrary threshold beyond which higher childcare expenditures might capture quality improvements, rather than substitute for parental time): a $1000 increase in childcare expenditures is then associated with 5.2 weekly decrease in hours of unpaid childcare (see Figure A.8 for piecewise linear regressions of unpaid housework and childcare time on non-childcare and childcare expenditures).

The cost of childcare implied in Figure 1—assuming that a 1 h increase in paid childcare is associated with a 1 h decrease in unpaid childcare—is $12.60 per hour of paid childcare. Substitutability is higher when categories are more narrowly defined, but the greater apparent substitutability of paid and unpaid childcare is not simply a function of the narrowness of the categories. Figure A.2 shows weekly time spent

[4]As shown in Figure A.3, overall expenditures and total unpaid services for families with children exhibit a small negative relationship, with substitutability between paid and unpaid childcare outweighing the lack of substitutability between other unpaid household services and expenditures.

TABLE 2
Ordinary Least Squares (OLS) Regression Results, Effects of Expenditures, Family Income and Employment Status on Housework and Childcare

	(1)	(2)	(3)
A. Housework as dependent variable			
Non-child family expenditures (in 1000$)	0.05***	0.05***	0.04***
	(0.01)	(0.01)	(0.01)
Family income tercile (reference: lowest)			
Middle tercile		2.81***	4.96***
		(0.71)	(0.69)
Top tercile		1.01	4.71***
		(0.81)	(0.80)
Employment status (reference: all adults employed full-time)			
At least one adult not employed			12.99***
			(0.59)
At least one adult employed part-time			5.29***
			(0.62)
B. Unpaid childcare as dependent variable			
Childcare expenditures (in 1000$)	−1.54***	−1.23***	−0.86***
	(0.19)	(0.20)	(0.20)
Family income tercile (reference: lowest)			
Middle tercile		−3.33	−0.24
		(2.28)	(2.27)
Top tercile		−11.57***	−7.28***
		(2.23)	(2.24)
Employment status (reference: all adults employed full-time)			
At least one adult not employed			22.25***
			(2.03)
At least one adult employed part-time			5.65***
			(2.13)
Observations	5595	5595	5595

Notes: Controls include number of children, age of youngest child, metropolitan area, and region. Standard errors in parentheses.

Abbreviations: PSID, Panel Study of Income Dynamics.

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Source: PSID 2017–2019.

by families on household activities (cooking, cleaning, and other work around the house) and family expenditures on food by income decile (unfortunately, the PSID does not allow us to obtain time spent preparing food). This, again, is a positive relationship, with a $1000 increase in food expenditures associated with a 0.3 increase in hours spent on household activities.

Multivariate analysis provides further confirmation of this contrast. Panel A of Table 2 regresses non-child family expenditures on housework, conditioning on the number of children, age of youngest child, metropolitan area, and region (specification 1, identical to Figure 1a); in specifications (2) and (3) additional controls are added for family income tercile and the employment status of the adults in the family (whether at least one adult works zero paid hours, or whether at least one adult works part-time). Terciles for household income are used for consistency with USDA methodology (described in the next section).

Panel B reproduces the same set of specifications for unpaid childcare on childcare expenditures. Even conditioning on the full set of controls, non-child expenditures are associated with a precisely estimated near-zero effect on housework, while a $1000 increase in childcare expenditures is associated with a 0.9 h decrease in unpaid childcare. The statistical relationship is significant despite the fact that unpaid non-parental childcare (such as care by grandparents) is not measured and cannot be taken into account. Note that conditioning on the employment status of adults reduces this negative relationship: it falls from 1.5 h/$1000 to 0.9 h/$1000. The presence of at least one non-employed adult increases unpaid childcare by 22 h a week (relative to a family where all adults are employed full-time), while the presence of a part-time employed adult increases unpaid childcare by 6 h (see later discussion of the effect of maternal earnings).

These patterns likely reflect the effect of women's paid employment hours. Table 3 focuses on two-parent families with children, while distinguishing between women's and men's paid employment hours and labor income among the controls. Non-child expenditures continue to have a zero (though insignificant) relationship with housework. A $1000 increase in annual expenditures on childcare is associated with a 0.8 h/week reduction for women (Table 3, Panel A), suggesting that much of the 0.9 h/$1000 reduction in specification (3) of Table 2 is driven by reductions for women. A 1 h increase in their partner's paid work increases unpaid childcare by similar amounts (about 0.3 h/week) for both women and men; however, an increase in their own hours of paid work decreases unpaid childcare by a slightly greater amount for women (0.6 h/week) than for men (0.4 h/week). (These regressions are not intended to capture causal relationships as hours of childcare and paid work, as well as childcare expenditures, are jointly determined).

As an extension of this hypothesis, we explore the possibility that maternal earnings have a stronger positive effect than paternal earnings on the purchase of childcare, whether as a result of gender norms or household bargaining. This implies that the high substitutability between expenditures and unpaid parental care time is largely driven by maternal work hours. We examine how women and men in two-parent families with children vary their unpaid work when their own or their spouse's labor income changes (see Table 3, Panel B). Column 1 suggests that a $1000 increase in woman's own labor income is associated with an 0.2 h reduction per week in unpaid childcare time. There is a smaller associated reduction in housework (0.1 h per week). Women's higher labor income is also associated with an increase in their partners' unpaid work, though the magnitude of this increase does not fully compensate for the reduction in women's hours. On the other hand, an increase in men's labor income is associated with non-significant or very small effects for both women and men.

5. PARENTAL EXPENDITURES OF TIME AND MONEY ON CHILDREN

In order to construct a measure of total average expenditures on children including the imputed value of parental time, we replicate USDA estimates of monetary expenditure to the extent the data allow. Next, we estimate average time spent on unpaid services for children, multiply this by a conservative replacement

TABLE 3
OLS Regressions of Expenditures and Income on Hours Spent on Unpaid Services, by Gender

	Women		Men	
	Housework	Childcare	Housework	Childcare
A. Expenditures and hours				
Expenditures (in 1000$)				
Non-childcare	0.005		0.004	
	(0.007)		(0.003)	
Childcare		−0.808***		−0.216*
		(0.160)		(0.119)
Household income				
Middle tercile	−1.856**	−6.138**	−0.460	−2.130
	(0.792)	(2.544)	(0.390)	(1.903)
Highest tercile	−4.832***	−15.267***	−0.334	−3.775*
	(0.862)	(2.606)	(0.424)	(1.949)
Weekly paid work hours				
Men	0.112***	0.260***	−0.097***	−0.400***
	(0.015)	(0.048)	(0.007)	(0.036)
Women	−0.280***	−0.592***	0.055***	0.261***
	(0.012)	(0.041)	(0.006)	(0.031)
B. Labor income				
Labor income (in 1000$)				
Men	0.000	0.005**	−0.020***	−0.005***
	(0.006)	(0.002)	(0.005)	(0.001)
Women	−0.186***	−0.076***	0.033***	0.015***
	(0.015)	(0.005)	(0.012)	(0.002)
Observations	3755	3744	3763	3734

Notes: Sample restricted to two-parent families. Panel A regresses individual unpaid housework time on the family's household expenditures and individual unpaid childcare time on the family's childcare expenditures, separately by gender. Panel B regresses individual housework and childcare time on own and spousal labor income, separately by gender. Controls for regressions in both panels include number of children, age of youngest child, metropolitan area, and region. Standard errors in parentheses.

Abbreviations: PSID, Panel Study of Income Dynamics.

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Source: PSID 2017–2019.

cost wage, and report the size of this estimate relative to total expenditures. This methodology builds on previous estimates of the value of parental time expenditures (Folbre, 2008).

The USDA estimates annual childrearing expenses for married- and single-parent families across income groups, using 2011–2015 expenditure data from 23,297 married-couple households and 7030 single-parent households in the Bureau of Labor Statistics Consumer Expenditure Survey (CE) (Lino et al., 2017). These expenditures consist of child-specific expenditures (such as childcare and education spending, as well as clothing expenditures on children) and imputed

shares for housing, food, transport, and healthcare expenditures devoted to children. They exclude consideration of time costs and foregone earnings, which they term indirect costs. However, they estimate childcare and education expenditures conditional on non-zero expenditure in this category, alleviating the exclusion of time costs by applying average childcare costs to even those families that do not utilize paid childcare services. We apply unconditional estimates of childcare and education expenditures, as we separately account of expenditures of unpaid care (we later discuss the effect of the USDA's adjustment relative to our valuation).

The allocation of family expenditures to children is as follows: each (non-housing-related) budgetary component (clothing, childcare and education, food, healthcare, transport, and miscellaneous expenditures) is regressed on three categories of family income (we use the USDA's categories, which, in 2018 dollars are: less than $63,800, $63,800–$115,800, more than $115,800), number of children under 17 (1, 2, 3+), age of the youngest child (0–2, 3–5, 6–8, 9–11, 12–14, and 15–17), region, and residence in a metropolitan area.[5] Unlike USDA, we include all partnered couples rather than just married couples in the category of two-parent families, and also exclude families with children over 18 (as time use is not available for adult offspring).

The predicted values for each budgetary component are allocated to children as follows: clothing is divided equally by number of household members (the USDA uses children's clothing divided by number of children: however, as no separate category for adult versus child clothing expenditures in the PSID, we use expenditures on all clothing divided by number of household members); childcare and education expenditures are divided by the number of children; food expenditures are based on 2016 USDA reports on cost of food by sex: shares by age of household member, household size, and income are applied; about 17–25 percent per child in a two-child, married-couple family. To compute healthcare expenditures, the USDA uses Medical Expenditure Panel Survey (MEPS) 2012 data to compute children's shares (ranging between 15 and 20 percent per child in a two-child, married-couple family. We use estimates provided in email correspondence by Mark Lino of the USDA (personal communication, March 12, 2022). Expenditures on transportation for family-related activities are divided equally across family members, as are miscellaneous expenditures (recreational expenses other than vacations). Miscellaneous expenditures in the PSID are "recreation and entertainment, including tickets to movies, sporting events, and performing arts and hobbies including exercise, bicycles, trailers, camping, photography, and reading materials;" they do not include personal care items (which are a part of USDA miscellaneous expenses). PSID expenses on trips/vacations are excluded from consideration as they do not seem to be a part of USDA miscellaneous expenses.

The USDA computes housing expenses associated with children by regressing total housing expenses on the number of bedrooms (excluding bathrooms) in

[5]The USDA categories in 2015 dollars are: less than $59,200, $59,200–$107,400, and more than $107,400; these do not split the PSID sample in three parts—the PSID families seem to have higher incomes than the CE (perhaps because we consider a later time period: i.e., 2015–2019 rather than 2011–2015); specifically the breakdown is 25% for low-income, 33% for middle-income and 42% for high income.

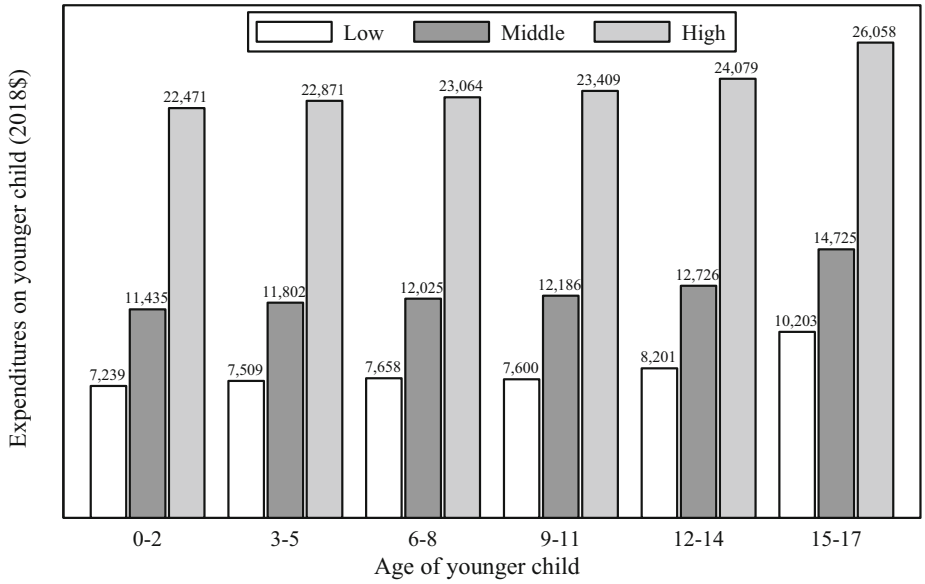

Figure 2. Parental monetary expenditures devoted to younger child in a two-child, two-parent family, by family income (low, middle, and high).
Source: PSID 2017–2019. See text for details on income categories and allocation of family expenditures. Abbreviations: PSID, Panel Study of Income Dynamics.

a home.[6,7] As the PSID does not have information on the number of bedrooms (only on the total number of rooms), we impute the number of bedrooms from the number of rooms based on the corresponding relationship in the Consumer Expenditures Survey of 2017 and 2019 (so, for example, a 5–7 room house is assumed to have three bedrooms). We concur with the USDA that using the average cost of an additional bedroom is a "conservative estimate of housing expenses on children because it does not account fully for the fact that some families pay more for housing to live in a community with preferred schools or other amenities for children" (Lino et al., 2017, p. 9). The results we obtain (see Figure 2) are of a similar magnitude to USDA estimates in Lino et al. (2017, p. 10), though expenditures for high-income families are higher than corresponding USDA figures (see Figure A.4 for estimates in 2015$ that apply conditional monetary expenditures on childcare and are more

[6]Housing expenses include shelter (mortgage payments, property taxes, or rent; maintenance and repairs; and insurance), utilities, and house furnishings and equipment. Mortgage payments included principal and interest payments. For conformity with the USDA approach, we exclude the imputed value of owner-occupied housing from housing expenses.

[7]Regressions are conducted separately by number of adults (single- or two-adult), region, and income category.

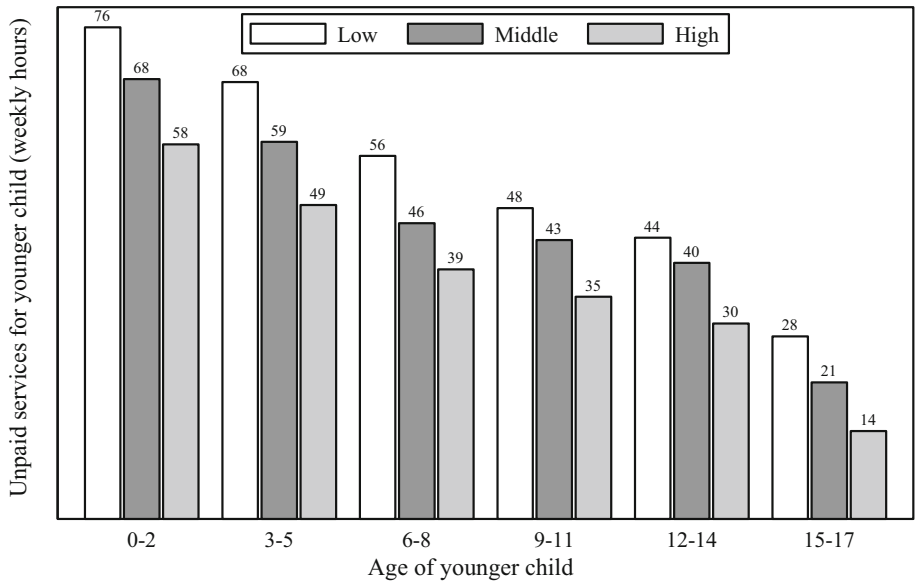

Figure 3. Usual weekly hours devoted by parents to younger child in a two-child, two-parent family, by family income (low, middle, and high).
Source: PSID 2017–2019. See text for details on income categories and allocation of time expenditures. Abbreviations: PSID, Panel Study of Income Dynamics.

comparable to the USDA estimates), possibly related to the difference in time period (2017–2019 in our paper, compared to 2011–2015 in the USDA report).[8]

The next step is estimation of average amounts of parental time devoted to children.

These include total household weekly hours spent on childcare and, for consistency with USDA estimates of money expenditures, time spent on children's share of household public goods, in this case time devoted to household activities and purchasing goods and services. Following USDA precedent, time in childcare and housework are each regressed on the three family income categories, number of children under 17, and the age of the youngest child. Predicted values are then allotted to children as follows: childcare time is allotted by child age—that is, infants receive a bigger share than teenagers—with shares determined by childcare time in single-child families;[9] housework is equally divided across all family members. Our results for a two-child, two-parent family are shown in Figure 3. The steep decline with child age is driven largely by declines in hours of childcare as children mature.

[8]Unless otherwise stated, all estimates are computed holding metropolitan area fixed at "yes," and region fixed at South (categories with the highest frequency in the sample).

[9]To illustrate this: if a family with one child aged 5 years devotes 40 hours per week to childcare and a family with one 12-year old devotes 10 h per week, then a two-child family with a 5- and a 12-year-old that spends 45 h per week on childcare would be assumed to allot 80% of that time to the 5-year-old and 10% to the 12-year-old. Figure A.5 shows our results when childcare time is divided equally by the number of children in the family.

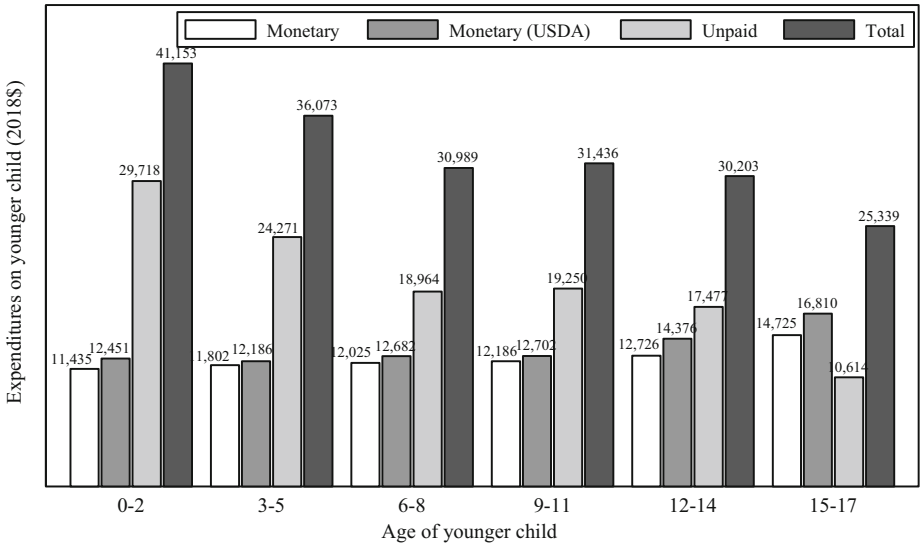

Figure 4. Parental expenditures devoted to younger child in a two-child, two-parent, middle-income family.

Source: PSID 2017–2019. See text for details on income categories and allocation of family expenditures. Monetary (USDA) expenditures include average childcare and education expenditures conditional on non-zero spending, while monetary expenditures include average unconditional childcare and education expenditures. Abbreviations: PSID, Panel Study of Income Dynamics.

An ideal measure for the replacement cost value of unpaid time would be the hourly cost of purchased childcare. However, the PSID measure of childcare expenditures does not include information on the number of hours purchased (and many families report zero childcare expenditures). Therefore, we rely on a lower-bound estimate of the replacement cost value of the unpaid time devoted to children, applying state-level effective minimum wages to families based on their state of current residence (Figure A.6 shows results based on using the federal minimum wage of $7.25 per hour irrespective of state-level minimum wage).[10] The resulting (annualized) estimates for the values of unpaid household services devoted to children are shown in Figure A.7. The average state-level minimum wage (weighted by the PSID sample) is $9.7 per hour, only somewhat lower than the $12.6 per hour price of paid childcare implied by the cross-sectional estimates, assuming that a 1 h increase in paid childcare is associated with a 1 h decrease in unpaid childcare.

Finally, we compare our estimates of total parental expenditures that include annualized replacement cost values for unpaid household services devoted to children against the USDA's method of estimating childcare and education expenditures conditional on non-zero expenditure in this category. In Figure 4, the bars

[10]State-level minimum wages obtained from US DOL Consolidated Minimum Wage Table for nonsupervisory, nonfarm private sector employment (US DOL 2022, accessed at https://www.dol.gov/agencies/whd/mw-consolidated on June 17, 2022).

labeled "Monetary (USDA)" pertain to the latter (while the monetary expenditures refer to our own estimates with unconditional average childcare and education expenditures). As is clear, they fall strikingly short of total expenditures that include unpaid time valued at a conservative replacement cost value.

6. VARIATION BY HOUSEHOLD COMPOSITION

In their estimates of money expenditures, the USDA reports similar expenditures on children for two- and single-parent families. For instance, in 2015, total family money expenditures on a child from birth through age 17 were estimated to be $172,200 for single-parents and $174,690 for married-couple households with before-tax income below $59,200 (Lino et al., 2017, p. 13). Money expenditures on children are only slightly lower for single-parent households, even though the latter expenditures are likely to be underestimates (non-custodial parents may also make purchases on behalf of a child that are not captured in the CE data). Because single-parent families have lower incomes, childcare expenditures form a greater share of total expenditures for these households. This raises an important question: how do total expenditures on children in single-parent households compare to those in dual-parent households?

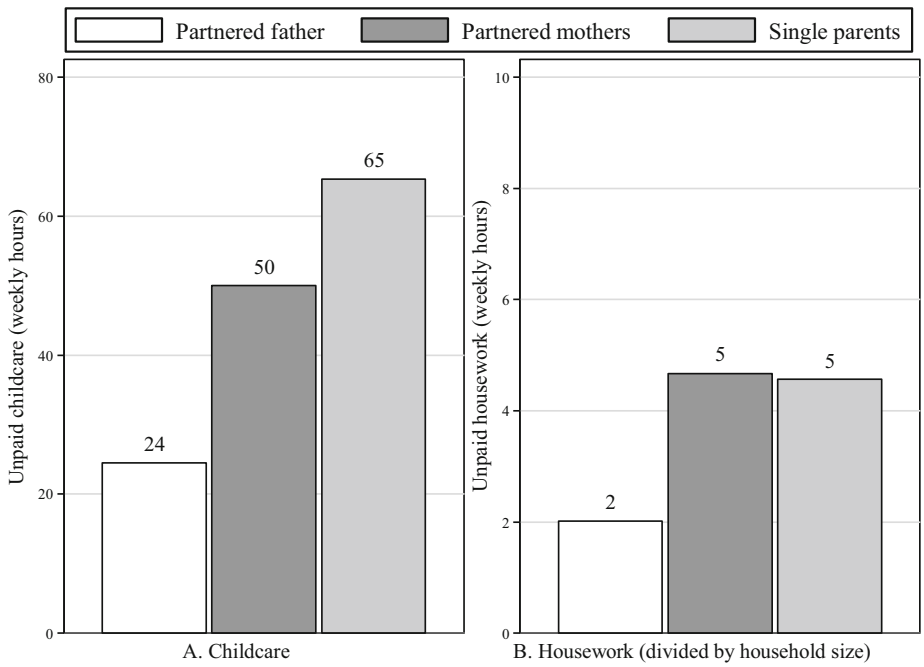

Figure 5. Average usual weekly hours spent on childcare and housework in two-child families by number of adults.
Source: PSID 2017–2019. Housework time divided by household size to account for the increase in housework requirements due to the presence of an extra adult in two-parent families. PSID, panel study of income dynamics.

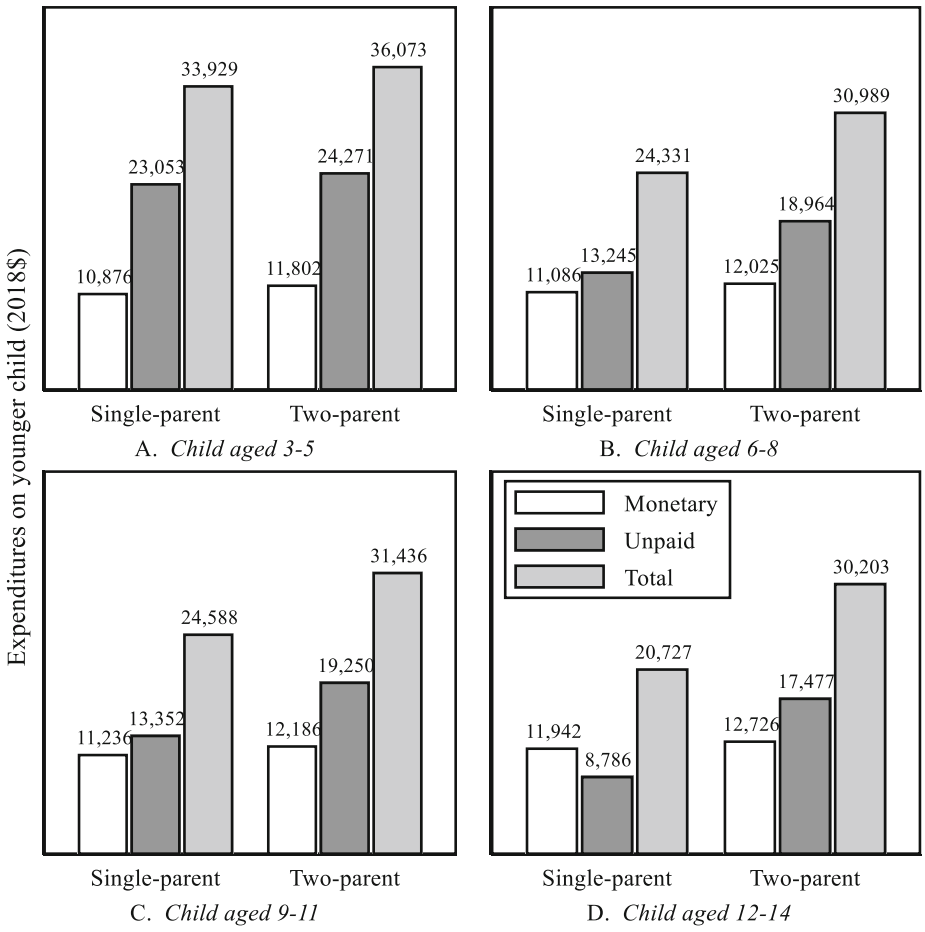

Figure 6. Total resources (monetary expenditures and time) devoted by family to younger child in a two-child, low-income family, by family composition (single- vs. two-parent).
Source: PSID 2017–2019. See text for details on income categories and allocation of family expenditures. PSID, panel study of income dynamics.

Two-parent families have a larger overall time budget than single-parent families, especially for supervisory care of children. Therefore, we hypothesize that family time devoted to children exhibits much greater differences between two- and single-parent families than money expenditures. Figure 5 supports this hypothesis. Two-child two-parent families spend more time on childcare, on average, than two-child single-parent families (Figure 5b shows similar patterns for housework time divided by household size). (To the extent that the PSID undercounts men's childcare time, the estimates for two-parent families are likely to be underestimates.) Partnered mothers spend less time on childcare than single mothers, though much more than partnered fathers. Single parents devote more time to childcare than partnered mothers, but not enough to compensate for lack of a partner.

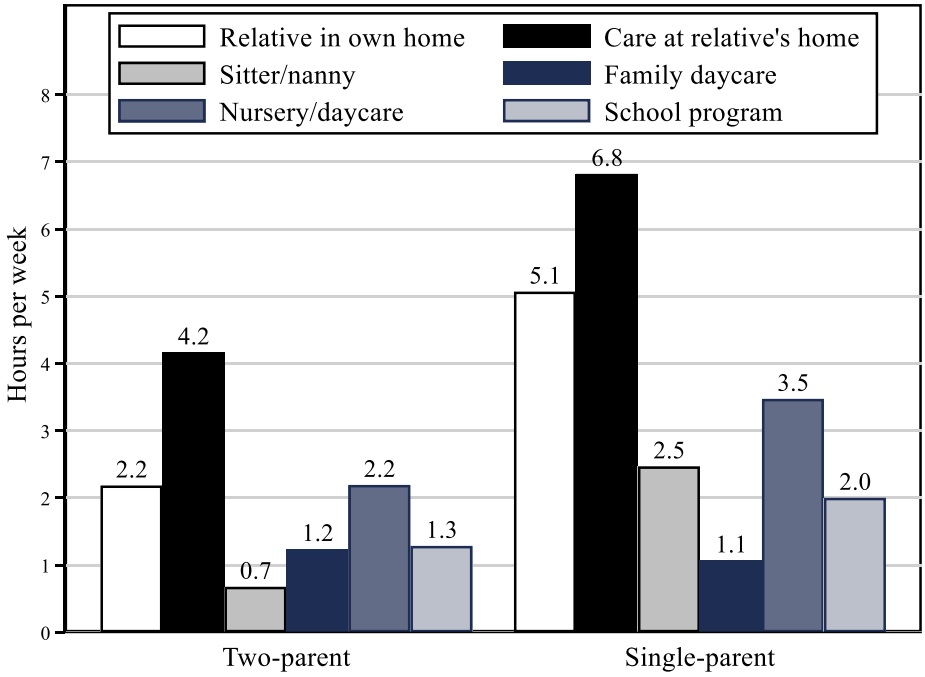

Figure 7. Average time spent by a child in non-parental care arrangements in the last 4 weeks, by family composition (single- vs. two-parent).

Source: PSID-CDS 2014 and 2019. Sample restricted to children in grade 6 or below (or not yet in school) ($N = 5708$: of which 4064 are in two-parent and 1654 in single-parent families). PSID, panel study of income dynamics.

On average, in families with two children, single-parent families devote 7.4 weekly hours less than two-parent families to the younger child, or about 14 percent less than the total time devoted to children by two-parent partnered families in the sample. Figure 6 reports our estimates of parental expenditures of money and time, comparing single- and two-parent families with two children. While both single- and two-parent families have similar monetary expenditures, parental expenditures of time are much higher for two-parent families, with the consequence that overall expenditures on children are higher. The gap does not fall (and in fact gets slightly larger) for older children.

Deficits in unpaid childcare provided in single-parent families might be partially, or wholly, addressed by unpaid childcare from non-household adults (such as the non-custodial parent, grandparents, or other relatives). We use primary caregiver reports on childcare arrangements in the past 4 weeks for children in grade 6 or below from the PSID-CDS to examine differences in such arrangements between single- and two-parent families (Figure 7). Note that time spent in such arrangements is reported from the perspective of the child, rather than the person caring for the child (and the unit of observation is the child rather than the family): a relative supervising two children from the same family simultaneously, for example, would report half the childcare time as the two children combined. Time reported in the CDS can therefore be thought as an upper bound to childcare subject to

TABLE 4
HOURS SPENT ON UNPAID SERVICES BY FAMILY INCOME CATEGORY

	Childcare	Housework	Childcare/# children	Housework/ family size
Family income tercile (reference: lowest)				
Middle tercile	−16.6***	−4.8***	−8.5***	−1.1***
	(3.6)	(1.1)	(2.5)	(0.3)
Highest tercile	−32.0***	−8.9***	−17.9***	−2.2***
	(3.4)	(1.0)	(2.4)	(0.3)
Number of children (reference: 1)				
2	−2.2	2.9***	−39.4***	−1.9***
	(2.6)	(0.8)	(1.8)	(0.2)
3+	−0.8	5.7***	−57.5***	−3.6***
	(2.9)	(0.9)	(2.0)	(0.2)
Age of youngest child (reference 15–17)				
0–2	89.3***	5.9***	72.0***	1.6***
	(4.4)	(1.3)	(3.1)	(0.3)
3–5	73.3***	3.2**	61.5***	1.0***
	(4.7)	(1.4)	(3.3)	(0.4)
6–8	52.3***	3.2**	51.2***	1.0***
	(4.9)	(1.4)	(3.4)	(0.4)
9–11	37.7***	4.4***	43.8***	1.5***
	(4.8)	(1.4)	(3.4)	(0.4)
12–14	26.8***	2.5	33.9***	1.0***
	(5.0)	(1.5)	(3.5)	(0.4)
Observations	3817	3817	3817	3817

Notes: Sample restricted to two-parent families. Metropolitan area and region controls included. Standard errors in parentheses.

Abbreviations: PSID, panel study of income dynamics.

*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

Source: PSID 2017–2019.

economies of scale, while time reported in the PSID would be a lower bound. Care from relatives (either at the child's home or at the relative's home) might proxy for unpaid childcare received from non-familial adults: children in single-parent families receive 5.5 h per week of such care more than children in two-parent families (Figure 7).

The extent to which this narrows the differential in children's consumption across single- and two-parent families is unclear. Informal childcare (i.e., care by grandparents or other relatives) is found to have adverse effects on child outcomes (relative to children who are cared for by their parents) (Bernal & Keane, 2011; Danzer et al., 2022). By contrast, formal center-based care has no adverse effects on child outcomes. Our results link these findings with research indicating that growing up in single-parent families is associated with negative child outcomes (Amato, 2005; Brown, 2010) by indicating a mechanism through which such disadvantages are accrued (i.e., lower time budgets, and therefore lower parental expenditures of time) in single-parent families compared to two-parent families.

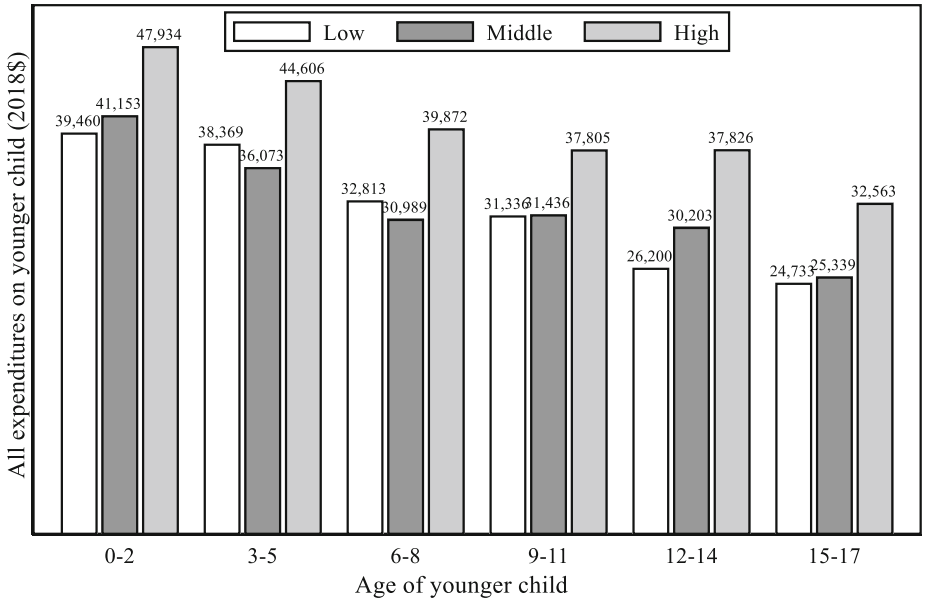

Figure 8. Total resources (monetary expenditures and time) devoted by family to younger child in a two-child, two-parent family, by family income (low, middle, and high).
Source: PSID 2017–2019. See text for details on income categories and allocation of family expenditures. PSID, panel study of income dynamics.

7. VARIATION BY FAMILY INCOME

Since purchased childcare services partially substitute for unpaid childcare time among households with total higher expenditures, estimates of money expenditures on children that omit consideration of the value of parental time likely overstate inequality in total parental spending. To test this hypothesis while controlling for family composition, we focus on two-parent families. Table 4 documents variation in unpaid services across income terciles for two-parent families, conditioning on the number of children and the age of the youngest child. Moving from the bottom tercile to the top tercile is associated with more than a 20 h weekly reduction in unpaid services devoted to a child (an 18 h reduction in childcare per child, and a 2 h reduction in housework per person).

Adding the imputed value of unpaid household child services to monetary expenditures radically alters the picture of total expenditures on children (see Figure 8). High-income families still appear to devote higher levels of total resources to children, but inequality in resources devoted to children between low- and high-income families is substantially reduced. Rather than high-income families spending three times as much ($23,200) compared to low-income families ($7600) (as inferred from average monetary expenditures), high-income families spend only 1.2 times as much as low-income families when the value of unpaid household services is included into the cost of children. More dramatically, it also changes how the cost of children evolves with child age: monetary

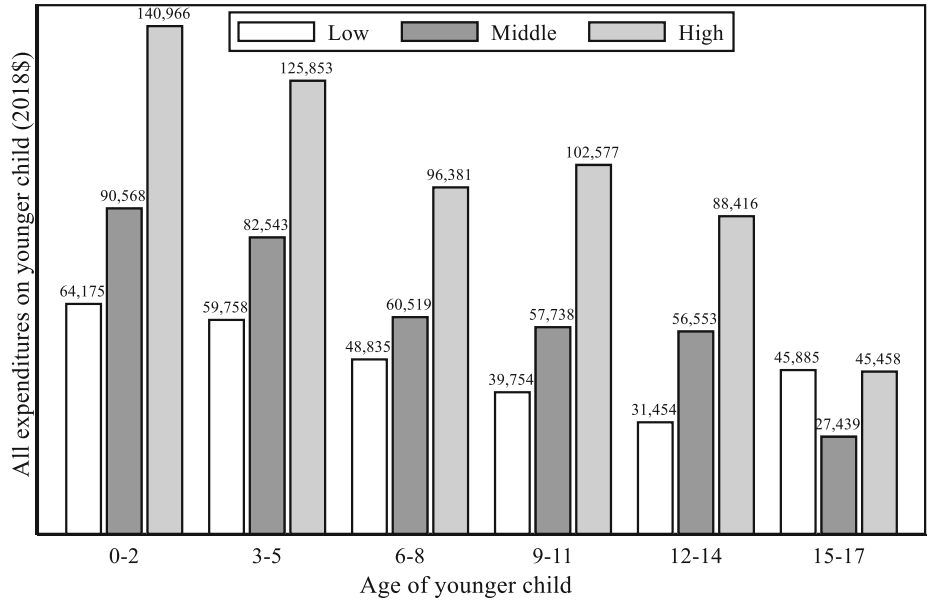

Figure 9. Total resources (monetary expenditures and time) devoted by family to younger child in a two-child, two-parent family, by family income (unpaid work valued at opportunity cost wages). *Source*: PSID 2017–2019. See text for details on income categories, allocation of family expenditures, and imputation of opportunity costs. PSID, panel study of income dynamics.

expenditures are roughly constant or even higher for older children compared to younger children, but when time costs are factored in, the cost of children falls with age.

Our choice to value labor inputs into household production at a replacement wage is motivated by a desire for comparability with other estimates of household production, most of which are guided by replacement wage approaches (Bridgman, 2016; UNECE, 2017). From a conceptual perspective, the appropriate valuation of labor inputs into household production is by the wage rate of a comparable household employee (Schreyer & Diewert, 2014). However, to address the concern that valuing unpaid work at opportunity costs might invalidate our finding that including time expenditures reduces inequality in child expenditures across the household income distribution, we replicate Figure 8 using opportunity costs instead of minimum wages. We apply average hourly wage rates by gender, age, education, race, ethnicity, and region to those who are not employed and therefore do not have observable wages.[11] Our results, shown in Figure 9, suggest that opportunity cost

[11]We use actual/observed wages for those who are employed and predicted wages for those not employed (predictions obtained from the regression of log hourly wage rates on dummies for 10 age groups, education (high school, college, post-graduate), race (black, other), Hispanic ethnicity, and state of residence, separately by gender). A control function approach (such as with the Heckman two-step estimator) preserves the qualitative conclusion (results available on request). Household-level wages for two-parent families are computed as the weighted average for the couple (with weights in proportion to the unpaid work performed by each adult).

valuation dramatically increases the value of unpaid work (from $27,124 to $57,125 for a middle-income two-parent family with two children) but preserves the reduction in inequality associated with the inclusion of parental expenditures of time, though by less than the replacement cost approach: the ratio of total expenditures for high-income to low-income families falls from 3.1 to 2.0.

8. CONCLUSION

As far as we know, the estimates provided above are the first empirically based estimates of parental expenditures on children that include an imputation of the value of parental time. For purposes of comparison and policy relevance, they hew as closely as possible to the USDA method of estimating monetary expenditures, clearly demonstrating the implications of a replacement cost valuation of parental time on the household level. Considering differences in survey design, reports of time use in the PSID are remarkably close to those in the more detailed ATUS. Evidence of substitutability between parental childcare and expenditures on purchased childcare in the PSID supports the validity of the valuation exercise.

While all imputations of the market value of non-market time are approximate, they provide a more accurate picture than the USDA's existing practice of acknowledging indirect costs by assigning an average childcare cost expenditure to all families. Even parents that spend large amounts on purchased care also provide significant amounts of unpaid care. In addition to documenting a higher magnitude of parental expenditures, our analysis modifies USDA findings in other respects. It reveals a greater economic disadvantage for children in single parent households, and considerable reduction in the economic disadvantage for children in low income relative to higher income households.

Our estimates are subject to several caveats. Valuation of parental time by the effective minimum wage provides only a lower-bound estimate of its value since some portion of this time simply cannot be replaced by a market substitute. Our estimates do not account for differences in the quality of parental childcare, essentially equating supervisory care with active developmental care. Nor do they account for public good effects: dividing time devoted to housework by the number of household members may understate its benefits; likewise, supervision of two children may not require any more time than supervision of one. Dividing household totals for childcare by the number of children has the effect of lowering amounts per child, understating the actual childcare received by children in families with more children (which tend to be lower income families). Also, as aforementioned, the PSID understates paternal hours of childcare relative to the ATUS.

None of these caveats, however, undermine our most important point: parental time represents a valuable expenditure on children that requires consideration. Policies making public assistance contingent on participation in paid employment (such as the Earned Income Tax Credit) should factor in the increased expenses incurred when publicly funded childcare is not available. Parental child support responsibilities should not ignore the value of in-kind contributions of parental care for either custodial or non-custodial parents. Foster parents deserve some recompense for the time they devote to their wards, not just for expenditures on housing, food, clothing and other out of pocket expenses.

Future research on total parental expenditures may be able to take advantage of an effort currently underway by the U.S. Bureau of Labor Statistics to create a synthetic data set by statistically matching observations from the ATUS and the Consumer Expenditure Survey. Redesign of existing survey infrastructure in the U.S. and elsewhere to provide a unified picture of the relationship between expenditures of time and money would offer even more useful results. In the meantime, the PSID remains a useful source of data for further exploration of this issue.

REFERENCES

Aguiar, M., & Hurst, E. (2005). Consumption versus Expenditure. *Journal of Political Economy*, *113*(5), 919–48.

Amato, P. R. (2005). The impact of family formation change on the cognitive, social, and emotional well-being of the next generation. *The Future of Children*, *15*, 75–96.

Bernal, R., & Keane, M. P. (2011). Child care choices and Children's cognitive achievement: The case of single mothers. *Journal of Labor Economics*, *29*(3), 459–512.

Bianchi, S. M. (2000). Maternal employment and time with children: Dramatic change or surprising continuity? *Demography*, *37*(4), 401–14.

Bridgman, B. (2016). Accounting for household production in the National Accounts, 1965–2014. *Survey of Current Business*, *96*, 1–5.

Brown, S. L. (2010). Marriage and child well-being: Research and policy perspectives. *Journal of Marriage and Family*, *72*(5), 1059–77.

Danzer, N., Halla, M., Schneeweis, N., & Zweimüller, M. (2022). Parental leave, (in)formal childcare and long-term child outcomes. *Journal of Human Resources*, *57*(6), 1826–1884.

Flood, S., McMurry, J., Sojourner, A., & Wiswall, M. (2022). Inequality in early care experienced by US children. *Journal of Economic Perspectives*, *36*, 199–222.

Folbre, N. (2008). *Valuing children*. Harvard University Press.

Folbre, N. (2023). Beyond the clock: Rethinking the meaning of unpaid childcare in the US. *Time and Society*., 32(4), 367-384. https://doi.org/10.1177/0961463X221131108

Folbre, N., Murray-Close, M., & Suh, J. (2018). Equivalence scales for extended income in the US. *Review of Economics of the Household*, *16*(2), 189–227.

Folbre, N., & Yoon, J. (2007). What is child care? Lessons from time-use surveys of major English-speaking countries. *Review of Economics of the Household*, *5*(3), 223–48.

Frazis, H., & Stewart, J. (2011). How does household production affect measured income inequality? *Journal of Population Economics*, *24*(1), 3–22.

Insolera, N. E., Johnson, D. S., & Simmert, B. A. (2019). *Evaluation of the time use data in PSID with comparisons to ATUS*. Institute for Social Research, University of Michigan: Technical Series Paper #19-02.

Kleven, H., Landais, C., Posch, J., Steinhauer, A., & Zweimuller, J. (2019). Child penalties across countries: Evidence and explanations. *AEA Papers and Proceedings*, *109*, 122–6.

Lino, M., Kuczynski, K., Rodriguez, N., & Schap, T. (2017). Expenditures on Children byFamilies, 2015. Miscellaneous Publication No. 1528-2015. U.S. Department of Agriculture,Center for Nutrition Policy and Promotion. Accessed online December 20, 2023 at https://www.fns.usda.gov/cnpp/2015-expenditures-children-families.

Misra, J., Moller, S., & Budig, M. J. (2007). Work-family policies and poverty for partnered and single women in Europe and North America. *Gender & Society*, *21*(6), 804–27.

National Academy of Science. (2005). *Beyond the Market. Designing Nonmarket Accounts for the United States*. Accessed online September 19, 2022 at https://nap.nationalacademies.org/catalog/11181/beyond-the-market-designing-nonmarket-accounts-for-the-united-states

PSID (Panel Study of Income Dynamics), public use dataset. (2017). Produced and distributed by the Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, MI.

PSID (Panel Study of Income Dynamics). (2021). *Main interview user manual: Release 2021*. Institute for Social Research, University of Michigan.

PSID (Panel Study of Income Dynamics). (2022). *Child Development Supplement 2019: User Guide*. Institute for Social Research, University of Michigan.

Schreyer, P. & Diewert, W. (2014). Household Production, Leisure, and Living Standards. In D. Jorgenson, J. Landefeld & P. Schreyer (Ed.), *Measuring Economic Sustainability and Progress* (pp. 89-114). Chicago: University of Chicago Press.

Suh, J., & Folbre, N. (2016). Valuing unpaid child care in the US: A prototype satellite account using the American time use survey. *Review of Income and Wealth*, *62*(4), 668–84.
Suh, J., & Folbre, N. (2022). *The responsibilities of parental childcare: Evidence from the American time use survey*. Working Paper. Department of Economics, University of Massachusetts Amherst.
UNECE (United Nations Economic Commission for Europe). (2017). Guide on valuing unpaid household service work. United Nations: Report ECE/CES/STAT/2017/3. Accessed online December 20, 2023 at https://unece.org/DAM/stats/publications/2018/ECECESSTAT20173.pdf.
UNWomen, Quantifying Care. (2021). *Design and harmonization issues in time use surveys*. CEGS Accessed online September 19, 2021, at https://data.unwomen.org/publications/quantifying-care-design-and-harmonization-issues-time-use-surveys
Wolf, D. A., Lee, R. D., Miller, T., Donehower, G., & Genest, A. (2011). Fiscal externalities of becoming a parent. *Population and Development Review*, *37*(2), 241–66.

Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's web site:

Data S1. Supporting Information.

Figure A.1. Age distribution in the Panel Study of Income Dynamics (PSID) and American Time Use Survey (ATUS), 2017 and 2019. Both samples are restricted to reference persons and spouses 18+ and are weighted by survey weights.

Figure A.2. Weekly family hours on household activities against annual family expenditure on food.

Source: PSID 2017–2019.

Binned scatterplot of weekly hours on household activities (excluding purchasing) against annual family expenditures on food, conditioning on the number of children, age of the youngest child, region, and metropolitan residence. PSID, panel study of income dynamics.

Figure A.3. Weekly family hours of unpaid work against all annual family expenditures.

Source: PSID 2017–2019.

Binned scatterplots of weekly hours on unpaid work (household activities and childcare) against annual family expenditures, conditioning on the number of children, age of the youngest child, region, and metropolitan residence. PSID, panel study of income dynamics.

Figure A.4. Family expenditures devoted to younger child in a two-child, two-parent family, with expenditures expressed in 2015 dollars and childcare expenditures calculated conditional on participation.

Source: PSID 2017–2019.

See text for details on allocation of family expenditures. PSID, panel study of income dynamics.

Figure A.5. Usual weekly hours devoted by parents to younger child in a two-child, two-parent family, by family income (childcare hours allotted equally across children).

Source: PSID 2017–2019.

See text for details on income categories and allocation of time expenditures. PSID, panel study of income dynamics.

Figure A.6. Family expenditures devoted to younger child in a two-child, two-parent family, by family income (low, middle, and high).

Source: PSID 2017–2019.

See text for details on income categories and allocation of family expenditures. Federal minimum wage of $7.25/h applied to compute replacement cost value. PSID, panel study of income dynamics.

Figure A.7. Imputed annual value of hours devoted by parents to younger child in a two-child, two-parent family, by family income (low, middle, and high).

Source: PSID 2017–2019.

See text for details on income categories and allocation of family expenditures. PSID, panel study of income dynamics.

Figure A.8. Weekly family hours on unpaid household services against annual family expenditure.

Source: PSID 2017–2019.

Binned scatterplots of weekly hours unpaid services (housework and childcare) against annual family expenditures (non-childcare and childcare-related), conditioning on the number of children, age of the youngest child, region, and metropolitan residence. Piecewise linear regressions reported with cut-offs of $100,000 for non-child expenditures and $5000 for childcare expenditures. PSID, panel study of income dynamics.